

Australian Cornish Mining Sites: Moonta Conservation Management Plan

May 2020, ref 19127



**Swanbury
Penglase**

Contents

1. Executive Summary	5
1.1 Background	5
1.2 Recommendations	5
2. Introduction	7
2.1 Background	7
2.2 Objectives	8
2.3 Location	8
2.4 State Heritage Places Mentioned in the National Heritage Values	9
2.5 Methodology	11
2.6 Project Team	12
2.7 Acknowledgements	12
3. Historical Outline of Moonta Mine: 1861 - 1923	13
3.1 International context	15
3.2 National and State Context	17
3.3 Moonta	18
3.4 Conclusion	38
4. Place Description	41
4.1 Introduction	41
4.2 Framework for Measuring Condition and Integrity of Values	46
4.3 Description and Condition	47
5. Heritage Significance	141
5.1 General	141
5.2 National	141
5.3 State, territory and local heritage	144
5.4 Areas for further research	145
6. Key Issues and Opportunities	151
6.1 Statutory Context	151
6.2 Land Ownership	152
6.3 Management	153
6.4 Cultural Landscape	155
6.5 Environmental Issues	156
6.6 Safety	157
6.7 Physical Conservation	157
6.8 Tourism	161
6.9 Interpretation	162
6.10 Nharangga Heritage	162
6.11 Planning Controls	163
6.12 Further Research	164

7.	Conservation Management Policy	165
7.1	Approach to Heritage Management	165
7.2	Form and context	167
7.3	Fabric and setting	170
7.4	Use	174
7.5	Interpretation	178
7.6	Management and Governance	181
7.7	Future Management of Planning and Development	184
7.8	Community Involvement	185
7.9	Review	187
7.10	Funding Opportunities	187
8.	Planning Precinct Policies	189
8.1	ACMS (Moonta) Site Wide Planning Policy	197
8.2	ACMS (Moonta) Precincts Policy	197
9.	Implementation	204
9.1	Responsibilities	204
9.2	Priority Actions	204
Appendix A: Statement of Significance		209
Appendix B: Community Engagement		210
Appendix C: Lists of Protected Species of Flora and Fauna		212
Appendix D: CMP Project Brief		213
Appendix E: Mapping		214
Bibliography		215
Endnotes		219

Edition	Date	Written by	Checked & Approved by	Comment
001	10.02.2020	HE, SS, AK, SL	AK	DRAFT
002	26.02.2020	HE, SS, AK, SL	AK	DRAFT
003	20.05.2020	HE, SS, AK, SL	AK	FINAL FOR COUNCIL ENDORSEMENT



We wish to acknowledge the custodians of this land, the Nharangga people and their Elders past and present. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region!

1. Executive Summary

1.1 Background

Swanbury Penglase were engaged by the Copper Coast Council to develop a Conservation Management Plan (CMP) for the Moonta Mines in September 2019. The project has come about as a result of the inclusion of the place along with Burra on the National Heritage List as the Australian Cornish Mining Sites: Burra and Moonta by the Federal Government in May 2017.

This document for the Australian Cornish Mining Sites (Moonta) (ACMS (Moonta)) has been developed in accordance with the Burra Charter (The Australia ICOMOS Charter for Places of Cultural Significance 2013) and the Federal Government's guidelines for Managing National Heritage Places. It will be used as a tool by owners together with the Council, State and Commonwealth Government agencies to inform future development and decision making and management strategies for the area.

The background historic research and site analysis necessary to establish an understanding of the place has reinforced the existing established National Heritage Values. Several other places both within and adjacent to the boundaries of the ACMS (Moonta) were identified where further research would be beneficial to determine if they also meet the criteria for inclusion in the current listing.

A number of issues and opportunities which currently or potentially may impact on the National Heritage Values have been identified including; the statutory context, land ownership, management, cultural landscape, environmental issues, safety, physical conservation, tourism, interpretation, Nharangga heritage, planning issues and further research. Specific policies have been developed to address the implications of these issues, while a detailed review of the policies and guidelines has been carried out and recommendations developed to address any inconsistencies in the existing Copper Coast Council Development Plan to address implications and responsibilities as a result of the National Heritage Listing. Consequently, as a result of this research a list of recommended priorities and actions have been developed.

1.2 Recommendations

The following actions are proposed to address the identified issues:

For action within the next two years

- > Facilitate endorsement of this CMP for the ACMS (Moonta).
- > Establish an Advisory Committee to advise and report independently back to Council on the management of the ACMS (Moonta) site and implementation of the recommendations contained in this CMP.
- > Prepare a Development Plan Amendment to integrate the objectives and recommendations of this document into the planning policy of Council's Development Plan (or planning code equivalent given the planning reform process underway in SA).
- > Establish an agreement between the Commonwealth and State governments to formalise a review of proposed developments to determine whether they meet the threshold for referral under the EPBC Act. Should this proceed, subsequent training of Heritage SA officers on the requirements and obligations under the EPBC Act 1999 and the preparation of a guide for their internal use to help facilitate this additional role shall be required.
- > Undertake a land tenure review of the ACMS (Moonta) to understand and rationalise land ownership and leaseholds, and therefore definitively identify responsibilities for heritage places across the site.
- > Develop an archaeological map to identify areas of high and low potential for undisturbed sites.
- > Review and audit all tourism strategies and proposals contained to ensure the authenticity of National Heritage listed places are not lost or compromised.
- > Undertake a site safety and security audit of all places at risk of collapse, sensitive sites requiring fencing, and places that have been vandalised such as mine shafts for actioning to improve safety and amenity across ACMS (Moonta). This should include new fencing or repair of existing barriers at the open mine shafts and to limit vehicle access to the slimes and tailing heaps.
- > Prepare a stormwater management plan and undertake environmental testing of the tailings heaps and slimes to understand their composition and their future management requirements.
- > Prepare a Reconciliation Action Plan and develop Indigenous policies to enable authentic collaboration, engagement and celebration of Nharangga culture alongside the Cornish and western culture.
- > Prepare a traffic management plan for the ACMS (Moonta) that investigates general vehicle speeds and the closure / relocation / sealing of certain roads to discourage through traffic and heavy vehicles.
- > Implement the immediate actions recommended in the 2012 Conservation Management Plan for Hughes' Enginehouse Precinct.
- > Undertake an assessment to facilitate the stabilisation of the top of Taylors shaft to prevent the collapse of the surrounding fabric.
- > Improve safety and security within the Precipitation Works and Yelta Slimes, and damage to archeological ruins by fencing and installing signage to restrict unauthorised entry.
- > Encourage and guide the conservation of the remaining miners' cottages in the ACMS (Moonta) through the preparation of a Design Guide for owners.

For action within the next five years

- > Investigate opportunities for the inclusion of the ACMS (Moonta) as part of existing world heritage listing of the Cornwall and West Devon Mining Landscape.
 - > Identify current market trends and research from the Copper Coast Economic Development and Marketing Plan (titled Precious Time) and the District Council of the Copper Coast Strategic Plan 2015-2025 to identify key places and future social and community needs that could support the adaptive re use and conservation of vacant or underutilised places in ACMS (Moonta).
 - > Develop a coordinated interpretation strategy to increase public understanding of the significance of the ACMS (Moonta).
 - > Develop a walking and cycling strategy for the ACMS (Moonta).
 - > Develop a signage strategy for the ACMS (Moonta) to increase wayfinding and safety.
 - > Develop a coordinated landscape management strategy to help direct clearing and areas of revegetation to aid in interpretive whilst balancing native habitat and biodiversity.
 - > Development of a maintenance programme for major components, including buildings, ruins etc.
 - > Establish a Heritage Grant Scheme for the ACMS – Moonta to enable funding for heritage conservation works.
 - > Facilitate training of those responsible for the management of the ACMS (Moonta) to highlight obligations under the EPBC Act and the recommendations outlined in this CMP.
 - > Conserve and enhance the unplanned and unstructured streetscape patterns and miners' cottages in the ACMS (Moonta) through the creation of streetscape design guidelines to complement the existing Historic Conservation Guidelines in the Copper Coast Development Plan.
 - > Prioritise a strategic master planning process for the Moonta Mines Management precinct to realise its full potential as a financial and management centrepiece for Cornish mining interpretation in the ACMS - Moonta.
 - > Develop a coordinated tourism and interpretation strategy for the Moonta Mines Management Precinct which also explores how to better connect to the Moonta Railway Station precinct.
 - > Based on the previous assessment, facilitate building works to stabilise the top of Taylors shaft to prevent the collapse of the surrounding fabric.
 - > Update and extend the 2012 Conservation Management Plan for Hughes' Enginehouse Precinct and expand upon to capture Taylors, Richmans, Elders and Truers Enginehouses and other associated sites and ruins within the Elders Main Lode precinct. This Plan should then be endorsed, and the recommendations actioned.
 - > Undertake a Conservation Management Plan for the Prince Alfred and Beddome's Lode precinct. This Plan should then be endorsed, and the recommendations actioned.
 - > Undertake a Conservation Management Plan for the Wesleyan Methodist Church. This Plan should then be endorsed, and the recommendations actioned.
 - > Undertake a Conservation Management Plan for the National Trust owned Miners Cottage. This Plan should then be endorsed, and the recommendations actioned.
 - > Prioritise a strategic master planning process for Elders Main Lode precinct to realise its full potential as the centrepiece for Cornish mining interpretation in the ACMS - Moonta.
- > Develop the Tailing Heaps as key interpretive sites for the ACMS (Moonta).
 - > Enhance links between the town of Moonta and the ACMS (Moonta) site, specifically the Hamley Tramline route, for pedestrians and cyclists with an emphasis on interpretation.
 - > Reduce vehicular traffic cutting through the ACMS (Moonta) by part closing Dominics Shaft Way.
 - > Introduce sealing and traffic calming measures to reduce speed and dust generation from major roads through the ACMS (Moonta).
 - > Catalogue and assess the heritage significance of moveable heritage on public land, including a review of mining related artefacts held by the National Trust associated with the site, particularly original records, maps, and mining and scientific equipment.

For action in more than five years

- > Reduce the impact of vehicular traffic on archaeological ruins by relocating the road to Richmans Enginehouse and the Tailings Heaps in Elders Main Lode precinct.
- > Investigate the long-term strategic acquisition of heritage places of significance identified in this CMP for conservation and future compatible interpretive uses.
- > Develop strategy for the ACMS (Moonta) to be a base for training in conservational based skills, building upon the existing association created by the Burra Charter.
- > Develop a long-term sustainability strategy with the National Trust to consider how to facilitate manage the Trust's assets into the future.
- > Undertake a Conservation Management Plan for the Hamley mine site. This Plan should then be endorsed, and the recommendations actioned.
- > Addition of new public toilet facilities to the central part of the ACMS (Moonta).
- > Consider entry statements at the northern, eastern and western approaches into the ACMS (Moonta) in the Buffer precincts to better highlight the entrance thresholds.
- > Screen incongruous and intrusive development from streets using landscaping, street trees and new fencing in accordance with the Copper Coast Council's Historic Conservation Guidelines.

2. Introduction

2.1 Background

This Conservation Management Plan (CMP) was commissioned by the Copper Coast Council and addresses the Australian Cornish Mining Sites at Moonta (ACMS - Moonta) located on the northern Yorke Peninsula of South Australia. The Project Brief which has guided the content and direction of this CMP has been included for reference in Appendix C.

The Cornish Mining Sites at ACMS - Moonta is inscribed on the Australian National Heritage List as a place of outstanding national heritage significance where Cornish mining technology, skills and culture is demonstrated to a high degree.

The place is defined in the National Heritage List as comprising the existing Moonta Mines State Heritage Area (Figure 1) and includes all mining infrastructure and artefacts within this boundary including engine houses and chimneys, mine shafts, precipitation works, tailings heaps and related ruins of offices and other buildings. The National listing also mentions specific intact buildings such as the Moonta Mines Uniting Church (former Wesleyan Methodist Church), Miner's Cottage and Fence and the Moonta Tourist Office (former Moonta Railway Station). These places are further described later in this chapter.

The CMP is intended as a document which helps owners, managers and authorities understand the national heritage values of the ACMS - Moonta. It specifies how those values can be best conserved over time. It is intended to be used as a tool by Council and State and Commonwealth Government agencies to manage change, inform future development, decision making and management strategies for the place.

This study was funded by the Australian Government through the Protecting National Historic Sites Program and has been prepared with reference to the principles of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) and Regulations.

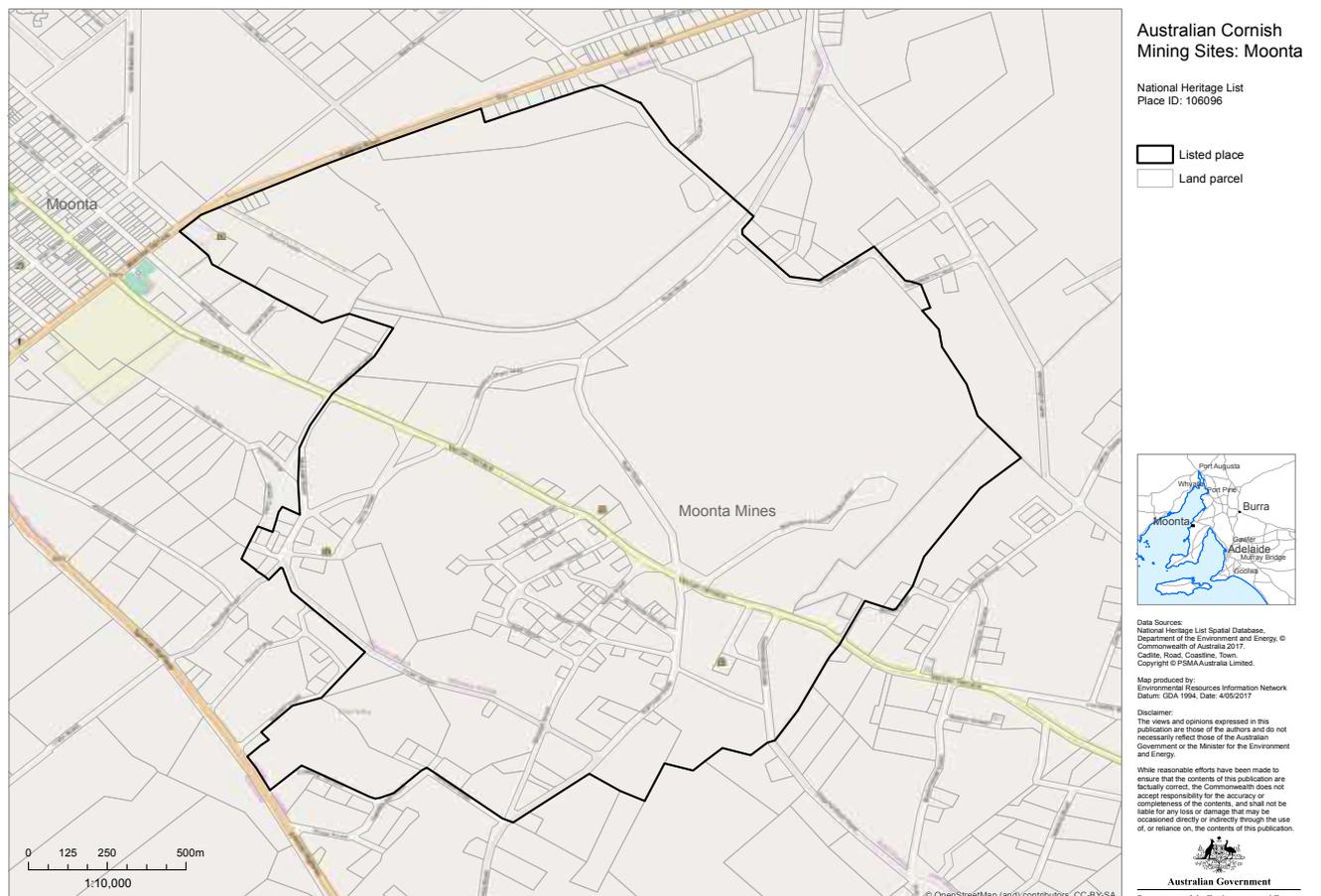


Figure 1: Moonta Mines State Heritage Area (outlined in black). Source: <http://www.environment.gov.au/system/files/pages/031c80f6-89ac-4bcb-944c-832aa052c51d/files/boundary-map-moonta.pdf>

2.2 Objectives

The primary objectives of the CMP are to:

- > Review, identify and analyse the heritage values of the ACMS - Moonta and its components
- > Develop conservation policies relating to the National Heritage list
- > Develop policies and guidelines for inclusion in the Copper Coast Council Development Plan
- > Make practical recommendations for the ongoing conservation, management and promotion of the ACMS - Moonta site
- > Contribute to the community's sense of identity - its past, present and future
- > Provide the basis for ongoing cultural resource management

In addition, the Plan has the opportunity to influence:

- > Tourism and marketing associated with the place
- > The aesthetic form, function and accessibility
- > Staging and sequencing of projects
- > Funding opportunities

2.3 Location

The township of Moonta is located on the upper west of the Yorke Peninsula in South Australia approximately 165 kilometres from Adelaide. Moonta is known as "Little Cornwall" due to its continued celebration of Cornish culture based on its Cornish mining history which it shares with the neighbouring towns Wallaroo and Kadina.

The site takes in the Moonta Mines settlement and includes both public and private land in an expansive area of approximately 320 hectares. The extent correlates with the Moonta Mines State Heritage Area (SAHR 13975) and which is included in the Copper Coast Development Plan (CoCoDP). A larger 'buffer zone' is represented in the CoCoDP maps CoCo/20 - Heritage, CoCo/22 - Heritage, CoCo/24 - Heritage, and CoCo/25 - Heritage. From Moonta's incredible mining-based population of approximately 12,000 people in 1875, according to the 2011 census the Moonta township (including adjacent suburbs of Cross Roads and Yelta) has a combined population of 651. The wider Moonta area (including Moonta Bay, North Moonta and Port Hughes) had a population of 3,659 in 2011. More recently, according to the 2016 Copper Coast Market Profile, the wider Moonta area had grown to a population of 4,700 people.

Moonta continues to function as an important pastoral district today with land surrounding the township used for growing wheat and barley, and now pulses, canola and other innovative crops.

Mining tourism and heritage continue to be strong drawcards for visitors, as does the beach with sustained foreshore residential development in Moonta Bay and Port Hughes.

The connection back to Cornish culture remains strong in this region with the biennial Kernewek Lowender Cornish festival taking place across Moonta, Wallaroo and Kadina over several days in late Autumn. Kernewek Lowender means "Cornish happiness", the event is popular with tourists and is said to be the world's largest Cornish Festival outside of Cornwall.

2.4 State Heritage Places Mentioned in the National Heritage Values

The following tables list the heritage places entered in the South Australian Heritage Register mentioned in the National Heritage values statement. It is assumed that the places listed in Tables 1 & 3 require further research for their contribution to the National Values to be better understood.

Table 1 contains the details of individually listed State heritage places also specifically referenced in the National Heritage values statement that fall within the ACMS - Moonta (SHP 13975).

Table 2 contains details of places that are within the boundaries of the ACMS - Moonta and are specifically mentioned in the National Heritage values statement but are not individually listed on the South Australian Heritage Register.

Table 3 contains other state heritage places inside of the ACMS - Moonta (SHP 13975) which historical research indicates are important to the development of the ACMS - Moonta.

These places have been reported on in further detail in the following chapters of this CMP.

All existing State Heritage Places are shown on Figure 2.

Table 1

Individual state heritage places within the ACMS - Moonta Historic Site mentioned in the National Heritage values statement.

State Heritage Place No.	Details
13110	Moonta Mines Model Sunday School Site
10113	Former Hughes Pump House & Chimney
10114	Moonta Mines Uniting (former Wesleyan Methodist) Church, including Fence and Sunday School Building
10135	Miner's Cottage & Fence
10187	Moonta Tourist Office (former Moonta Railway Station)

Table 2

Individual places within the ACMS - Moonta Historic Site mentioned in the National Heritage values statement but not individually listed on the state heritage register.

Details
Hughes Engine Pool
Elders Enginehouse
Richmans Enginehouse and nearby tailings dumps
Hancocks tailings dump (including the tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks Enginehouse and crusher house
Ryans tailings heap
Ryans shaft
Taylor's shaft
Treuers shaft
Precipitation works (ruin)
Mine workshops site
Mine offices site
General Managers residence site
Assayer's Residence site
Powder magazine (ruin)
Water reservoir (remnant)
Hamley mine (site and remnant)
Hamley tramline route and the Moonta Railway Station including disused railway line within the ACMS - Moonta state heritage area (remnant)
Bible Christian Church

Table 3

Other state heritage places inside and outside the ACMS - Moonta Historic Site that our research indicates are important to the development of the ACMS - Moonta.

State Heritage Place No.	Details
11732	National Trust Museum (former Moonta Mines Model School)

2.5 Methodology

This CMP has been prepared based on the principles and processes set out in The Australia ICOMOS Charter for Places of Cultural Significance, The Burra Charter 2013 and broadly follows the methodology established by Dr James Semple Kerr's The Conservation Plan: A Guide to The Preparation of Conservation Plans for Places of European Cultural Significance (2013).

It is also guided by Schedule 5A of the Environment Protection and Biodiversity Conservation Regulations, (Aus) 2000: 'Management Plans for Commonwealth Heritage Places' which sets out various requirements such as a comprehensive description and condition of the place; the methodology used to establish its heritage values; provision of a management framework including relevant statutory requirements; the provision of policies for the management and conservation of the place; and an implementation plan.

Also, the document was undertaken in accordance with the guidance of Ask First - A Guide to Respecting Indigenous Heritage Places and Values prepared by the Australian Heritage Commission.

2.5.1 Consultation

Community consultation and key stakeholder engagement was collaboratively undertaken between Council and the consultant team. Council has led the wider community consultation process with the consultant team assisting by providing presentation and supporting material for workshops. This consultation builds on the previous community engagement performed by Council and others as part of the national heritage listing process and the list of stakeholders generated was guided by these earlier activities.

Process

The method for consultation and engagement for the CMP consisted of two parallel processes. The first involved a series of individual meetings with key stakeholders to understand the history of the project, and of the place and to test ideas iteratively. The list of stakeholders engaged included:

- > Copper Coast Council
- > Heritage SA (SA Government)
- > National Trust of South Australia
- > Nharangga Aboriginal Progress Association (NAPA)
- > Department of the Premier and Cabinet – Aboriginal Affairs & Reconciliation Division (SA Government)
- > Department of the Environment and Energy – Historic Heritage Section (Federal Government)

More widely, two publicly advertised community information sessions were held in the town of Moonta. A presentation was given to introduce the project and explain what conservation management plans are and what they do. The presentation was designed to be informal and interactive and followed the principles of the International Association for Public Participation (IAP2) pillars to inform, consult, involve and collaborate with the community. Questions were raised iteratively throughout the evening and a map of the ACMS - Moonta showing all State Heritage listed places, as well as those listed in the National Values Statement was pinned up for attendees to interrogate and add notes, queries and concerns.

Attendees of the community information night consisted of residents and landowners, members of community groups, NAPA, local Councillors and staff from the Copper Coast Council. A list of attendees is included in Appendix B.

These community information sessions led to a series of follow up meetings with interested parties throughout the week while the consultant team was based in Moonta.

2.5.2 Physical Investigations

A four-day long exercise was carried out in the ACMS - Moonta to undertake a physical inspection of all places listed in the National Heritage Values Statement and the site generally. This inspection process analysed and helped to understand the configuration and condition of the places with the intent of proposing future ongoing management and maintenance recommendations in the CMP.

Overlay maps were created from previous historical maps and plans to identify the physical development of the ACMS - Moonta over the life of the mine. These were used onsite to identify and cross check places of significance which deserved further investigation and to understand the rate of change / degradation of these places. This information was cross checked against the 1985 Moonta Mines State Heritage Area Draft Management Plan undertaken by the State Heritage Branch of the Department of Environment and Planning – Government of South Australia. This document served as a valuable tool to assess the rate of change of the fabric of state heritage listed places over the last thirty five years.

Current high-resolution aerial photography and a current cadastre information formed the base for the overlay maps. This allowed the consultant team to set up site wide and detailed individual site investigations sheets ahead of the physical inspection for a more informed and tailored process to occur.

The consultant team also investigated the broader urban design characteristics of the site, including the interrelationship with the town of Moonta, entry statements and vistas, streetscape character, key sites and general amenity.

2.5.3 Historic Research and Analysis

Information collected during the physical investigations was analysed against background material and historic data. Further research and contextual analysis was undertaken to provide evidence and justification for the conservation management principles, policies and actions required for the places listed in the National Heritage Values Statement relating to ACMS-Moonta.

This research and analysis forms the basis of the following Chapters in this CMP.

2.6 Project Team

This report has been prepared by the following people:

- > Andrew Klenke
- > Stephen Schrapel
- > Susan Lustrì
- > Simon Carter
- > Emma Dohrmann
- > Heath Edwards
- > Felicity Swanbury
- > Greg Drew
- > Heather Burke

2.7 Acknowledgements

The following organisations/bodies have provided valuable assistance and direction to the consultant team in the preparation of this summary report.

- > Copper Coast Council
- > Heritage SA (SA Government)
- > National Trust of South Australia
- > Nurungga Aboriginal Progress Association Inc (NAPA)
- > Department of the Premier and Cabinet – Aboriginal Affairs & Reconciliation Division (SA Government)
- > Department of the Environment and Energy – Historic Heritage Section (Federal Government)

3. Historical Outline of Moonta Mine: 1861 – 1923

In May 1861, shepherd Patrick Ryan discovered traces of copper in earth that had been burrowed out of a wombat hole on the pastoral lease of Walter Watson Hughes. Hughes had anticipated that copper existed in the area and had earlier instructed his shepherds to bring him any indications of copper. Hughes secured mining leases over the discovery site and formed the Tipara Mining Association (later the Moonta Mining Company). In late 1861, mining operations began on what became known as the Moonta Mine. In 1864, Henry Richard Hancock became Mine Captain and proved influential not only in terms of his management but also for his part in technical innovations namely the so-called Hancock jig which improved ore processing. He was also a prominent community leader. Cornish miners flocked to Moonta, bringing not only their Cornish mining technology and methods, but also their social and cultural traditions. The mine produced rich copper ore from the outset and the Moonta Mining Company was the first mining company in Australia to pay £1 million in dividends.² The mine had “phenomenal success”³ and became one of Australia’s most productive mines. Together with Kadina and Wallaroo, Moonta is one of the towns which became known as “Australia’s Little Cornwall”,⁴ and the area is often referred to as the “Copper Triangle”. “Moonta’s copper production established Australia internationally as one of the world’s major sources and exporters of copper”.⁵



“Looking east from Camborne towards Redruth”, Cornwall’s mines, c.1890.

Source: Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 Oct. 2018.

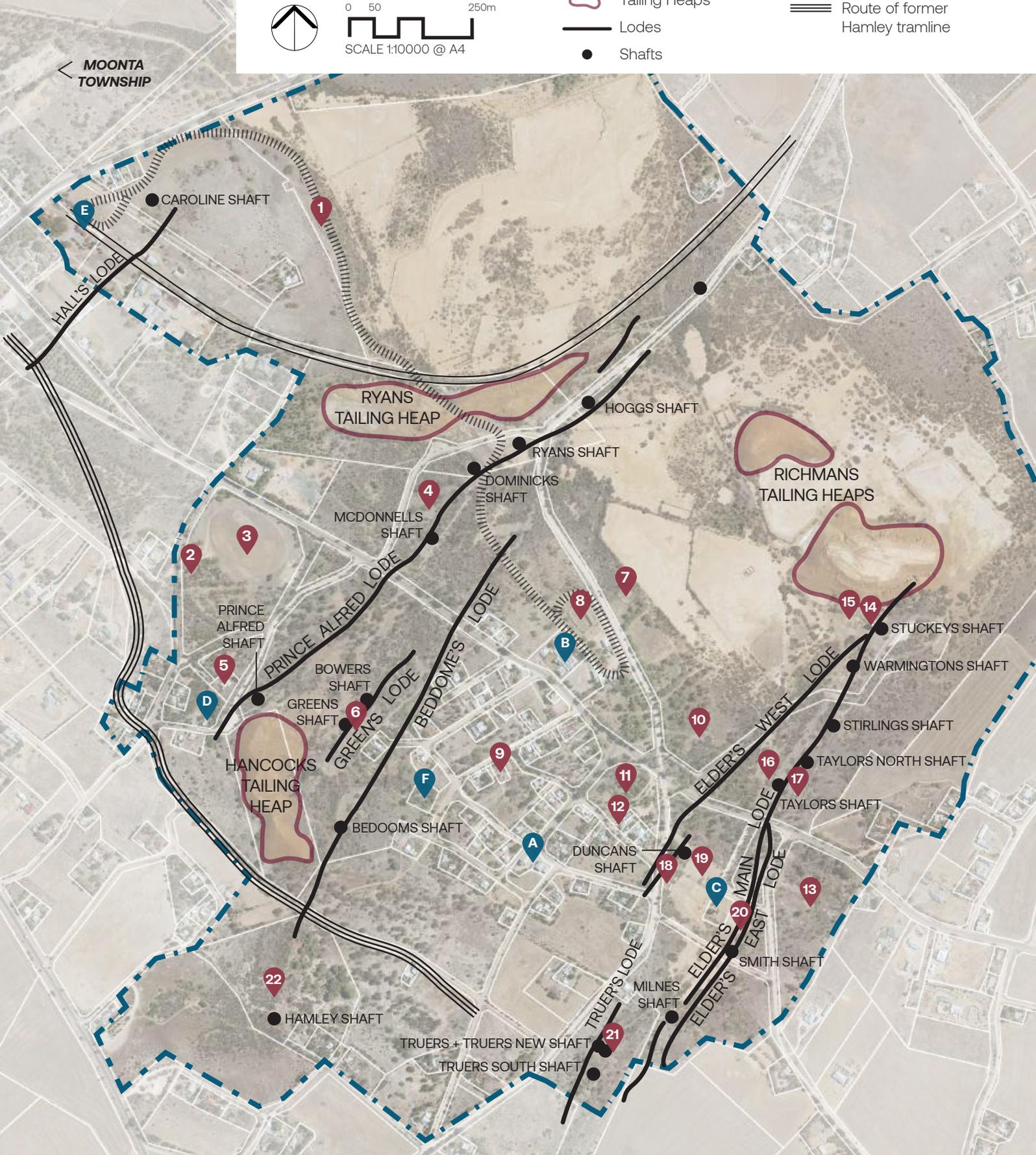
KEY PLACES



0 50 250m
SCALE 1:10000 @ A4

- State Heritage Boundary
- Tailing Heaps
- Lodes
- Shafts

- Railway Line
- Tourist Railway
- Route of former Hamley tramline



State Heritage Listed Places

- A. Moonta Mines Uniting Church, including fence and Sunday School Building (SAHR: **10114**)
- B. National Trust Museum (former school) (SAHR: **11732**)
- C. Former Hughes Pump House and Chimney
- D. Miner's Cotage and fence (SAHR: **10135**)
- E. Moonta Tourist Office (SAHR: **10187**)
- F. Moonta Mines Model Sunday School Site (SAHR: **13110**)

Key Structures

- | | |
|--|--|
| 1. Precipitating Works & associated structures | 9. Primitive Church Plant |
| 2. Exhibition Building | 10. Superintendent's Residence |
| 3. Showgrounds | 11. Mine Offices |
| 4. Assay Office | 12. Police Station |
| 5. Assayer's Residence | 13. Mechanical Shops |
| 6. Hancock's Engine House | 14. Richman's Engine House & associated structures |
| 7. Explosives Magazine | 15. Richman's Concentrating |
| 8. Moonta Mines Reservoir | 16. Taylor's Engine House |
| | 17. Taylor's Winding House |
| | 18. Hughes Engine Pool |
| | 19. Mine Stables |
| | 20. Elder's Engine House |
| | 21. Truer's Winding House |
| | 22. Hamley Engine Crusher House |

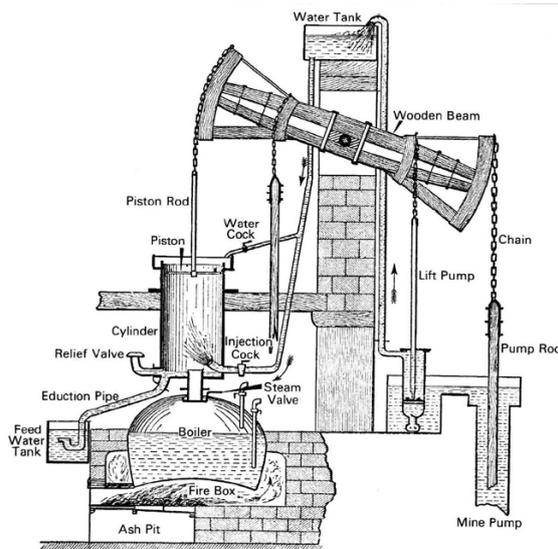
3.1 International context

3.1.1 Introduction: Copper mining in Cornwall

Cornwall and West Devon are counties located in the south-west of England. Geologically, Cornwall is known for its rich mineral deposits notably tin, copper and arsenic. Since the early Bronze Age, metals have been mined there.⁶ For almost 2,000 years, tin mining was a major industry in Cornwall with traders exporting throughout the Roman Empire and Europe.⁷

From the eighteenth century, copper mining became increasingly important. Demand for copper was high, “prices were good and copper reserves were large ... At its peak the copper mining industry employed up to 30% of the county’s male workforce”.⁸ Copper was not only highly sought after for domestic uses such as kitchenware and kettles, but also by the shipbuilding industry for copper sheathing to sailing ships.⁹ Later, in the nineteenth century “copper was used to make steam engines, cannon, ships, building elements, agricultural equipment, cooking pots, coinage, telegraph and electrical wires”.¹⁰ By the early nineteenth century, Cornwall became the world’s leading producer of copper; “producing two-thirds of the world’s supply”.¹²

During the eighteenth and early nineteenth centuries, Cornwall and West Devon were transformed by both tin and copper mining. The landscape was rapidly industrialised and characterised by “deep underground mines, engine houses, foundries, new towns, smallholdings, ports and harbours, and their ancillary industries”.¹³ Huge volumes of “ore were moved, mining areas having their entire appearance transformed by the sinking of shafts, the construction of engine houses and the disposal of millions of tons of waste material in surface pits”.¹⁴ At its peak, there were approximately 1,000 mines in the region.¹⁵



Newcomen's Atmospheric Engine, 1712.

Source: Jamieson cited in Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012), p20.

Cornish Deep Hard Rock Mining

Underground hard rock mining occurs in igneous or metamorphic rocks. Various mining techniques are used in hard rock to excavate hard minerals such as ore which can contain numerous metals including copper. It is distinct from soft rock mining and surface mining. In Cornwall, when “ore deposits at the surface or from shallow mines started to run out, miners needed to dig deeper underground to follow the rich, near-vertical mineral lodes that had formed millions of years ago along cracks or fissures in the rock”.¹⁶ Indeed, there were “two main problems for miners: removing large volumes of water from deep workings, and the hardness of the rock to be broken”.¹⁷ In Cornwall, the “productive area of the lode being exploited is known as the stope”.¹⁸ Cornish miners “used a variety of tools to extract the ore, including hammers, borers (chisels) and gads (wedges). From the 1880s, they also used air-powered rock drills to increasing effect. Mining today owes much to 19th century Cornish miners, who pioneered new tools and methods for extracting ore”.¹⁹ Indeed, Cornish miners became renowned for their specialised skills in deep hard rock mining throughout the world.

The Steam Engine in Britain and Cornwall: Beam Engines, Boilers and Cornish Engineering

The success of Cornish mining was significantly influenced by the development of British engineering in particular the revolutionary steam engine. Cornwall and West Devon led the way, not only in deep hard rock mining but also in steam engine technology and “played a major role in their worldwide diffusion”.²⁰

From 1700 to the early 1900s Cornish mining entered a new phase. This was initiated by the introduction not only of gunpowder for rock breaking but also, more importantly, steam power. The challenge of mining in Cornwall was that it:

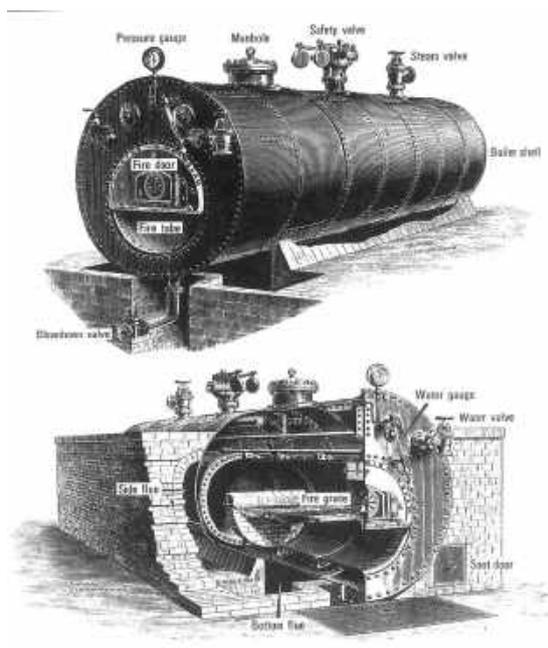
*is a very wet county and miners were hampered by water, the deeper they went. These drainage problems and the prospect of huge profits for people who could solve them led to the development of large and very powerful steam engines. Cornish beam engines, initially developed by Thomas Newcomen in the late C18th and developed by James Watt and Richard Trevithick, were built locally in such places as Hayle (Harveys Foundry), the Perran Foundry, Perranarworthal and Camborne (Holmans). This industry grew rapidly, producing engines and mining equipment for export. As a result, Cornish mining technology could be found all over the world.*²¹

Around 1712, the first Atmospheric Steam Beam Engine was designed by British ironmonger and inventor, Thomas Newcomen (1664-1729).²² The “term beam engine refers to a steam engine with a vertical steam piston pushing and/or pulling on one end of a beam, pivoted at its near-centre, the rise and fall at the other end operating a pump or other mechanical device. ... The first practical operating engine was a beam engine”.²³ Newcomen's engine was used for dewatering mines in England and around the world. It allowed mining to occur at greater depths. Deep mining was integral to large scale ore production and, in turn, to the Industrial Revolution. By 1740, deep mining of copper was established in Cornwall as a result of these engines.²⁴ However, Newcomen's engines were relatively inefficient and expensive to run. Scottish instrument-maker and inventor, James Watt (1736-1819) improved on Newcomen's steam engine. Watt worked with English manufacturer and engineer Matthew Boulton. In 1769, Boulton and Watt invented the Separate Condenser Engine. These were more powerful and less expensive engines to operate. In the mid 1770s, Watt installed numerous pumping engines in Cornish copper and tin mines.²⁵

In 1800, Cornishman, British inventor and mining engineer, Richard Trevithick (1771-1833) invented the first High-pressure Steam Engine “which resulted in the typical Cornish beam engine which came into use after 1810”.²⁶ The “development of engines up to 1800 was inhibited by the inability to build boilers which could withstand significant steam pressures ... Trevithick and other engineers adopted higher pressures ... Trevithick ... devised a boiler (which was further developed in Cornwall) with a firing tube ... running the length of the boiler and fitted below the boiler centre line. The fire grate was arranged within this tube or flue ... This became known as the Cornish Boiler”.²⁷

Trevithick’s Cornish Beam Engine and Boiler became the most efficient, powerful and economic engine around the world. Indeed, Trevithick also pioneered the first steam locomotive. The “Cornish engines were quickly adopted by the industry and by the 1870s mine depths of almost 600 metres below adit were being achieved”.²⁸ These large steam engines required purpose-built, masonry, Cornish enginehouses and at its peak there were around 3,000 enginehouses in Cornwall.²⁹

These steam engines were not only highly influential in Cornwall but also had a profound effect on mining internationally. Thus “Cornish technology embodied in engines, engine houses and mining equipment was exported around the world ... [they] were the heartland from which mining technology rapidly spread”.³⁰ This had a flow-on effect to other industries. As “Britain’s most important non-ferrous metal-mining region. ... These metals [copper] provided raw materials for major industrial developments elsewhere in Britain: notably the copper-smelting of South Wales centred on Swansea, the global centre of the industry during most of the nineteenth century”.³¹



“The Cornish boiler (from the 1891 catalogue of Tangyes Ltd). Source: Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p 52.

3.1.2 Cornish diaspora

From 1815 to 1914, there was a “huge movement of Cornish people overseas”, often referred to as “Cornwall’s ‘Great Emigration’”.³² In addition, the potato blight struck Cornwall and the crop failed in 1845 and 1846 resulting in the infamous food riots. By the mid nineteenth century, with the “discovery of huge [mineral] deposits elsewhere in the world ... the price of copper fell”.³³ In 1866, the price of copper crashed and had a profound impact on Cornish mining.

By the mid nineteenth century, the “best Cornish deposits had been exhausted and mining in Cornwall was in a perilous state”.³⁴ Although the discovery of tin led to a later, second mining boom, this was short-lived. Following the discovery of tin elsewhere around the world, the Cornish tin mines also gradually closed in part due to high costs associated with deep mining.

In effect, mining ... [had become] firmly rooted within the culture of Cornwall. Its economy and ways of life were so intertwined with the industry that when economic depression hit in the early 1840s (followed by a crash in copper prices two decades later) Cornishmen and their families left in droves, often looking to continue their trade in newly discovered mining districts, taking their language, technical expertise, and culture of mining with them.³⁵

This gave rise to the “Cornish diaspora”, the mass emigration of people from Cornwall around the world. “Economic factors were the driving force behind the Cornish diaspora”.³⁶

In each decade from 1861 to 1901, about a fifth of the Cornish male population migrated abroad – three times the average for England and Wales. In total a quarter of a million people left Cornwall between 1841 and 1901. Miners made up most of the numbers, but the emigrants also included farmers, merchants and tradesmen. Cornish miners quickly grasped the opportunities promised by the discovery of gold, silver and copper across the globe. Emigrating offered the chance of better pay and conditions, and the opportunity to rise in society. The Cornish expertise in hard rock mining was highly valued and agents were employed by mining companies to recruit from the Cornish mines.³⁷

The Cornish travelled to countries including the United States of America, Australia, Mexico, Spain and South Africa. The success of Cornish miners overseas was partly due to not only their mining experience but also their engineering expertise, and willingness to travel.

In 2006, the Cornwall and West Devon Mining Landscape was entered on UNESCO's World Heritage List due to its profound influence not only to the Industrial Revolution in Britain but also to mining internationally.³⁸ The World Heritage List represents the world's best examples of cultural and natural heritage. The significance of the Cornwall and West Devon Mining Landscape lies in its

*Innovative Cornish technology embodied in high-pressure steam engines and other mining equipment [which] was exported around the world, concurrent with the movement of mineworkers migrating to live and work in mining communities based in many instances on Cornish traditions. The transfer of mining technology and related culture led to a replication of readily discernible landscapes overseas, and numerous migrant-descended communities prosper around the globe as confirmation of the scale of this influence.*³⁹

The Cornwall and West Devon Mining Landscape is an extensive site which includes ten locations: St Just Mining District; The Port of Hayle; Tregonning and Gwinear Mining Districts with Trewavas; Wendron Mining District; Camborne and Redruth Mining District with Wheal Peevor and Portreath Harbour; Gwennap Mining District with Devoran and Perran and Kennall Vale; St Agnes Mining District; The Luxulyan Valley and Charlestown; Caradon Mining District; and Tamar Valley Mining District with Tavistock.⁴⁰

3.2 National and State Context

3.2.1 The beginning of Australia's metal-mining era

In Australia, in the 1790s, coal mining began at Nobby's Head near Newcastle with the "first coal shipment leaving Newcastle in 1799 ... [it] was Australia's first commodity export",⁴¹ and was Australia's "earliest recorded mine".⁴²

Australia's mining industry was slow to be established. It is often remarked that "South Australia, the last of the colonies to be settled, ... [was] the first to discover the nature of its mineral wealth".⁴³ In September 1840, two Cornish miners, named Thomas and Hutchins, discovered a lode of silver-lead ore in the Mount Lofty Ranges (above Glen Osmond). In 1841, this became "Australia's first metal mine"⁴⁴ named Wheal Gawler after Governor Gawler. "Wheal" was a Cornish word meaning a single shaft or mine.

In 1842, South Australian pastoralists, Charles Hervey Bagot's son, Charles Samuel, and Francis Stacker Dutton discovered copper carbonate in the Mid North. On 8 January 1844, they established Australia's first commercial copper mine at Kapunda. Bagot and Dutton "engaged a team of experienced Cornish miners and set them to work digging up copper ore".⁴⁵ The mine was officially opened by German mineralogist and geologist, Professor Johannes Mengé⁴⁶

In 1845, copper was discovered at Burra Burra Creek by shepherd Thomas Pickett. His discovery led to the development of one of Australia's most important mines - The Burra Burra Mine. The copper lode was so extensive that it became known as the "Monster Mine" both in Australia and overseas, and South Australia soon became known as the Copper Kingdom. Thousands of Cornish miners and their families emigrated to Burra joining the already well-established Cornish community in South Australia.

In New South Wales and Victoria, the discovery of gold near Bathurst, and Ballarat and Bendigo respectively led to the renowned goldrushes and by the "1850s, Australia was producing almost 40 per cent of the world's gold".⁴⁷ However, it was not long after that copper was discovered on the Yorke Peninsula.

3.3 Moonta

3.3.1 The Nharangga People: the traditional landowners

The traditional landowners of the Yorke Peninsula in South Australia, including Moonta, are the Nharangga people. Their land includes the whole of the Peninsula from Yorketown in the south to Kadina in the north. The Nharangga people have four clans: Garnarra (Kurnara) (north), Windara (Windera) (east), Dhillba (Dilpa) (south), and Warri (Wari) (west).⁴⁸ Throughout much of the year, the Nharangga people had large coastal settlements which “provided a regular supply of food and fresh water, as well as a gathering place for social and religious ceremony. There is also evidence of smaller camps scattered throughout the Peninsula”.⁴⁹ The name Moonta is reportedly derived from an aboriginal word Moonta-Moontera (munta-muntara) meaning a place of thick, dense, or impenetrable scrub.⁵⁰

In 1834, the British Parliament passed the South Australia Act which “made provision for 300,000 square miles to become the territory in which British settlers could begin the colony of South Australia”.⁵¹ Following the establishment of the colony of South Australia in 1836, the Yorke Peninsula, including Moonta, was one of the earliest areas to be occupied by British settlers. “Responses to the colonial presence varied: ... [the Nharangga people] were, successively and at times simultaneously, in awe, frightened, wary, accommodating, inclusive, resistant, resigned, accepting and rejecting of these intruders. Like others across Australia, they initially thought white people were spirits or the ghosts of their relatives”.⁵²

In the nineteenth century, the “vegetation and geography of ... [Nharangga] country enabled its people to continue to live relatively autonomous lives. The thick scrub and seeming lack of water delayed and limited the arrival of settlers and offered secluded retreats where they could be avoided”.⁵³ Prior to 1836, non-Aboriginal visitors to the Yorke Peninsula were mainly whalers and sealers, however from 1836 to 1846, the numbers increased to include “surveyors, tourists and those avidly searching for grazing and farming land”.⁵⁴ From 1846 “newcomers were no longer temporary visitors. Pastoralists began arriving with their employees, stock and guns”.⁵⁵ Indeed, by August 1849, there were 106 colonists, 50,000 sheep, 270 cattle and 63 horses recorded residing at seven stations, and by the end of the same year “applications for 23 occupation licenses for ‘runs’ had been registered”.⁵⁶ In the early pastoral years, the Nharangga people “outnumbered colonists approximately three to one”.⁵⁷ However, it was the discovery of copper on the Yorke Peninsula which was to have an even more profound effect on the Nharangga people.⁵⁸

3.3.2 The discovery of copper ore

In 1851, regulations for mineral leases were introduced in the colony, ending the “Special Mining ‘Monster’ Surveys”⁵⁹ which had governed the establishment of other mines such as the renowned Burra Burra Mine. In 1857, mineral leases were introduced for Crown Waste Lands.

The first mines of significance to be acquired under mineral leases were discovered in 1859 and 1861 [Wallaroo Mines (Kadina) and Moonta Mine], when shepherds discovered brightly coloured copper ore which had been brought to the surface by the burrowing of native animals. Walter Watson Hughes, the owner of the pastoral leases covering the discoveries, secured mining leases and formed two separate companies to work them: the Wallaroo Mining Company and the Moonta Mining Company (Drew 1990: 3).⁶⁰

In July 1851, “Robert Miller leased the ‘Waste Lands’ in what was to become the Moonta area at an annual rate of ten shillings per square mile. He surrendered his pastoral lease in 1857, requesting that a new lease be granted to Walter Watson Hughes, a retired Scottish sea-captain and amateur mineralogist”.⁶¹

Walter Watson Hughes (1803-1887)

Scottish-born, Walter Watson Hughes (1803-1887) arrived in South Australia in 1840. He became a significant South Australian pastoralist, mine-owner and public benefactor.⁶² Hughes was initially employed in mercantile work with Bunce & Thomson, however following the financial crisis of the early 1840s, he turned to sheep farming and later mining. His pastoral and mining pursuits were to have a significant influence on the development of South Australia in the mid to late nineteenth century. In 1872, the Council of the new Union College approached Hughes for a donation. His generous gift of £20,000 was so substantial that the Council decided to establish a new University – The University of Adelaide. His gift encouraged other benefactors; thus, Hughes is often referred to as the “Father of the University”.⁶³ In 1873, Hughes moved permanently to England and died in 1887.

Hughes’ mining interests had developed out of his pastoral holdings. Earlier, in 1851, Hughes “took up The Peak at Hoyleton in the mid-north and in 1854 with his brother-in-law, (Sir) John Duncan, and family leased the vast Wallaroo station [for sheep farming]”.⁶⁴ As an “amateur mineralogist”,⁶⁵ Hughes noticed that “mallee roots on his Wallaroo lease burned with a green flame”.⁶⁶ He made “observations in northern Yorke Peninsula, ... [and] expected that mineral deposits existed there and instructed his shepherds to look out for any traces”.⁶⁷ Indeed, when “Hughes first found traces of copper on his pastoral run in the early 1850s, he was short of funds and simply sat on his find while nurturing a valuable relationship with Edward Stirling, one of four directors in Elder, Stirling & Co. When his shepherd, James Boor, found copper on Hughes’ Wallaroo property [in the area south of Kadina] in December 1859, Stirling and his brother-in-law, John Taylor, invested in the venture”.⁶⁸ Hughes established the Wallaroo Mine Co. and “became the largest shareholder ... when it was founded”.⁶⁹ However, “Six months later, when all three faced insolvency, Stirling and Taylor tried to resign from the company and take half the company assets with them. Robert Barr Smith got wind of their plans and called their bluff. In a smart move, he and Thomas Elder also became partners in the mines”.⁷⁰ However, it was not long until another copper discovery was made, this time by “shepherd, Patrick Ryan, [who] found copper on Hughes’s Moonta property”.⁷¹

At Moonta, lodes were not evident on the surface, and it was on 13 May 1861 that shepherd, Patrick Ryan, identified “traces of copper in earth burrowed out of a wombat hole on the pastoral lease of ... Hughes”,⁷² in the area named Tipara. It was reported on 29 June 1861 that, “[w]e understand the first discoverer of copper at Tipara was a shepherd in the employ of Captain Hughes”.⁷³ Ryan with “grievances against Hughes, ... tried to take out the claim with other friends, who became known as the Mills Syndicate”.⁷⁴ He attempted to register a mining claim but did not have the exact location. As a result, the syndicate was formed to survey the site and secure the leases. Simultaneously, Hughes heard of the discovery, surveyed the site and dispatched William Horn to Adelaide to register the survey plan ahead of the rival syndicate who had a 17-hour head start.⁷⁵ There was a desperate race to register the plan. It “was received by Hughes’ agent, John Taylor, the following morning. Taylor and the rival syndicate were present when the Lands Department office opened at ten o’clock but Taylor received first attention and was subsequently able to secure mining leases over the discovery area”.⁷⁶

The mining leases were disputed by the rival syndicate. Hughes’s “interference was condemned by the Mills Syndicate as a blatant abuse of the mining regulations and protests by them and others saw a select inquiry, a Supreme Court case, an equity case in the Supreme Court and the first Privy Council judgement for South Australia. But when funds ran out in 1868, the Mills syndicate settled out of court for £8,000, leaving Hughes and his partners owners of the Moonta Mine. ‘Technical errors’ in Hughes’ mineral claims were sanctioned retrospectively by the Mineral Lease Validation Act of January 1869”.⁷⁷ Hughes retained the leases and went on to establish the highly lucrative Moonta Mine.

3.3.3 The establishment of the Moonta Mine

In 1861, Hughes formed the Tipara Mining Association (later the Moonta Mining Company) and began, what became known as, the Moonta Mine.⁷⁸ Hughes established the mine with the four partners of Elder, Stirling & Co. including Edward Stirling, John Taylor, Robert Barr Smith, and Thomas Elder.

It is likely that the name “Tipara” originated from the name of the place where shepherd Patrick Ryan first discovered copper. “Tiparra” is also “the Aboriginal name of local springs, south of Moonta, and [is] situated in low sandhills”.⁷⁹ In 1861, it was reported that “[s]ome discoveries of extraordinary richness have been made in the Tipara district, and a large number of claims have been taken out in consequence ... Captain Hughes has sunk a shaft on Section 930, and another on 931, about 50 yards from the first, in each of which a good lode of ore (supposed to be the same) has been struck”.⁸⁰

The Moonta Mine created great interest and caused a “rush of miners from the Burra and Wallaroo mines ... [and] a rush for leases in the vicinity and numerous companies were formed including Karkarilla (later Hamley), Yelta, Paramatta and Poona”.⁸¹ However, these were only ever small scale mines in comparison to Moonta. The Moonta Mine proved successful from its establishment. In its first year, it produced almost 5,000 tons of ore worth £67,350, ensuring no additional capital was required to finance the mine.⁸²

3.3.4 The Moonta Mine Nharangga People

In the south of the Yorke Peninsula, “vast areas of scrub remained undisturbed well into the twentieth century”.⁸³ Whereas in the north, following the establishment of the Moonta Mine in the 1860s and other neighbouring copper mines, there were increasing numbers of non-Aboriginal “miners and townspeople who settled in ... [these] districts of the peninsula”.⁸⁴ Here “large numbers of ... [Nharangga people] (and Aboriginal people from surrounding areas) congregated near the mining towns”⁸⁵ due to employment opportunities. The Nharangga people “made their winter camps close to the workings, where ... ‘they could always obtain food, water and the usual allowance of raiment, with the proviso that they should work for it’”.⁸⁶ Settlers “found a number of ‘robust and obliging’ Aboriginal people”⁸⁷ to employ. The Nharangga people “incorporated the changed circumstances into their movement and subsistence patterns, finding employment in the mines, towns and shearing sheds as bullock drivers, domestic helpers and general servants. Continuing to hunt and adapting traditional skills for the new market economy, they made possum-skin cloaks to sell”.⁸⁸

The “nephew of Walter Watson Hughes, ... recalled in 1907 that at the beginning of the Wallaroo mine [c.1860], his ‘particular duty, with native assistance, [was] carrying water from Tickera and Tipara’. [He] ... remembered: ‘A strong tribe of natives at Wallaroo ... Some of them were expert riders and bullock drivers and good shepherds’”.⁸⁹ In 1869, it was reported that a “number of aboriginals are now at work on the Moonta Mine, and a large number more have just come up from the Peninsula for the same purposes”.⁹⁰ In the same year, a tea meeting was held at the Moonta Mine Institute for the “aborigines working at the mine ... A goodly number of them are in constant employment”.⁹¹ In 1870, it was stated that “some aboriginals have been employed at surface work, for a considerable period of time, at the mine”.⁹² Although, “they cannot ... be prevailed upon to go below [underground]”.⁹³

In 1927, Cornishman Samuel Paynter, reminisced that “more than 100 [Aboriginal people] camped between the [Moonta] mine and the township. His father [W.A. Paynter, Moonta Mine Surface Superintendent] took an interest in the natives and established a night school for them. He also endeavoured to train them as miners ... Sometimes Mr. Paynter would have as many as 50 natives working about the mine”.⁹⁴ In 1870, the “Moonta Native School”⁹⁵ at the “Moonta Mines [was re-established] for the instruction of the aboriginals in that locality”.⁹⁶ Due to “a number of them ... [having] obtained employment at the mine ... The number of scholars now in attendance comprise about a dozen adults, and eight or ten ... [women and] children ... In learning to read and write the pupils, it is said, display considerable aptitude, and are making satisfactory progress”.⁹⁷

King Tommy and King Jemmy were recognised as important local Nharangga elders.⁹⁸ On 3 February 1869, near Moonta a “native corroboree”⁹⁹ took place. The “corroboree was a very grand one, no less than two kings being present, King Tommy and King Jemmy, with, no doubt, the requisite number of queens, princesses, and princes. ... Two tribes were present, numbering, in the aggregate, about one hundred and fifty persons”.¹⁰⁰ There were reportedly “two to three hundred [spectators] from Moonta present”.¹⁰¹

However, the establishment of the mines also negatively impacted the surrounding landscape. It was not long until the “presence of large numbers of Europeans and their stock plus the rapid and extensive clearing of native vegetation (to supply the mines and population firewood) interfered significantly with traditional hunting [including the supply of native animals] and gathering practices and made it difficult to subsist independently”.¹⁰² The rapid development of mining had a profound impact on the area and the traditional owners. “Local townspeople and miners sympathetic to the plight of ... [the Nharangga people] blamed the government and those who had profited most handsomely from the land and its mineral resources for leaving the ‘real owners of the land’ untaught and uncared for. The need for a school or depot for the Aborigines was raised”.¹⁰³

“The enthusiasm and active campaigning for, as well as the positioning and running of, (what was to become) the Point Pearce Mission, differentiated ... [the Nharangga people’s] experiences from those of many other Aboriginal groups. Many individuals played important roles in the establishment of a mission house, but crucial to its success was the support of ... [the Nharangga people], in particular ‘King Tommy’, and local townspeople, and the rapport that rapidly developed between the first mission superintendent, [Moravian missionary] Julius Kühn, and ... [the Nharangga people]. According to Moonta resident Mary Meredith, ‘all the tribes submit to one Chief, generally known as King Tom ... He orders the movements of the tribes, and his word is never disputed’”.¹⁰⁴

King Tommy and the Nharangga people “imagined their own township in which settlers would ‘take care of the helpless old people and the helpless young, and care for the sick’ – a place where they could receive food, clothing and shelter if needed and where their children could receive a western education. The establishment of an Aboriginal institution was, therefore, supported by both colonists and ... [the Nharangga people]”.¹⁰⁵ It was a concerted and collaborative effort and in January 1866:

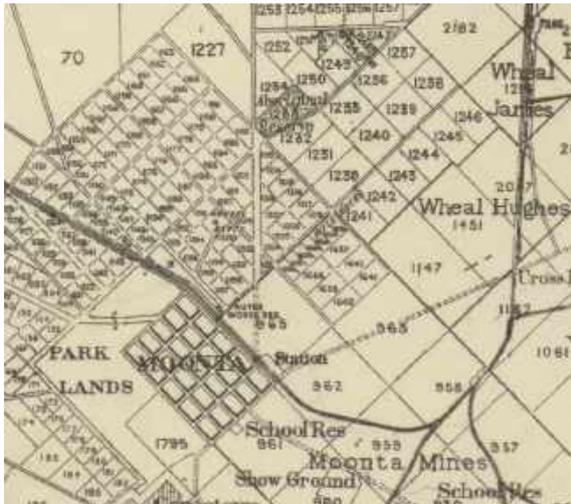
“Congregational, Presbyterian and Baptists ministers on northern Yorke Peninsula collected donations and preached sermons encouraging their parishioners to support the establishment of a mission. Public letters were written and petitions for land and funds were sent to the government. Colonists lent buildings, gave food, animals and wood, and made clothes for ... [the Nharangga people]. [The Nharangga] ... people attended meetings and performed in fundraising concerts. The site chosen for the mission reflected ... [the Nharangga people]-settler cooperation and communication. Committee members were aware the site needed to be near the seas to enable fishing. It needed permanent water, good soil for cultivation, and scrub to provide timber and shelter ... It is highly likely ... [the Nharangga people] directed the colonists’ attention to the land at Point Pearce (Boorkooyanna), which Kühn helped secure. This traditional meeting area contained numerous vital sacred sites”.¹⁰⁶

In 1868, the Point Pearce Mission was established south of Kadina. From as early as February 1866 until 1880, Kühn worked as a mission superintendent and teacher.¹⁰⁷ In the 1868 publication, *The Aborigines and the Chinese in Australia*, it was recorded that on “Yorke’s Peninsula – Point Pearce [sic]”, “this arid tongue of land there are about two hundred and fifty aborigines”.¹⁰⁸ By the 1870s, crops were harvested at the mission and it was akin to a “small township with cottages and houses, wool sheds, workshops, a church and large underground stone tanks”.¹⁰⁹ The mission was popular until 1872 when “sixteen mission residents died of whooping cough or croup and ... [the Nharangga people’s] faith in Kühn and his teachings dramatically declined. Thereafter Kühn had to go to great efforts to induce ... [the Nharangga people] onto the mission station”.¹¹⁰

The Nharangga people “who were around stations, shepherds’ huts and northern mining towns chose to be there, thereby increasing their knowledge and experience of colonial society, gaining material goods and increasing status in the eyes of their own people”.¹¹¹ However, during the “late 1800s few chose to reside permanently on the mission. Instead ... [the Nharangga people] lived throughout the peninsula and in the mining towns of Moonta, Wallaroo and Kadina”.¹¹²

In 1875, the Point Pearce Mission’s original government grant of 8 square miles of land was increased to 20 square miles. In the 1880s and 1890s Aboriginal people arrived from the Poonindie and Point McLeay missions increasing the population of the Point Pearce Mission. “The ... [Nharangga people] were not helpless victims dependent on the mercy of settlers or forced onto the mission. In the nineteenth century ... [the Nharangga people] used the mission if and when it suited them – for rations when in the vicinity or if alternative options were unavailable”.¹¹³ In 1915, the South Australian Government took control of the mission and in 1966 the mission land was passed to the Aboriginal Lands Trust.

Distinct from Point Pearce, was the Aboriginal Reserve which was established just north of the Moonta township and was formed sometime after 1895 and was recorded as early as 1912. In 1968, under the “Aboriginal Lands Trust Act 1966-1968” the land (of approximately seventeen acres) was transferred to the Aboriginal Lands Trust.¹¹⁴



Hundred of Wallaroo Showing "Aboriginal Reserve", c.1912. Source: Wikipedia "Hundred of Wallaroo", https://en.wikipedia.org/wiki/Hundred_of_Wallaroo, accessed 24 February 2020.

From the early twentieth century, "the invasion of stock and the systematic clearing of land destroyed the environment that had nurtured and sustained ... [the Nharangga] people for millennia and they were forced to beg for food, clothing and 'anything they could get', or exchange fish for basic foods. Having witnessed the death of many of their people through disease and other consequences of European settlement, they were the last of their people to know their country as it was".¹¹⁵

In 2004, the "Narungga Nation (comprised, governed and led by people who identify as Narungga) was the first Aboriginal council in South Australia to sign an Indigenous Land Use Agreement (ILUA) with local regional councils. The Narungga Nation native title claim was lodged in 2013 and was registered by the National Native Title Tribunal. The claim covers the whole of Yorke Peninsula and offshore waters and islands, and extends to the north as far as Port Broughton and the Hummock Range".¹¹⁶

3.3.5 Mine Captain: Henry Richard Hancock (1836-1919)

The Moonta Mine developed under the traditional leadership of the Cornish mine captain. The first Mine Captain (superintendent) was James Warmington, who was later replaced by his brother William. They proved unpopular and this led to the 1864 miners' strike and the appointment of a new mine captain. In 1864, Henry Richard Hancock became Mine Captain and proved most influential. He retained the position until his retirement in 1898.

Henry Richard Hancock (1836-1919) was born, in 1836, in Devon, England.¹¹⁷ He gained experience in local English mines in assaying, mineral dressing, surveying, bookkeeping, and underground mining practices.¹¹⁸ He later became a Mine Captain at Sortridge Consols; a West Devon mine near Horrabridge. In 1859, at the age of 23, he travelled to South Australia, where he managed Wheal Ellen; a silver-lead mine located near Strathalbyn. In 1862, Hancock was "invited by the Wallaroo mine directors to 'gather information and particulars relative to the Mines and the Wallaroo District generally'".¹¹⁹ In October 1863, Hancock was offered a three month contract at Moonta Mine as an assayer, and he later worked as a Mine Captain for the Yelta Mine. He impressed the directors and was subsequently appointed at the Moonta Mine as Chief Mine Captain in June 1864.

3.3.6 The expansion of Moonta Mine

Under Hancock's leadership, the mine expanded and in 1865, it employed around 1,200 men and boys. By 1870, "more than 5000 people were dependent on the mine, which was producing annually more than 20,000 tons of dressed ore, averaging about 20% copper".¹²⁰ The number of employees continued to increase and by 1876, the mine employed 1,700 men and boys and was the "first mining company in Australia to pay £1 million in dividends".¹²¹ Moonta Mines, Wallaroo Mines (Kadina) and the Port Wallaroo Smelter (which was established in 1861 and operated until 1926),¹²² became known as the "Copper Triangle" and "constituted the largest industrial area in the colony of South Australia. By the late nineteenth century, the Copper Triangle supported a population of about 30,000 people".¹²³

Copper was a highly valued commodity with the majority exported to India and the United Kingdom. "Before this industrialisation, Australia was largely an agricultural economy, which had initially been based on convict labour. Australia was taking its new place in the western world's economy and the western world's industrial revolution. The copper was used to make steam engines, cannon, ships, building elements, agricultural equipment, cooking pots, coinage, telegraph and electrical wires. This copper enabled the British Empire to expand into South Africa and Asia".¹²⁴ The mine was so rich in copper ore that it survived the worldwide collapse in copper prices in the mid-1860s although its operations were affected up until 1871 when prices improved. Indeed, it was not only the richness of the mine which ensured its success but also Hancock's skill of being able to capitalise on the mine's natural resources.

3.3.7 Hancock's drive for mechanisation

Hancock was an “enthusiast for machinery”¹²⁵ and he recognised the benefits of mechanisation, and in turn profitability. He replaced hand- and horse-worked pumps, winches and ore-crushers with steam-power. By 1865, barrow work was replaced by tramways and by 1866, wagon teams, which carried ore to the Wallaroo Smelters, were replaced by a railway.

In the early years, gunpowder was “used to break the rock and was placed in shot-holes drilled by hand, using a technique known as hammer and tap in which one man held a steel borer while two others alternatively hit it with sledge hammers”¹²⁶ However, the:

mine's engineering shops were the best in the colony and enabled Hancock to experiment in replacing the slow and arduous labour of drilling holes by sledge hammer in the hard Moonta rock. He designed and patented a percussion drill driven by compressed air [c.1870-90]¹²⁷ and capable of boring forty feet of shot-holes in an eight-hour shift. For separating sulphides from the ores he made and patented a jigger [the Hancock Jig was developed in the 1860s and patented in 1870 and] ... was also used later at Broken Hill.¹²⁸

Hancock was “responsible for the development of ore treatment methods at Moonta, introducing the famous Hancock mechanical jig and improved buddles, which were erected at three treatment plants, Hancocks and Richmans, powered by beam engines, and Ryans, powered by a horizontal engine. Hancock also introduced wire rope and skips in place of chain and kibbles”¹²⁹

However, accusations surfaced “from time to time, ... that Hancock had appropriated as his – and for his own financial gain and professional prestige – technical innovations that had in fact been developed by mechanics on the mines”¹³⁰ Hancock's role in the design of the so-called Hancock Jig has particularly been debated. Some authors believed that the mechanical jig had been developed by Captain Paynter, and this was then modified by Hancock and patented. It in turn became known as the ‘Hancock Jig’ which gained international mining recognition and was used extensively in Australia and was “widely adopted in America”¹³¹ The jig had an increased capacity compared with previous machines and could increase the rate of ore processing. However, the Hancock Jig is generally attributed to Hancock.

3.3.8 Hancock's welfare reforms

Hancock proved influential not only in terms of the role he played in technical innovations and inventions but also for his interest in the miners' welfare and more broadly as a prominent leader of the community who in turn reinforced Cornish traditions. He was a devout Wesleyan and established several welfare initiatives for miners at Moonta. One of his most notable, was the introduction of the minimum wage. In 1873, the mines' most profitable year, “Hancock persuaded the directors to maintain constant production and employment by assuring a minimum weekly wage of £2 for bad years”¹³² Although, this was tested the following year, in 1874 when copper prices fell, and the directors attempted to reduce the minimum wage below this amount, Hancock fought for it to be retained, and was successful. In addition, Hancock required “all employees to join the medical club at a small weekly rate, ... [where] medicines and consultations were free and sick pay was provided”¹³³

Hancock also encouraged social activities not only sports such as football and cricket but also chess, glee clubs, and mutual improvement societies. He established a library and reading room, and a brass band. He also supported the new public school and introduced a “compulsory night school for boys from the mine's sorting tables. He ... helped to found the Point Pearce Mission for Aboriginals from the Moonta area, the local school of mines, the gas company and the Agricultural, Horticultural and Floricultural Society, serving on their boards for many years. For his varied powers Captain Hancock was held in awe”¹³⁴ Indeed, in 1871, Hancock as President of the Aboriginal Mission stated “we have taken possession of the land, and thus deprived the natives of their hunting grounds, it is our bounden duty to support this Mission”¹³⁵

3.3.9 The Cornish in South Australia

In the nineteenth century, the Cornish were well-established in the colony.

There is a strong historical connection between the Cornish in Australia and the mining industry, but South Australia's Cornish community was established before any metalliferous mining industry existed on the Australian continent. The utopian free-enterprise ethos of early South Australia attracted a high proportion of immigrants from Cornwall and the West Country generally, where the Methodist faith, political liberalism and anti-establishment beliefs had a strong following. One in ten applications for passage to South Australia in the first five years of the introduction of the free Migration Scheme – representing 941 families – came from Cornwall (Migration Museum 1995: 97) ... Even before a single mine had been opened, the population of South Australia was about 8-10% Cornish-born, the largest enclave of Cornish immigrants in Australia (Payton 1984: 12). Precisely because these immigrants included a large number of people with experience in mining, they were able to play a major role in establishing enterprises very early in South Australia's history (Blainey 1969: 106).¹³⁶

Following the discovery of copper ore, Moonta was an attractive destination but “Moonta can only be understood fully in the context of its comparative place in the vast panoramic story of Cornwall's ‘Great Emigration’”¹³⁷

3.3.10 Cornish miners

In South Australia, with the “discovery of minerals, it became ... [local] practice to recruit experienced teams of miners direct from Cornwall to open new mines; this ... happened at Kapunda in 1844, and at Reedy Creek (Tungkillo) and Glen Osmond in 1847.”¹³⁸ The Burra Burra Mine, established in 1845, also employed predominantly Cornish miners and “was the first significant concentration of Cornish in Australia.”¹³⁹

The South Australian government employed emigration agents in the major Cornish ports to recruit suitable mining workers, often in teams accustomed to working together. Cornish miners knew how to excavate with hand tools and explosives, to design safe and efficient underground workings, to recognise valuable ore, to extract it and raise it to the surface, crush it and process it, and thereby to separate copper from waste rock. Their boots and tools, helmets and candles, mining practices and equipment, teamwork, management structure, industrial relations, company finances, book-keeping, language and folklore all arrived with them from Cornwall (Pryor 1962). For fifty years the Cornish mines had been the world leaders in steam-powered industrial technology, and steam engines and pumps from Cornish foundries were exported all over the world. Moonta, Australia’s “Little Cornwall” [a term coined by former Moonta miner and author Oswald Pryor] (Pryor 1962), soon had an industrial landscape that arriving Cornish immigrants recognised instantly: tall stone engine houses with their enormous slow moving iron bobs working the pump rods in the shaft, boiler houses alongside with their tall characteristically Cornish round stone and brick smokestacks (Payton 2007).¹⁴⁰

Initially, the first miners at Moonta came from the surrounding mines including Burra, Kapunda, and Wallaroo (Kadina). However, more miners were soon required, and Hancock recommended that they should be brought across not only from the Victorian goldfields but also directly from Cornwall. In 1883, Hancock initiated a “massive recruiting drive”¹⁴¹ when he sent Captain Piper to Cornwall to entice Cornish miners to Moonta.

Captain Hancock was gratified to have secured so successfully what he had set out to achieve: the creation at Moonta, and later at Wallaroo too, of what was essentially a large Cornish copper mine in the Antipodes. This was a Cornish mine worked by Cornish hands according to Cornish practice, dependent on Cornish technology and shot through with the culture, habits, mores and terminology of the Cornish copper mining industry.¹⁴²

Although, the 1866 “great copper crash” had devastated the mines in Cornwall, Moonta had survived.

In this way, strangely, Captain Hancock’s ‘white cow’ – the Moonta mine – survived as a model Cornish copper mine long after its prototypes in Cornwall had disappeared or metamorphosed. This did much to elaborate Captain Hancock’s own myth and mystique, and it contributed enormously to the consolidation of Moonta and environs as ‘Australia’s Little Cornwall’.¹⁴³

3.3.11 “Cousin Jack” and Cornish traditions: Hancock – an honorary Cousin Jack

By the 1840s, “there were two predominant imaginings of the Cornish miner ... [one being] ‘Cousin Jack’ [and the other] ... ‘the lawless tinner’”¹⁴⁴ “Cousin Jack” was an image of a hard-working miner with superior mining experience and expertise. A miner whose Methodist religious values were central to the image based on sobriety and order.¹⁴⁵ By contrast, the “lawless tinner” image was based on the rioting miners from Cornwall who were desperate for food, particularly during the winter of the mid 1840s. However, “Cousin Jack” was a more positive image of the miner. The origin of the name “Cousin Jack” is debated; some authors believed that “Cornish miners became known as “Cousin Jacks” because they were always asking for a job for their cousin Jack back at home. Others think it was because the miners used to address each other by the old greeting of “cousin”, and Jack was the most popular Christian name in Cornwall.”¹⁴⁶ These important Cornish cultural symbols were transplanted to Moonta. Although Captain Hancock was born in neighbouring Devon, it has been argued that over time he became “certainly more than an honorary Cousin Jack.”¹⁴⁷

With such a large Cornish population at Moonta Mine, Cornish traditions were readily established. These included the celebration of the Duke of Cornwall’s birthday, Whit Monday, and midsummer’s eve - where in 1867 fifty bonfires were lit at Moonta Mines.¹⁴⁸ Today, the Kernewek Lowender Cornish Festival, held in Moonta, Kadina, and Wallaroo, is exceedingly popular with over 45,000 visitors during the week of festivities.¹⁴⁹

3.3.12 Cornish mining methods and employment systems

Hancock's management of the mine was highly successful and reinforced the Cornish system of working mines. Vertical shafts and horizontal levels were sunk which divided the lodes into "pitches". This work was referred to as Tutwork, and prepared the lode for ore extraction, known as Tribute work.¹⁵⁰ With Tutwork, miners were paid according to volume of ground dug, whereas with Tribute work, miners were paid according to the value of ore. Hancock "encouraged the tribute system by which independent miners could bid for their pitches and employ their own men; tributers numbered eighteen in 1862 and by 1874 represented nearly half the mine's workforce of 900".¹⁵¹ The Tribute system was popular with miners because it could be highly lucrative. Throughout the latter half on the nineteenth century, "evidence of the application of the Cornish employment systems in South Australian mines ... [was] abundant in newspaper reports".¹⁵²

There are advertisements for the letting of tutwork bargains and tribute pitches at the Burra and Moonta mines in the late 1840s and 1860s. Detailed descriptions are provided of Survey Day at the Burra and Moonta mines which are strikingly similar to accounts from Cornwall (Drew 2011: 8).¹⁵³

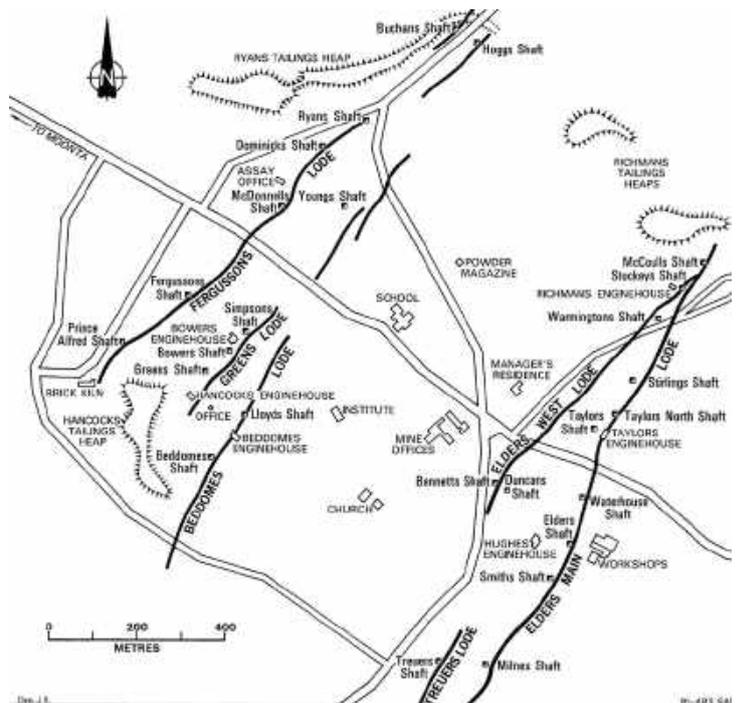
However, following the Moonta miners' 1874 Great Strike the "miners felt increasingly that, for all their much-prized skills as hard-rock miners, they had been reduced in the directors' estimations to little more than labourers. The method of remuneration - tribute and tutwork contracting - had likewise, they argued, shifted from being a means by which an enterprising miner might earn a more than decent living, to the mechanism by which the bosses were able to keep wages artificially low. In a remarkable reversal of the position generally adopted by Cornish miners in the early days of copper mining in the colony, the Peninsula trade unionists were now arguing for the abolition - or at least radical restructuring - of the tribute and tutwork system".¹⁵⁴ Discontent continued into the 1890s, "Partly in response to this continuing unrest, numerous adjustments were made to the letting of contracts. The most significant was in 1903 when the time-honoured practice of 'captain's prices' [the guide price for a particular pitch or bargain, set by the relevant underground captain]¹⁵⁵ was replaced by a 'sliding scale' - based on changes in the price of copper - in which the contractor participated directly in the company's profits".¹⁵⁶ Indeed, former Moonta Miner and Mine Grass Captain, Oswald Pryor recalled that by 1910, "the tribute system ... [was] abolished in the Wallaroo and Moonta mines".¹⁵⁷

3.3.13 Early development at Moonta Mine

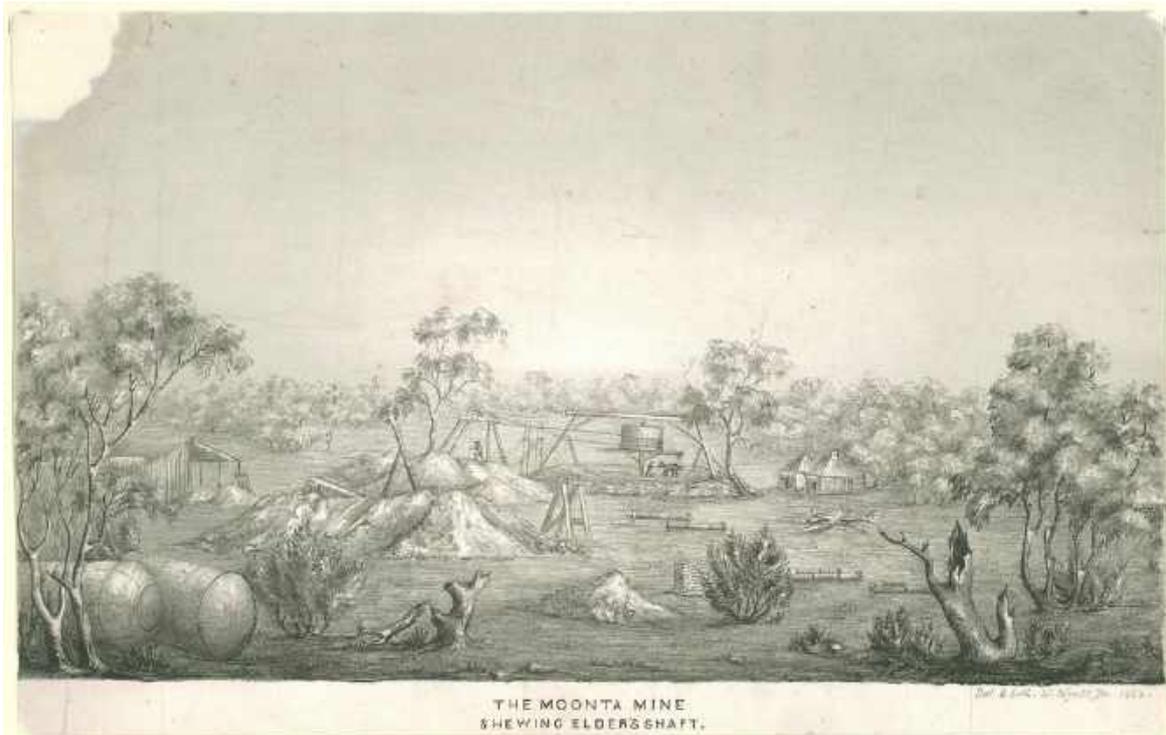
The "Moonta property comprised more than ten individual lodes over a strike width of one mile, oriented north-south, and dipping westerly at 50° to 70° ... [The Moonta lodes] were exceptionally rich, yielding sulphide ore of 20 to 30% copper".¹⁵⁸ The main lodes, or orebodies, were: Elders Main (or Taylors) Lode, Elders West Lode, Treuers Lode, Beddomes Lode, Greens Lode, and Fergussons (or McDonnells) Lode. "The shafts, engine houses, processing areas, supporting functions and administrative facilities are all located in a pattern which is oriented to the underground lines of lode".¹⁵⁹

Mine Shafts

At Elders Lode, "underground levels extended for a distance of 3000' (905m) near the surface & 2000' (610m) at a depth of 1600' (488m). Shafts sunk to various depths on this line of lode were McCoulls, Stuckeys, Warmingtons, Stirlings, Taylors [1862], Waterhouse [1862], Hughes, Elders [1861], Smiths [1862], & Milnes".¹⁶⁰ At Treuers Lode there was one main shaft, Treuers Shaft (c.1880), and on Elders West Lode there was Bennetts Shaft and Duncans Shaft. Fergussons Lode included Fergussons Shaft (1870), Prince Alfred Shaft, McDonnells Shaft (1862), Dominicks Shaft (1863), and Ryans Shaft (1861). Greens Lode was the site for Greens Shaft, Bowers Shaft, and Simpsons Shaft. Beddomes Lode contained Lloyds Shaft and Beddomes Shaft. Others included Youngs Lode and Youngs Shaft (1862), and Buchans Lode and Hoggs Lode which comprised Buchans Shaft and Hoggs Shaft respectively.



Moonta Mine showing the main lodes.
Source: Pers. Comm. Greg Drew.



"The Moonta Mine: shewing [sic] Elder's Shaft" lithograph, by William Wyatt, 1862.
Source: State Library of South Australia (SLSA) B 8126.

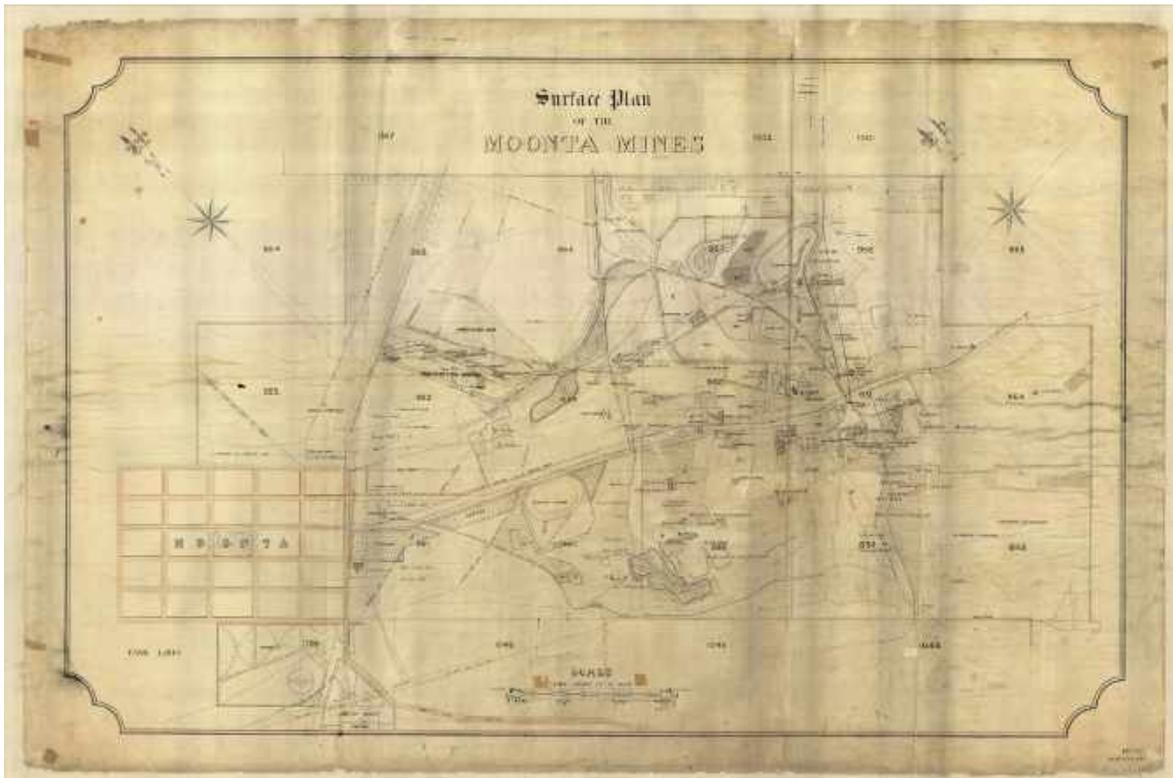
It is disputed which mine shaft was the first to be sunk, some authors claim it was Elders Shaft however others such as Oswald Pryor recalled that "trial pits were sunk, and then the first of the Moonta shafts, which was named after Ryan"¹⁶¹. In 1861, Ryans Shaft (Part of SAHR 13975) was commenced. It was located near the site where shepherd Patrick Ryan first discovered the copper ore, on Fergussons Lode. In 1864, Ryans Enginehouse was constructed and in 1865 the first crusher and processing plant was erected nearby. The "engine was also used for pumping from several shafts"¹⁶² In 1871, new concentrating works were erected which included the renowned Hancock jig.¹⁶³ Ryans Enginehouse was demolished in 1906 however there is still evidence of the rectangular slime pits near Ryans Shaft which were used to "precipitate fines from liquors."¹⁶⁴

From 1864 to 1906, the tailings (crushed waste rock or skimps)¹⁶⁵ from Ryans processing plant were dumped in Ryans Tailings Heap (Part of SAHR 13975). From c.1901 to 1943, leaching was carried out on the tailings to extract the last remaining copper. In c.1900, a stone tunnel was constructed to "enable two heaps to be joined as one and allow passage for trains and pipelines to the Precipitation Works [(Part of SAHR 13975)] on the other side. The tunnel was restored and a narrow gauge railway line reconstructed in 1984 to carry tourists to the Precipitation Works interpretive area."¹⁶⁶

In 1861, Elders Shaft, was sunk on Elders Main Lode.¹⁶⁷ The lode was sited approximately 800 metres east of Patrick Ryan's discovery. The "shaft was operated by a double horse whim, which had two ropes; one for hauling the full kibble up from the shaft, the other for letting it down"¹⁶⁸ Elder's Shaft is represented in the earliest-known image of the Moonta Mine, dated c.1862, a lithograph by artist William Wyatt.

In early 1863, the mine's first steam engine and boiler were purchased for £880. They were "installed in a small enginehouse near Elders Shaft by August 1863"¹⁶⁹ Elders Engine was a "35 horsepower horizontal engine with an 18-inch cylinder and 4-foot stroke ... and was used initially for removing water from Elders Shaft"¹⁷⁰ In 1865, Hughes pumping engine was erected and consequently Elders Engine was no longer required for pumping instead it was used for winding. When the mine closed in 1923, the "enginehouse was subsequently demolished leaving only the winding drum mounting blocks [Part of SAHR 13975]"¹⁷¹

Two other early shafts which were sunk at the mine were the Waterhouse Shaft and Smiths Shaft. The Waterhouse Shaft was sunk on Elders Lode between 1861 and 1863.¹⁷² It was named after the Chief Secretary, George Marsden Waterhouse. "Initially ... [it included] a horse whim, [but] by 1866 it was being hauled by Elder's Engine to the south"¹⁷³ A small indentation, a mound of tailings, shaft, and ore floors are still evident. Smiths Shaft was also sunk on Elders Lode, between 1861 and October 1862.¹⁷⁴ It was named after Robert Barr Smith; a company Director. The open shaft is extant.



Surface Plan at Moonta Mines, dated 1897.
Source: SLSA Map N1900, BRG 40/16/21.



"Timbering at Moonta Mine", c.1910.
Source: SLSA B24096.



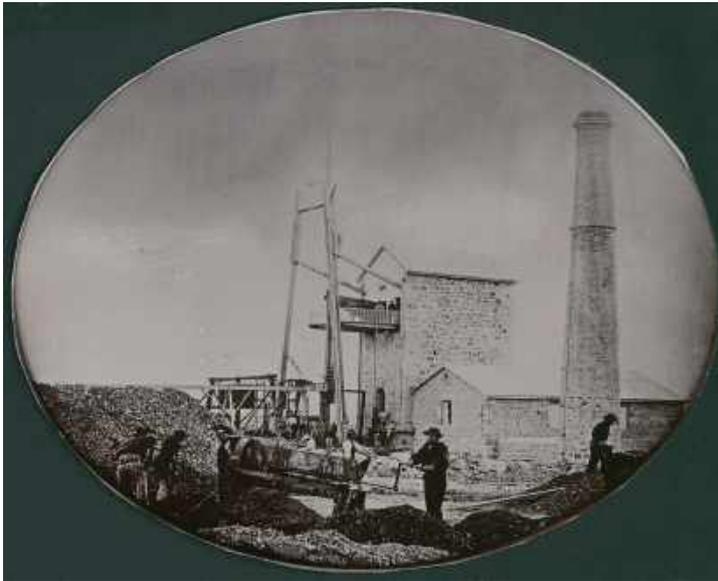
"Moonta mines timbermen", c.1910.
Source: SLSA B 24094.

3.3.14 Cornish Beam Pumping, Beam Rotative Engines, and Cornish Boilers at Moonta

Hughes Engine

The transportation of Cornish engines to the mines in the colony was often difficult. In the early days of the Burra Burra mine, the Cornish engines arrived in Port Adelaide and “most notable was the transport of two 80-inch engines over unmade roads to Burra, 100 miles north of Adelaide in 1852 and 1858”.¹⁷⁵ However, “all Cornish engines for the Moonta-Wallaroo mining district were landed ... [at Port Wallaroo] and transported on the horse-tramway to the mines” which “would have been relatively straightforward”.¹⁷⁶ The erection of the Cornish engines was “made routine by the Cornish engineer’s skill and experience”.¹⁷⁷

Unlike the Burra Burra Mine and the Wallaroo Mine, which were known as wet mines – where water was a problem when mining at depth – at Moonta, water was less problematic “being controlled by an 18 inch horizontal engine [Elders Engine] erected near Elders Shaft in 1863”.¹⁷⁸ However, due to increased water in Elders Shaft, in March 1862, the Directors ordered a 60-inch Cornish pumping engine from Harvey and Co., Hayle, Cornwall, in addition to three Cornish boilers and pitwork. They arrived in February 1863 “under charter to backload ore for Swansea”.¹⁷⁹ In 1863, Hughes Shaft was sunk on Elders Lode near Elders Shaft. By September 1863, Hughes Enginehouse was under construction,¹⁸⁰ in preparation for the installation of the 60-inch pumping engine which was named Hughes Engine, after Walter Watson Hughes.



Hughes Enginehouse, c.1864.
Source: State Library of SA (SLSA) B 12588.

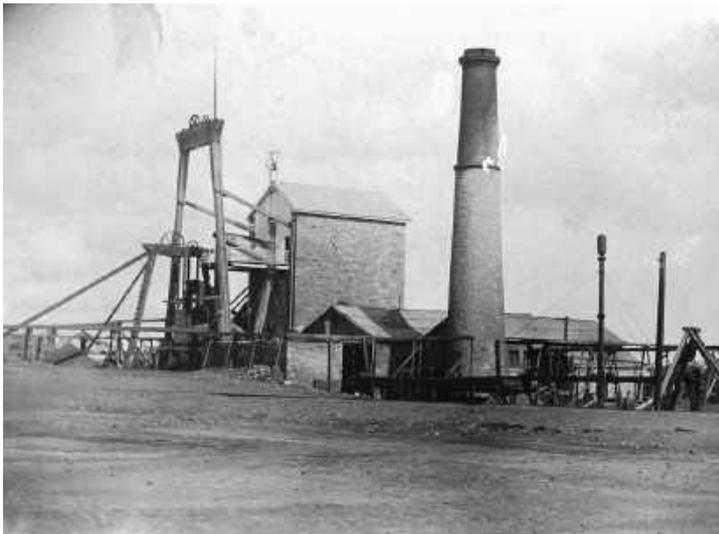
By March 1865, Hughes Enginehouse was completed under the supervision of Chief Engineer Frederick May and costed approximately £7,000. It was ceremoniously started on 2 September 1865 by Captain Hancock and Chief Engineer May. Mr Glucas was the pitman. It was reported in the Adelaide Observer newspaper that the “masonwork in the engine and boilerhouse is of most massive and solid character, from designs which were sent out with the engine. Mr. John Beaglehole has been the contractor for not only this, but for nearly all the stone buildings on the mine”.¹⁸¹

John Beaglehole was born in Cornwall and migrated to South Australia in 1849. He was a building contractor who lived in Ryan Street, Moonta. He was “prolific at the Moonta Mines, being the contractor for construction of nearly all of the stone buildings on the mine. He was also the founder of the Moonta Wesleyan Sunday school and intimately involved in the Methodist Church in the district”.¹⁸²

The Hughes Enginehouse was built “using fossiliferous limestone from Boors Plains”.¹⁸³ There was a semi-detached Boilerhouse to the northern side, which housed the three Cornish boilers. Further north was the tall chimney which was connected to the Boilerhouse. In 1866, a balance bob was added to Hughes Enginehouse. Also, in 1866 Elders Engine was converted to a winding engine since it was no longer required for pumping. In 1868, flat rods were installed connecting Hughes Engine to Taylors Shaft to pump from this location. In 1873, flat rods were also connected to pump from Duncans Shaft. It was the “only beam pumping engine erected at Moonta and was sufficient to dewater most of the mine”.¹⁸⁴

This engine became the “longest serving Cornish beam engine in Australia”,¹⁸⁵ operating from 2 September 1865 to 25 September 1923 when the mine closed. It “worked day and night from its installation ... until the mine’s closure”.¹⁸⁶ In c.1974, the National Trust stabilised Hughes Enginehouse and chimney (SAHR 10113), however the Boilerhouse is no longer extant. In c.1992-93, further conservation works were undertaken to the top of the shaft.

The Hughes Engine Pool (Part of SAHR 13975) is located close by and was built c.1865, to store water which had been pumped out of Hughes Shaft by Hughes Engine. Although some reports claim that “a succession of engine pools hold the water from the condensers”.¹⁸⁷ The pool was constructed from stone and “divided into three internal compartments, each measuring 18 metres by 10 metres and 2 metres deep”.¹⁸⁸

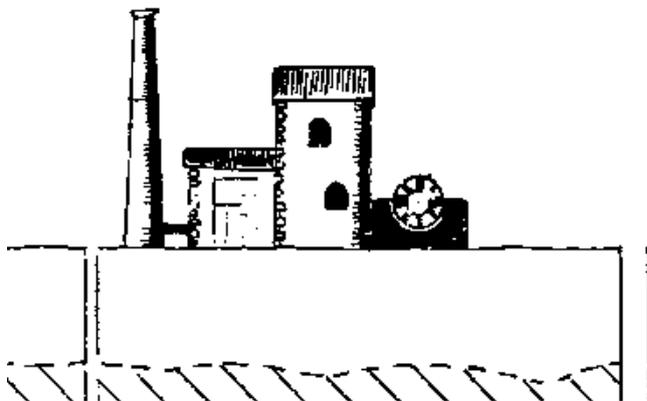


Hughes Enginehouse, c.1900.
Source: SLSA B 58893.

Prankerds Engine

By the late 1860s, the mine was booming, and another two Cornish engines were erected on the main lode: Prankerds Winding Engine, and Richmans Engine. Prankerds Engine was ordered from Williams Bedford Foundry in Tavistock, Devon. The “expected cost of the [beam rotative] engine, crusher and two boilers was £1370 and plans of the engine and crusher houses with drawings of the machinery arrived in December 1864 and were immediately sent to Captain Hancock at the mine”.¹⁸⁹ However the “order was completed by June 1865, at a total cost of £2518 ... the engine, which was named after director P.D. Pranker, [and] was started on 1 July 1867 in the presence of Captain Hancock and other mine officers”.¹⁹⁰ Initially, Prankerds Engine “hailed from Taylors and Stirlings shafts and powered rock breakers, crusher rolls, trommels and jiggging machinery, but after 1874 it was used mainly for winding”.¹⁹¹ It was operational until 1901, when it was dismantled and Taylors horizontal winding engine was used.

Prankerds Engine House



Prankerds Engine House, Copy of plan dated c.1877.
Source: S.A. Dept of Mines Moonta Mines Longitudinal Section. Courtesy of G. Drew.

Richmans Engine

After Prankerds Engine was commissioned, Hancock suggested that another engine should be purchased to increase the mine’s capacity to crush and dress low-grade ore. A 32-inch Cornish beam rotative engine was bought from the local Kurilla Mine owned by Elder Smith & Co. for £2,100. Richmans Beam Rotative Engine, as it became known, powered crushing and dressing machinery. The “building of an enginehouse for the new engine, named Richmans after a director, began in July 1867 at Stuckeys Shaft near the northern end of Elders Lode. By June 1869, the enginehouse, built from stone from Moonta Beach, was nearing completion and the crushing and winding machinery, which had been made in the Moonta workshops, was being fitted under the supervision of Frederick May. The engine started operations near the end of 1869”.¹⁹² The distinctive enginehouse with its parapeted roof and internal twin bob arrangement was designed by engineer May and he also supervised its construction. “The crusher was started in December 1869 and the first Hancock jig was added in 1872 ... In 1875, two circular buddles were erected on Richmans dressing floors to concentrate the slimes from the jiggers ... In the 48 years of operation, Richmans Engine served the progression of concentrating processes from jigs and buddles, to Wilfley tables and finally to flotation”.¹⁹³ In 1917, the engine ceased operation and a new gas engine was installed. In 1986, Richmans Enginehouse (Part of SAHR 13975) was stabilised. Richmans Tailings Heaps containing the crushed waste rock from the concentrating plant are located close by.



“Richmans concentrating plant”, c.1898.
Source: SLSA B 12595.

Hancocks Engine

Hancock sought to further increase the mine's capacity to crush and concentrate ore and in 1871 he purchased a second-hand Scottish 35-inch beam rotative engine from Melbourne. In December 1872, the construction of a new enginehouse was commenced by "Messrs Nettleton and Thorne under the supervision of Mr Maddern. The crusherhouse, Boilerhouse and stack were erected by the same builders".¹⁹⁴ Hancocks Enginehouse, as it became known, had architectural pretensions with an Mansard "ornate vaulted roof ... with a viewing platform which was floored with lead".¹⁹⁵ The Boilerhouse was sited one side of the Enginehouse while the two storey Crusherhouse, with a similar vaulted roof, was located on the other side with an adjacent timber jiggerhouse. There was an inclined tramway to the Crusherhouse for the ore trucks.

The engine was named Hancocks Engine and was commissioned in 1874. It powered crushing and concentrating plant. "Hancocks Engine powered, via lines of flat rods, pumps in Greens, Prince Alfred and Beddomes shafts and also a rock breaker, two sets of Cornish crushing rolls in the crusherhouse and jiggling machinery in the wooden jiggerhouse."¹⁹⁶ Once the surrounding lodes were exhausted the plant was dismantled and in 1904 Hancocks Enginehouse was demolished. From 1874 to 1900, tailings from Hancocks processing plant were dumped at Hancocks Tailings Dump (Part of SAHR 13975).



"Moonta Mines: Hancock's engine, crusher and jigger houses", c.1900. Source: SLISA B 34857.

One of the later mine shafts was Treuers Shaft (Part of SAHR 13975). It was constructed c.1880 and was named after Mr Von Treuer, one of the company Directors. It was sited on Treuers Lode at the southern end and was a "major producing area after 1900. In 1906, a new headframe and winding engine were erected, replacing structures built about 1880. The foundations of these structures, which operated until 1923, still remain".¹⁹⁷

3.3.15 Other mine-related infrastructure and buildings

Other mine-related infrastructure and buildings constructed on the site included a reservoir (Part of SAHR 13975) which was built in 1873. The tank was constructed from stone and rendered and was "covered by an iron roof and held 5 million litres for mining use, and for residents during water shortages".¹⁹⁸ Indeed, it wasn't until 1891 that reticulated water was supplied to the area from Beetaloo Reservoir.¹⁹⁹

Another mine-related building was the Powder Magazine, which was constructed c.1875 to store gunpowder for mine blasting. Gunpowder was originally placed in hand drilled holes to break apart the rock however "Nitroglycerine was introduced in the 1870s and, later, dynamite was used in machine-drilled shot holes".²⁰⁰ The ruins of the Powder Magazine (Part of SAHR 13975) are extant.

In c.1865, the first Mine Workshops were constructed. They were used for building and repairing mining equipment and machinery. This large-scale complex included: "a fitting shop, blacksmith's shop ... , pattern store, moulding [shop] ... and a locomotive workshop ... The workshops employed up to 300 men and boys and were the largest mechanical workshops in the southern hemisphere".²⁰¹ They played an important role in the development of local inventions such as the Hancock Jig. The Moulding Shop measured 65 x 40 feet and included three furnaces which could manufacture castings weighing up to 10 tonnes.²⁰² The Pattern Store measured 70 x 30 feet. It comprised two floors and a cellar. Patterns were produced for pulleys sized from 2 inches up to 6 feet and spurwheels up to 10 feet in diameter. The Blacksmiths Shop was 130 x 50 feet and contained 18 forges, a faggoting furnace, and 2 steam hammers. The Fitting Shop housed machinery including: 9 lathes (one of which could bore wheels 12 feet in diameter); farriers; wheelwrights; carpenters; and locomotive shops. The site of the Mine Workshops (Part of SAHR 13975) is now represented by ruins.



"Machine Shops at the Mines", c.1884
Source: SLISA B 10514.

The Stables were built adjacent to the Mine Workshops, near Hughes Enginehouse. At one time there were approximately 300 horses kept at the mine for uses such as horse whims, ploughing slimes, and pulling the Captain's trap, however horses were not used underground in the mines.²⁰³ The stables housed horses, fodder, and a steam driven chaff cutter. The stables remain in ruins.



“Moonta Mines Stables, showing left the chaff house, in the foreground Captain Hancock’s buggy, and right Hughes’ Pumping Engine House”, c.1898.
Source: SLSA B 34860.

In 1875, the two storey Mine Managerial Offices and Stores buildings were constructed. Captain Hancock “was able to view the whole mine area”²⁰⁴ from the first floor. “The mine office was equipped with speaking tubes and from a look-out on its roof he could survey the surface workings. In his own room he had a ‘pulpit’ desk, his papers far above the range of prying eyes”.²⁰⁵ The Office was the base for the regular “survey day”, where the miners bid for the various underground pitches while the adjacent open area was the location for the mass meetings for the miners, known as “the ring”. The Stores were used for storing coke, hardwood and Oregon. Ruins of the Mine Offices (Part of SAHR 13975) exist including partial walls, with the remains of several cellars.

The Moonta Mining Company also built several mine-related residences for other senior officers. In 1863, the single storey Assayer’s Residence and attached two storey Assay Office was constructed. “Captain H.R. Hancock was appointed as the first assayer in 1862 at a salary of £250 per year. He was replaced by Captain [John] Bennett in June 1863 when Hancock accepted the management of the nearby Yelta Mine, returning as general superintendent of the Moonta Mine in 1864”.²⁰⁶ Joseph Jolly was another of the Mine’s assayers. The Assayer’s Residence (Part of SAHR 13975) is now in ruins.

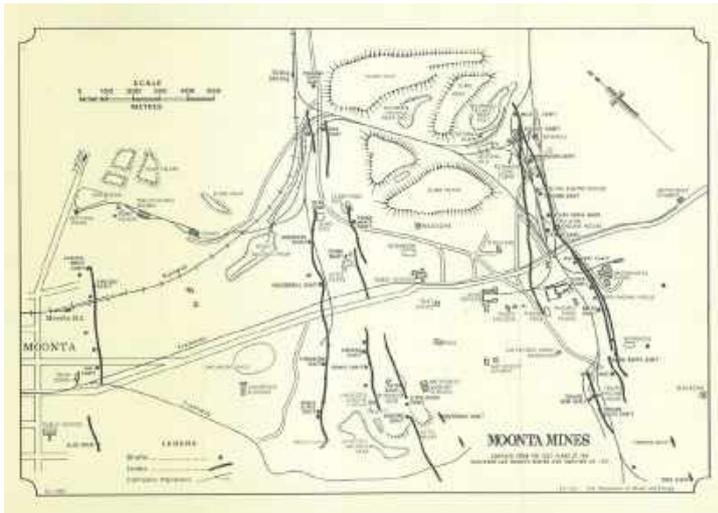


“Mine office and stables at Moonta with horse drawn wagonette waiting; Captain M.K. Hancock [sic] stands left”, c.1900.
Source: SLSA B 33882.

Another mine-related residence was the General Manager’s Residence. According to Oswald Pryor, the lower storey of the Manager’s Residence was built prior to the appointment of Henry Richard Hancock in 1864.²⁰⁷ Approximately ten years later, c.1874-75, the upper storey was constructed. It was surrounded by a fenced area which contained a lawn, garden, and a “patch of original scrub”.²⁰⁸ The dwelling was built to house the Moonta Mine General Manager or Chief Mine Captain. Henry Richard Hancock was Mine Captain from 1864 to 1898. Hancock’s “large two-storied mansion, surrounded by native trees, was adequately staffed and connected by telephone to the stables where he had a special carriage”.²⁰⁹ His son, Henry Lipson Hancock (1867-1935) succeeded him and lived there until the Mine closed in 1923. Ruins of the General Manager’s Residence (Part of SAHR 13975) are extant.



Mine Office, c.1910.
Source: SLSA B 12587.



Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p3b.

3.3.16 Moonta Mine settlement: housing the miners

In March 1863, the Government township of Moonta was surveyed, with allotments auctioned soon after in April of the same year. It was designed as a symmetrical grid with a central parkland square. The township provided miners with an opportunity to live away from the mine and offered them a sense of independence as they were not reliant on the mining company for their housing. The Burra dugouts provided a similar sense of independence in contrast to the Company town of Koorlinga.

However, unlike other mining towns such as Burra, at "Moonta, the companies also tolerated the workforce living on the mine leases. There were a number of advantages: housing was rent free and close to work, and the company allowed access to mine water and firewood".²¹⁰ The "mining companies, anxious to attract labour to their workings, were only too glad to let the miners and their families construct make-shift cottages on the mineral leases, land that the companies had leased from the Crown".²¹¹

In the "1860s, large industrial buildings were erected along the line of the main lode and the Moonta Mines residential core was established in the centre of the mining area on the mining leases with easy access to the workings".²¹² The right of ownership was respected by the mining company and if the site was required, the company would purchase the cottage at full value,²¹³ and "thus assist ... [the miner to relocate and] build another ... This is largely the case on the Moonta mines, where some hundreds of dwelling-houses have been erected without any legal title to the land".²¹⁴

The Moonta Mine settlement proved popular with miners and most chose to reside there instead of in the Moonta township. Indeed, the settlement remains distinct from the township of Moonta.

*The inhabitants of the mineral lease settlements, especially, were seen by Hancock as 'his' people – women as much as men, children as well as adults. ... For example, the conditions under which employees might be allowed to erect cottages on the leases had been carefully regularized. The mine company retained the right to refuse an individual's request to build, and could insist on the immediate departure from the leases of anyone who had caused their displeasure.*²¹⁵

In contrast to the planned grid of the Government township of Moonta, "the settlement of the mining areas, by predominantly Cornish miners, evolved in a sudden haphazard form as temporary dwellings were constructed on mining leases adjacent to the mine workings".²¹⁶ In the mid 1860s, the:

*Moonta Mining Company was induced ... to survey Occupation Blocks, and designate rectilinear residential areas, but they seem to have been ignored in favour of the established community settlement pattern which gave cottages a substantial curtilage for stables and outbuildings ... Early settlement at Moonta Mines was characterized by the lack of social planning and the sense of Cornish migrant culture expressed in the "natural" village settlement pattern orientated around the central Wesleyan Methodist Church. It was also characterized by the scale and form of cottage life.*²¹⁷

As Oswald Pryor noted "because the houses and fences had been erected without any sort of street alignment, dotted around among dumps of overburden, slime dams, and old shafts, any stranger trying to find his way around was soon bewildered, especially as there were no roads or footpaths".²¹⁸ In the 1870s, a visitor to the "district ... [noted that] he was astonished to find that the miners had 'built habitations for themselves round the very mouths of the shafts, and in this way ... vast villages have sprung up, called Wallaroo Mines and Moonta Mines'".²¹⁹

As Oswald Pryor recalled:

*Anyone visiting Moonta in the heyday of the mines would have been struck by the large number of quaint little white-washed cottages ... They were the homes of miners and their families for successive generations, although built originally as "temporary – for the time being [sic]"; as their builders put it ... They had seen the Burra Burra mine decline, with the consequent fall in the value of house property in the adjoining town – and they would take no chances with this new mine ... So ... they put up crude shacks, thinking that these would outlast the mine ... Nobody could foresee that the mines were destined to work continually for nearly sixty-three years, but when it became apparent that the lodes were large the miners began to improve their cottages, and to enlarge them to meet the needs of growing families. The miners were their own architects as well as builders, but there was not much scope for self-expression when the weekly wage averaged £1.18.0.*²²⁰

Construction materials varied, and the miners:

had to make do with such materials for walls as the stone and clay available on the leases, and timber for roofing and fittings were often “borrowed” from the stacks belonging to the mine. To save time and money some houses were built by excavating the rooms to a depth of a few feet and using the limestone thus obtained to build walls to the required height. As a result, they looked so squat ... A few houses had wattle-and-daub walls, made by erecting a reinforcement of sticks, and then giving both sides a thick plaster of clay. Others were built by placing two planks horizontally, a foot or fifteen inches apart, then filling the space between them with a mixture of loam, clay, and broken stone, which was well rammed and allowed to set before the boards were raised for the next course ... The best walls were built of “German bricks”, made by placing wet earth, limestone rubble, and straw or long grass in moulds nine inches by fifteen, and allowing them to dry. These were easy to lay and, if protected by a coat of plaster, very durable. Mallee saplings often served for rafters and purlins, and roofing materials ranged from wooden shingles to the iron from nail cans, cut open and flattened. The big sheet-iron cans also served as chimney pots. Timber from packing cases was used for floor-boards, door frames, and window frames. When the cottage was complete a fence of tea-tree stakes would be erected round it to protect the vegetable plot from marauding goats. The biggest job of all would be the sinking of an underground tank, to be filled by surface drainage gutters – and Central Board of Health officers were later to shudder when they saw those supplies of domestic water. Homes of this type were usually whitewashed, inside and out, every Christmas ... As the size of a family increased, extra rooms would be added, with improvements, if money was available, such as papered walls and covered floors.²²¹

These “‘Cornish cottages’ (as they came to be known) were simple affairs”.²²² As other have noted a “prime example of the importation of a building style may be seen in [Moonta] “Australia’s Little Cornwall” ... ‘Cornish miners emigrated here to work in the copper mines, and very soon they used the local stone to build cottages and chapels which are almost exact replicas of those in their home country’”.²²³

However, the health and sanitation of these mining settlements were soon under question. In 1870, the “scandalous and disgraceful sanitary state of the Moonta Mines township”²²⁴ was reported. The mud huts “composing the township of the mines have been erected without the slightest regard to sanitary laws ... We submit that so fruitful a source of vice and immorality, of moral and physical plaque, of pestilence and disease should not be tolerated”.²²⁵ Indeed, in nearby Karkarilla Flat (later Hamley), “or as it is more commonly called, Cemetery Flat”²²⁶ disease was rampant. The “hollow would be a disagreeable neighbour under any circumstances; but for hundreds to live not merely on the brink of it, but down in its very depths is an outrage upon humanity. The danger is not a mere theoretical or proximate one. The damps and malaria are cutting off their victims ... The evil is aggravated by the small cramped up cabins in which the miners are confined”.²²⁷ In 1873, “the lack of sewage and water services led to a typhoid epidemic which killed as many as 300 people, mainly women and children. A reticulated water supply from the Beetaloo Reservoir did not reach Moonta until 1891”.²²⁸



Miners' Cottage, “Believed to be one of the earliest built on the Moonta mining leases/Situated a little south of the Wesleyan Methodist Church”, c.1900.
Source: SLSA B 12612.



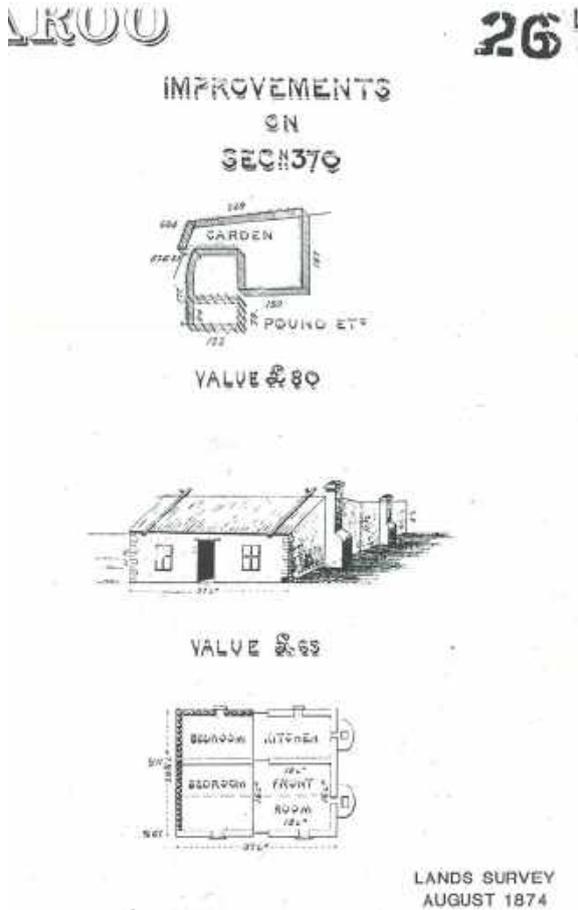
“Miners' cottages Moonta Mines”, c.1910.
Source: SLSA B 72434/2.

One so-called Miner's Cottage (SAHR 10135) located on the Moonta Mines settlement was reportedly constructed c.1870 by Mr Wood, a local brickmaker "who operated a small brickworks over the road".²²⁹ He "carried out his trade ... using clay from the large quarry in front of this cottage to the left".²³⁰ Although the cottage was built by a brickmaker, it was typical of the early miner's cottages and thus it is often claimed to be an "excellent example of the early miners' cottages that were once common throughout the mines area".²³¹ In 1967, the cottage was acquired by the National Trust.

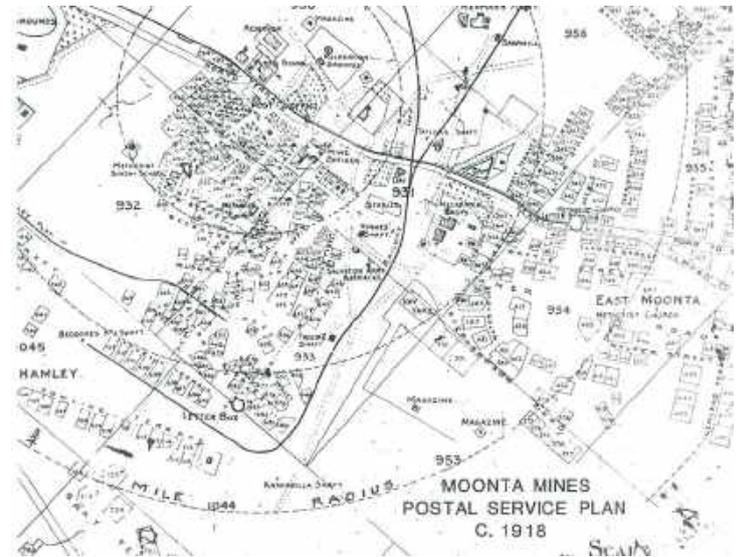
In 1864, "350 miners lived on leases, 800 by 1865. The main central settlement was called Moonta Mines, and it became surrounded by industrial workings as mining development expanded beyond expectations".²³² By 1870, reflecting the success of the mine:

*the population of Moonta township and the adjoining Moonta Mines mineral leases stood at about 10,000, of whom some 6,000 lived on leases – their cottages scattered apparently randomly amongst the engine-houses, crusher-plants and other paraphernalia of heavily capitalized mining. The 6,000 were overwhelmingly Cornish but there were also a great many Cornish people among the population of the township itself: miners and their families, and those who had settled into other occupations – cobblers, blacksmiths, shopkeepers and so on.*²³³

By 1875, the district of Moonta had a population of 12,000 which was the largest town outside of Adelaide. However, with the closure of the mine in 1923, "many of the houses were left to ruin or were demolished ... The remaining cottages are sparsely scattered around the mine site".²³⁴



Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p14a



Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p5a.

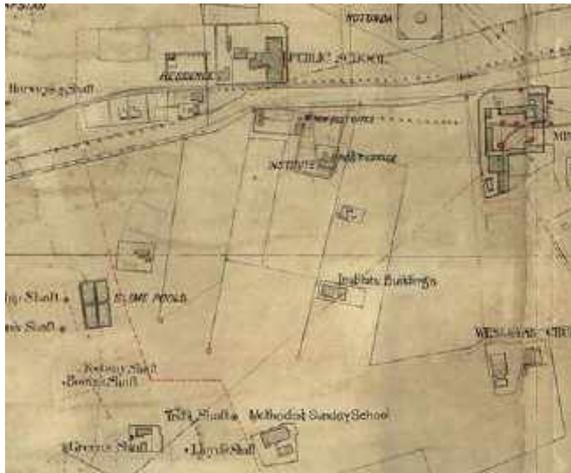


"General view showing miners' homes".
Source: SLSA B 48281.

**Swanbury
Penglase**

3.3.17 Cornish Methodism in Moonta

In Cornwall, in the mid nineteenth century, “Methodism was at its zenith – the unofficial religion of the Cornish people and a major influence on behaviour and events, from emigration to politics ... This ‘Cornish Methodism’ was transplanted to northern Yorke Peninsula”,²³⁵ and the Cornish saw it as “their”²³⁶ religion. Methodist religion was an important part of mining life in Moonta. In 1891, eighty per cent of the Yorke Peninsula population were Methodists.²³⁷ There were three main branches including: the Wesleyan, the Primitive Methodists, and the Bible Christians.



Extract from “Surface Plan at Moonta Mines”, dated 1897, showing the Wesleyan Church, Methodist Sunday School (former Primitive Methodist Church) and Institute Buildings (former Bible Christian Chapel) located on the Moonta Mine settlement near mine workings. Source: SLSA Map N1900, BRG 40/16/21.

The 1860s-70s were a busy time when Methodism made its mark on the Yorke Peninsula. The Moonta Mines Methodist Church (SAHR 10114) was constructed by the Wesleyans, as the Wesleyan Methodist Church, in 1865, at the centre of the Moonta Mine settlement. “In the leased mining areas at Moonta the Moonta Mines Methodist Church (1865) was the focus of the settlement”.²³⁸ The loosely Gothic inspired building was designed by the mines Chief Engineer Frederick May and was built by local builder Samuel Rossitor. It “formed an integral part of the Cornish lifestyle”.²³⁹ Hancock, a devout Wesleyan, laid the foundation stone on 7 August 1865.²⁴⁰ He was also a preacher at the Chapel. “Hancock’s reputation as a preacher on northern Yorke Peninsula was almost as formidable as it was as a mine captain”.²⁴¹ The chapel was opened on 26 November 1865.²⁴² In 1872, a gallery was added which increased the chapel’s capacity from its original 750 to around 1,100 people, although some reports claim 1,250 people could be seated. In the same year, two Sunday School halls were added which accommodated 120 officers and 649 students. In 1890, a pipe organ was bought with funds donated by Hancock. Now the Uniting Church, it remains in use as the last of many which once served the surrounding community.



Moonta Mines Methodist Church (SAHR 10114) (Former Wesleyan Methodist Church). Source: SPA November 2019 (_DSC0196).

The Primitive Methodist Church was also erected within the Moonta Mine settlement in c.1865-66 to a design drawn by architect William Lewis of Wallaroo Bay.²⁴³ In 1900, after the formation of the Methodist Union which resulted in the amalgamation of the Wesleyan, the Primitive Methodists, and the Bible Christians, the building was used for a Methodist Sunday School. In 1907, Sunday School Superintendent, Henry Lipson Hancock (Captain Hancock’s son who had also taken over as mine captain) introduced the Rainbow System of Bible Study which was pioneered in the United States of America. Lipson Hancock was also one-time Secretary of the World Sunday School Union.²⁴⁴ The building was demolished in September 1939,²⁴⁵ although some reports date the demolition as early as 1936.²⁴⁶ Parts of the demolished building were used to construct additions to the hall at the Wesleyan Church. The site of the Primitive Methodist Church is also known as the Moonta Mines Model Sunday School Site (SAHR 13110) and is marked by wall remnants, foundations, rubble and trees.



“Moonta Mines Methodist Sunday School”, also known as the Primitive Methodist Church (now demolished), c.1900. Source: SLSA PRG f185/7/1.

The Bible Christian Chapel was constructed c.1865, also on the Moonta Mine settlement. After 1900, it was used as a Church Hall (Victoria Hall) and Institute. It was demolished in 1950. The site of the Bible Christian Church is now marked by a mound of earth (Part of SAHR 13975). By 1875, there were fourteen Methodist chapels in the Moonta area and twenty-four in the wider district.²⁴⁷

3.3.18 Railway Station

Transportation routes were also an important part of the mine's success. On 11 July 1866, the Wallaroo and Kadina Railway and Pier Company opened the Wallaroo to Moonta horse-drawn tramway for the transportation of copper ore. In May 1876, the "Government negotiated the purchase of the tramway between the mines and the smelter, and by early 1878 had completed the deal. The line was upgraded for steam locomotives, and linked to the Colony's rail system, via an extension of the already established Adelaide-Burra line. This branch was extended west from Bowman's, through Port Wakefield, skirting south of the Hummock's Range to Moonta ... The goods shed currently on-site dates from this period, but the original ... wooden station building has been demolished".²⁴⁸

The current Railway Station building (SAHR 10187) was built in c.1908 and replaced the earlier timber station. It was opened in April 1909. It was constructed when the "price of copper was booming, and Moonta was a prosperous rural centre with a large mining population".²⁴⁹ The Station was designed by Engineer-in-Chief, Alex Moncrieff and is a standard design which was also used for Penola and Wallaroo Railway Stations. It was constructed by building contractor Messrs. J.A. Gambling & Sons of Adelaide. The railway station closed in 1979 and the building is now owned by the National Trust. There is also a crane, and toilet block, in addition to the Station building and early timber Goods Shed. The signal box has been demolished.



Moonta Railway Station, c.1910.
Source: SLSA B 12652.

3.3.19 Moonta Mine Public Buildings and Recreational sites

In the "1860s and 1870s, the copper mining towns of Moonta, Wallaroo and Kadina were just as significant an impetus to the development of Yorke Peninsula as an agricultural district".²⁵⁰ In general, "mines ... had a direct bearing on agricultural development, for settlers clearing their newly-acquired land were able to raise much-needed cash by selling waste timber to the mining companies as building materials and engine fuel, while any surplus hay would also be snapped up by the mine operators as feed for their whim-horses and bullock teams".²⁵¹

There were several public buildings and recreational sites built on the Moonta Mine site which sat alongside the residential and ecclesiastical buildings and supported both the mining and agricultural communities. One of which was the Exhibition Ground built in 1872 reflecting the importance of agriculture to the town. It was located part way between the Government township of Moonta and the main cluster of mine buildings. It was used as an Exhibition Ground, or Showground, until 1928 with a pavilion erected in 1901. In 1929, the showground was transferred to the Moonta Oval.

The Moonta Mines School (SAHR 11732) was constructed in 1877 on land leased by the Moonta Mining Company and "compulsory education was introduced".²⁵² It was built by Rossiter and Davies and was opened in 1878 for 800 students and operated until it was closed in c.1968-69. It is now owned by the National Trust and is used as a museum. The Headmaster's Residence is sited at the rear of the school.

3.3.20 Hamley Mine (1862)

Earlier, in 1861, ore was discovered south of the Moonta Mine, and it became the site of the Hamley Mine. The Karkarilla Mining Company was established, with James Warmington as Mine Captain, and operations commenced in 1862. They “worked an extension of the main Moonta lode”.²⁵³ In 1868, the Company became Hamley Mining Company and they subsequently worked “an extension of Beddomes Lode”.²⁵⁴ In 1874, a 24-inch horizontal engine was erected “to power winding, crushing and concentrating machinery. At peak production in the mid 1870s up to 200 men and boys were employed but the mine closed in 1888. It was reworked by tributers in the early 1900s and sold to the WMMS Co. in 1916. Total production is estimated of 10,000t of copper”.²⁵⁵ Although, some reports state that from 1862 to 1888, the mine “produced about 40,000 tonnes of hand-picked ore from depths of up to 300 metres ... Notable mine captains were the father and son team of Thomas and Richard Cowling who managed the mine between 1878 and 1888”.²⁵⁶ The site and remnant structures of the Hamley Mine (Part of SAHR 13975) are extant and include a stone paved ore sorting floor, engine crusherhouse ruins (erected in 1874) and mine shaft.

The Hamley Tramline (Part of SAHR 13975) was built in 1896 and connected Moonta to Hamley Flat which was the site of many miners’ cottages for those who worked at the Hamley Mine. The horse drawn Hamley tramway line “extended to near Treuers Shaft, closed in 1931 along with the Moonta Bay and East Moonta branches”.²⁵⁷

3.3.21 Building materials

In general, building materials were initially sourced from the surrounding area. Many of the early smaller mine buildings were constructed of timber but as the mine developed, they were replaced with stone. However, the large industrial buildings such as the Enginehouses were necessarily constructed from stone from the outset. Building materials used for the Enginehouses included: “cream-coloured fossiliferous limestone”²⁵⁸ for Hughes Enginehouse; stone sourced from near Moonta Beach²⁵⁹ for Richmans Enginehouse; and Hancocks Enginehouse, Boilerhouse, and Crusherhouse were built from “durable, slightly brecciated sandstone, taken from the beach near Port Hughes”.²⁶⁰

In the Moonta township, “Most of ... [the] buildings were built in the period between 1865 and 1920 and are constructed of random limestone rubble walls with brick quoins and surrounds to openings; only a few are built of faced stone”.²⁶¹ On the mining settlement the “earliest dwellings were of a primitive nature using pine and canvas, but as mining became established, small squat cottages were built by miners after their shifts and often in stages, using wattle and daub (clay reinforced with saplings) or limestone rubble and clay”.²⁶² “Ti-tree” scrub was reportedly “plentiful on the land” prior to the establishment of the mine.²⁶³ In 1899, it was evident that much of this “Ti-tree” was used for the fences surrounding the miners’ cottages.



“Surface installations of the Hamley Mines”, c.1916.
Source: SLSA B 12602.



“Hamley Mine with a miner’s house left foreground”, c.1900.
Source: SLSA B34851.

3.3.22 Amalgamation

The Moonta Mine was highly lucrative and successful however in the late nineteenth century economic conditions deteriorated. In the late 1870s, copper prices fell which resulted in unemployment and “[l]ittle development was carried out in the 1880s, when low copper prices resulted in the company’s first losses”.²⁶⁴ The directors of the two separate companies – the Wallaroo Mining Company and the Moonta Mining Company, decided to amalgamate in 1889 and thus “more efficiently use their resources. The resulting company, the Wallaroo and Moonta Mining and Smelting Company Limited, became the largest mining company in Australia”.²⁶⁵ In 1889, “ore worth £5.6 million had been raised from the Moonta Mine”.²⁶⁶

From 1880 to 1900, “there was a shift of mining enterprise and settlement towards Wallaroo Mines (Kadina), and Moonta Mines went into a gradual phase of decay lasting until the Company’s liquidation in 1923. In the next decade [1900 to 1910] the disintegration of the mining village entered a marked phase of decay, as over 2,500 people left the District’s mining lease settlements”.²⁶⁷

3.3.23 Twentieth Century

In the twentieth century, the mine entered a new phase as much of the rich ore had been worked out leaving predominantly low-grade ore.

*After 1900, the lodes became unproductive at depth and work was confined to extraction of ore above the 300 fathoms (549 metre) level. Hancocks Engine was dismantled and Prankerds winding engine was replaced by a modern horizontal steam winding engine at Taylors Shaft, where a new headframe and sorting plant were erected. In contrast the Wallaroo Mine was developed and modernised with great urgency and surpassed Moonta as the large ore producer.*²⁶⁸

In the late 1890s, “tailings from Moonta’s three ore concentrating plants (Richmans, Ryans, and Hancocks) formed four large heaps containing 1.5 million tonnes of coarse residue assaying about 0.9% copper. In addition, slimes areas contained 330 000 tonnes of fine residue assaying 3.5% copper”.²⁶⁹ Tailings and slimes were the two waste products from the ore concentrating process. Thus, attention soon turned to extracting copper from the waste. At Moonta mine when:

*Lipson Hancock was appointed to take charge of the working of these mines, ... he was impressed with the possibilities of revenue to be obtained from the tailings and other products discarded from the ore-dressing operations. He brought the matter before the board of directors, with the result that ... after due enquiries had been instituted in Europe, Mr. J.S. McArthur, a leading expert in the leaching process, was engaged to report upon the application of this method to the heaps at Wallaroo and Moonta. This authority approved the scheme: and, upon his recommendation, Senor [Antonio] Delgado, who has had thorough experience in this class of work in connection with the famous copper mines of Spain, was engaged to institute the new treatment. This gentleman came, saw, and conquered.*²⁷⁰

Delgado, from the Rio Tinto mine in Spain, was contracted for two years to “establish a leach-precipitation process to extract copper from the tailings. This process was called cementation”.²⁷¹ The terms precipitation, leaching, and cementation were often interchanged. In 1901, the Precipitation Works was established to extract copper from the tailing heaps. The process involved mixing “sea water and a little sulphuric acid [which] was allowed to percolate through the tailings into channels”.²⁷² Although Delgado “had no experience in leaching slimes ... he hoped to improvise a method for their successful treatment, which added considerably to the cementation resources”.²⁷³ The slimes dams were ploughed to hasten oxidation, then “surface material was collected by horse-drawn scoops and transferred to rail hoppers for conveyance to a mixing plant. The material was slurried with acidic sea-water then settled through labyrinth tanks and ponds, so that the copper liquor”²⁷⁴ could begin the cementation process.

Once the copper was in solution from both the tailings heaps and slimes settling dams, the Cementation process began. It “flowed into cementation tanks and channels filled with scrap iron [some of which was sourced from redundant mine machinery]. This precipitated the copper. The copper sludge was collected, washed, dried and railed to the smelters at Wallaroo for conversion to copper. The remains of the channels, cementation tanks, wash and dry house and pumping station can be viewed from the tourist railway which departs from the Moonta Mines Museum”.²⁷⁵

3.3.24 Closure of the mine 1923

In the post-World War One period, “activity and prosperity was further curtailed due to a sharp drop in copper prices and limited ore reserves. In 1923, the company went into voluntary liquidation after 2000 workers at Moonta and Wallaroo refused to accept a drastic cut in wages”.²⁷⁶ “Ore worth £10.7 million was raised from the Moonta Mine. A combined total of about 350 000 tons of copper were produced from the two mines [Moonta and Wallaroo], and at £20.4 million, amounted to nearly half the value of mineral production in South Australia up to 1924”.²⁷⁷ The mine closed in 1923.

3.3.25 Post Moonta Mine operations

The mine site was still utilised throughout the twentieth century by various companies. During the 1930s, both the Commonwealth and State governments subsidised mining on the site with a “new headframe ... erected at Smith Shaft”.²⁷⁸ Small scale operations, including prospecting, continued until the late 1930s, while leaching was still undertaken until 1943. From 1933 to 1938, a floatation mill was erected and operational.

Exploratory drilling by the South Australian Government from 1909 until 1949 discovered further mineralisation, and, since 1960, exploration companies have located many zones of copper mineralisation, several of which have proved economic. A small orebody near the Poona Mine was mined by open cut between 1988 and 1992, and Wheal Hughes, just north of Moonta was worked by open cut and underground methods between 1990 and 1994. These two mines produced a total of 18,000 tonnes of copper from 376,000 tonnes of ore.²⁷⁹

3.3.26 Post-mining Era changes at Moonta Mine

Although mine operations continued on site after 1923 when the Moonta Mine closed, many of the early buildings were demolished. Others have “bemoaned the destruction that have attended the closure of the mines in 1923. Everything that could usefully be salvaged or sold was dismantled or broken up ... ‘Whole suburbs, which happened to be built on the mineral leases, were flattened so that the stone in the cottage walls and the galvanised iron roofs could be sold as rubble or scrap: today there are paddocks without a trace to indicate that once a thriving community lived there’. Where infrastructure had survived – notably the massive Cornish engine houses – this was only because the cost of demolition would have outweighed the receipt of sales of the recycled building materials”.²⁸⁰

As early as 1926, it was reported in *The Register* that “[m]uch of the machinery and housing accommodation at the old mines has been demolished and sold ... Taylor’s Shaft and plant [at] Moonta Mines [was also] now demolished”.²⁸¹ In 1927, it was reported that at the Wallaroo Mines “[d]emolition at the plant and buildings of the Wallaroo and Moonta Mining Company’s premises is still going on. During the past few weeks many old landmarks have disappeared. The tall poppet heads at the mining shafts, as well as the many buildings have been dismantled, and the timber sawn into convenient lengths. A large portion of the timber will be sent to Adelaide, and used in the construction of buildings”.²⁸² Although this newspaper report purportedly refers to the Wallaroo Mine, this may have included the Moonta Mine, as the Company’s other premises. The article continued to also describe the demolition which was occurring at the smelting works located at Port Wallaroo, another of the Company’s premises.

In 1952, when an earth tremor was felt at Moonta Mines, “[v]arious buildings shook and rattled ... [and it was reported that] the old mine workings in Taylor’s shaft have subsided due to the very wet winter ... [however] [s]everal inspections have been made of the old workings on the surface, but no subsidence is visible”.²⁸³ By 1953, most of the mine shafts were “flooded to almost the surface”.²⁸⁴

3.4 Conclusion

In 1962, Oswald Pryor (1881-1971) a former Moonta miner and Grass Captain turned author, published an illustrated “folk-history”,²⁸⁵ entitled *Australia’s Little Cornwall*. He wrote “Today, the streets of ‘Australia’s Little Cornwall’ are quiet and sleepy. But the value to the Australian Commonwealth of the work of those who once walked them should never be forgotten”.²⁸⁶

*Long after the copper-mining industry had all but disappeared in Cornwall, Captain Hancock’s mines remained significant players on the international stage, Moonta and Wallaroo the fitting inheritors of the myth of Cousin Jack. More than anywhere else in Australia, here were Cornish copper mines run by Cornish men – and sons of Cornish men – on Cornish principles.*²⁸⁷

In 1964, the National Trust of South Australia formed the Moonta branch, and the “tourism industry was becoming very significant for the Moonta area ... In 1968 the National Trust set up a museum in the former Moonta Mines ... School and began to acquire leases over some mining sites. Stone work was carried out on Hughes Pumping Engine House and Chimney to stabilize the 1864 structure, and the Miner’s Cottage was opened as a historic house museum”.²⁸⁸

Moonta was declared a State Heritage Area on 10 May 1984 and “ranks as one of the state’s most important collections of nineteenth century mining structures and relics”.²⁸⁹ On 9 May 2017, the “Australian Cornish Mining Sites: Burra and Moonta” were jointly included on the National Heritage List, in recognition that “Moonta is of outstanding heritage significance to Australia because of its very high capacity to demonstrate the Cornish mining system. Moonta in particular demonstrates the resilience of the Cornish mining system in Australia which enabled the system to be dispersed further throughout Australia with Cornish miners. At Moonta this system was also further improved by continual innovation in machine technology”.²⁹⁰

As Payton, British historian and Emeritus Professor of Cornish and Australian Studies, reflected on the Cornish transnational identity of Moonta, he stated that:

*an important indicator of the probable future trends is the achievement in 2006 of UNESCO ‘World Heritage Site’ status for the mining landscapes of Cornwall. Integral to this status is recognition of the international significance of those landscapes, and an understanding that across the globe are scattered other landscapes that are inherently ‘Cornish’. This is nowhere more obvious than in South Australia – most especially on northern Yorke Peninsula, and specifically at Moonta. As Cornwall moves to capitalize on its new-found status, so these other global Cornish landscapes will feature anew in consideration of the international implications of being a ‘World Heritage Site’, and a new inter-governmental alliance or network of transnational Cornish landscapes may well emerge. It is in this symbiotic context that Moonta’s myth as ‘Australia’s Little Cornwall’ could be comprehensively re-invented afresh during the twenty-first century.*²⁹¹

Thus, Moonta Mine may well be entering a new phase in the twenty-first century.

3.4.1 Development Sequence 1861-1923

Date	
1840	Walter Watson Hughes (1803-1887) arrived in Adelaide
May 1861	Shepherd Patrick Ryan discovered copper ore in a wombat burrow
Late 1861	Hughes established Tipara Mining Association and secured mineral lease over Moonta land
Late 1861	Tipara Mining Association commences mining operations
1861	Elders Shaft sunk on Elders Main Lode – the Mine’s first shaft
1861	Ryans Shaft constructed on McDonnells Lode
1862	Tipara Mineral Association renamed Moonta Mining Company
By September 1862	Smiths, Waterhouses and Taylors shafts are sunk on Elder’s Main Lode
	Youngs Shaft sunk on Young’s Lode and McDonnell’s Shaft sunk on Fergusson’s Lode
1862	Ore discovered south of the Moonta Mine leases (Hamley Mine)
1862	Hamley mine established
March 1863	Government town of Moonta surveyed
April 1863	Allotments auctioned in the town of Moonta
1863	Elders enginehouse constructed
1863	Assayer’s Residence constructed
1864	Henry Richard Hancock appointed as Mine Captain
1864	Ryans Tailings Heap (used from 1864-1906)
c. pre 1864-1875	General Manager’s residence constructed
1865	1,200 mine employees
1865	Moonta Mines Methodist Church constructed by Wesleyan Methodists (SAHR 10114)
c.1865	Bible Christian Church constructed (now demolished) (Note – Building was used as a Church Hall (Victoria Hall) and Institute)
c.1865-66	Primitive Methodist Church constructed (now demolished) Moonta Mines Model Sunday School Site (SAHR 13110)
1865	Hughes enginehouse and stack (chimney) constructed (SAHR 10113)
c.1865	Hughes Engine Pool constructed
c.1865	Mine workshops constructed
By March 1866	21 shafts have been sunk
1866	Wallaroo to Moonta horse-drawn tramway in operation
1869	Richmans enginehouse constructed
1870s	Moonta Mines at its peak
1870	Moonta town population 10,000 (second to Adelaide)
1870	6,000 lived on mining leases
c.1870	Miners Cottage and surrounding Fence (SAHR 10135)
By March 1871	24 shafts have been sunk
1872	Exhibition Grounds (Showgrounds) established
1873	Reservoir constructed
1874	Hancocks tailings dump (used from 1874-1900)
1875	Moonta town population 12,000
1875	Mine offices constructed
c.1875	Powder magazine constructed
1876	Mine paid £1 million in dividends

Date	
1876	1,700 mine employees
1878	Original Station Goods Shed constructed
1878	Government purchased horse-drawn tramway and extended line to Moonta Bay
1870s-1880s	Low copper prices - unemployment
c.1880	Treuers Shaft constructed
c.1889-90	Moonta and Wallaroo Companies amalgamated to form Wallaroo and Moonta Mining and Smelting Company Limited
1896	Hamley tramline constructed
1898	Mine Captain H.R. Hancock retired
Post 1900	Deep lodes unproductive, led to extraction above 300 fathom level
c.1901	Leaching established
c.1901-03	Precipitation works established
c.1908-09	Moonta Railway Station constructed and opened (SAHR 10187)
1923	Company went into voluntary liquidation due to 2,000 mine employees at Moonta and Wallaroo failing to accept a wage cut
25 September 1923	Hughes Engine ceased working
October 1923	Mine ceased operations and mine closed
1926	Moonta town population 1,350
Late 1930s	Commonwealth and State Government subsidized mining at Moonta
	Small scale mining
1933-38	Floatation mill installed and operated
Until 1943	Leaching
1988-92	Poona Mine
1990-94	Wheal Hughes Mine

4. Place Description

4.1 Introduction

The Australian Cornish Mining Sites (Moonta) (ACMS-Moonta), as included in the SAHR and the NHL, is located adjacent to the adjoining township of Moonta, at the northern end of South Australia's Yorke Peninsula, 160km northwest of the state capital of Adelaide. The area is set on undulating calcareous plains that slope gently toward Spencer Gulf, some four kilometres to the west.

4.1.1 Climate

ACMS-Moonta is in a semi-arid region, located above Goyder's Line.²⁹² The area is characterised by a Mediterranean climate, with short, sometimes wet winters and long hot and dry summers, when it can reach more than 40°C for consecutive days. The average rainfall is about 380mm per year. The highest monthly rainfalls occur in the winter months of June, July and August.

The irregular rainfall combined with a lack of a fresh water source nearby, combined with South Australia's hot summers, had a significant influence on the development of the mines and European settlement.



Typical miner's cottage stick fencing using local native vegetation

4.1.2 Topography, Geology and Soils

The geography of the ACMS-Moonta is important in that the historic significance of the area is largely due to its metal bearing ores. The Moonta-Wallaroo district lies within the Moonta Subdomain, on the eastern margin of the Gawler Craton of South Australia, which is also host to the Olympic Dam, Prominent Hill, Carrapateena, and Moonta-Wallaroo deposits. It is an example of anomalous copper in transported sediment that reflects the presence of mineralisation in weathered crystalline basement beneath. Ore bodies in the Moonta district typically have the form of tabular veins within fractures and shear zones in the Moonta Porphyry.

The soil within the ACMS-Moonta is largely made up of calcareous earths. They contain finely divided (<2mm diameter) calcium carbonate throughout all or most of the profile. They also often contain hard calcium carbonate segregations in the form of nodules, fragments or concretions. Hard carbonate can be thick and dense, while many Calcarosols are also underlain by calcrete (a layer of hard carbonate).²⁹³

4.1.3 Vegetation

Prior to the 1860s, the ACMS-Moonta area was covered by open scrub and eucalyptus Mallee woodland. The open Mallee grows in the 250-500mm rainfall zone on calcareous and infertile soils and is characterised by multi-stemmed Eucalyptus species which grow to a height of 2 – 9 metres from a swollen woody base. They have an umbrella-like leaf canopy and the trees shade 30 – 70% of the ground. Several layers of vegetation grow in association with Mallee eucalypts, from large shrubs up to 3 metres high to very small grasses and forbs, and ephemerals.

The Mallee areas of South Australia were first used for low intensity sheep grazing, mainly on the grassy openings scattered through the scrub until large scale clearing for cereal crops occurred in the 1880s.

This native vegetation did not survive long after the commencement of mining operations, being cleared for fuel and building materials such as the fencing erected around the miners cottages.

4.1.4 European Settlement Pattern

The earliest industrial structures at Moonta: shafts, Enginehouses, processing areas, workshops, supporting and administrative facilities were developed along the main ore bodies in linear patterns that closely followed the underground lodes. Underground, a vast network of timber shored shafts and drives was constructed, with the deepest shaft reaching 750m below ground.

Miners and their families settled on the mining leases in a haphazard fashion characterised by a lack of formal social planning. The predominantly Cornish migrant culture was expressed in the organic development of a village of small timber and stone cottages clustered next to the workings and orientated to the central Wesleyan Methodist Church. More substantial stone dwellings were erected by the company for the Mine Manager, Captains and other company officials.

The early settlement quickly became surrounded by the mine workings as the full extent of the copper bearing lodes was realised, and further lodes were discovered and exploited. Secondary residential areas were developed alongside the new workings: East Moonta (partially included in the ACMS-Moonta area), Hamley (fully in the ACMS-Moonta area), and Yelta (not included in the ACMS-Moonta area). As described in a previous planning study, 'The impact of such intense activity in a poor waterless pastoral environment literally changed the landscape overnight to a densely populated industrial area and the landscape was further denuded by the demand for wood...Mining has also affected the soil quality in many areas and the tailing heaps and precipitation works are still virtually barren.'²⁹⁴ Mining structures were in constant development. As mining technology developed throughout the life of the mine, new structures were erected to house the new machinery and older structures demolished or refitted to accommodate change.

The irregular and unplanned character of the settlement is an intrinsic part of the heritage of the area, with a scattered and low-lying appearance and no imposed control of land development.

Dispersed, but homogenous in scale, form and materials, the original two roomed cottages were expanded over the life of the mines with numerous additions and extensions, all of similar style with gabled roofs, symmetrical fronts and lean-tos, which harked back to Cornwall in their form and construction. The mines areas are characterised by these low-profile cottages set in an undefined streetscape, offset by the larger public buildings and industrial structures of the mines²⁹⁵

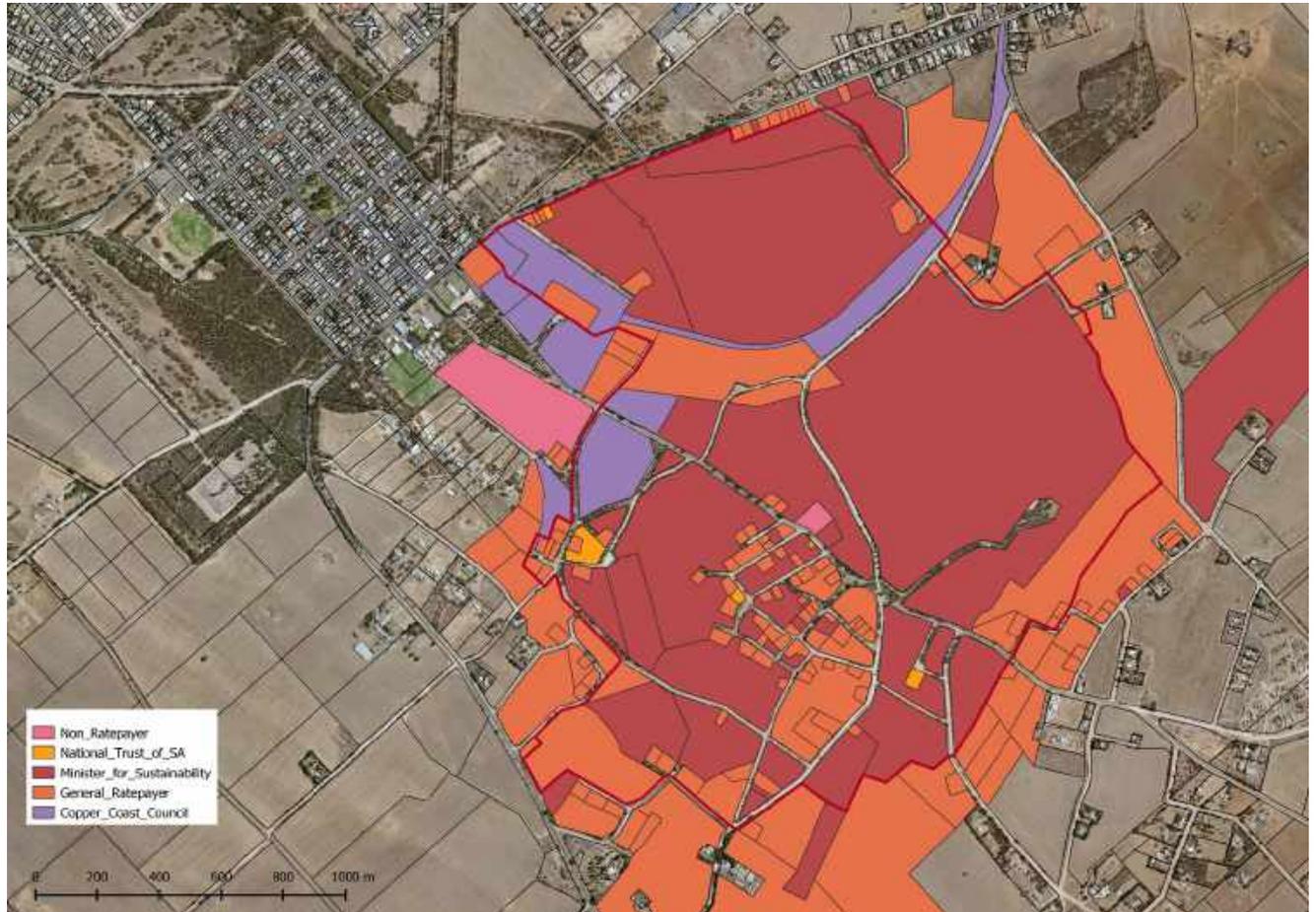
Contrary to this, the government township of Moonta, established in 1863, west of Moonta Mines was laid out in the 'Adelaide model' of a grid pattern surrounded by a belt of parklands. Although Moonta town is not included in the subject area, it has an inseparable history with the mines as the commercial centre for the region.

When the mines closed the population of the Moonta Mines settlement dispersed and many of the industrial structures were demolished as were most of the Mining Company workshops and houses. Extensive amounts of machinery, scrap iron and shaped building stones resulting from the demolition were sold off by the company's liquidators, at many sites leaving very little above ground evidence of what were impressive and substantial structures. The cessation of community and government institutions followed, and over time the marked distinction between the twin settlements diminished. The 'Moonta Mines Young Turks Football Club', once a fierce former rival of the Moonta Football Club, was disbanded in 1926. The Moonta Mines School closed in 1968, and the Moonta Mines Post Office shut in 1972, effectively integrating Moonta Mines and Moonta. Moonta meanwhile was able to prosper as an agricultural commercial centre in the transition to cereal farming as the main industry, and more recently, to service the thriving seaside holiday and sea-change living at the nearby beach towns of Moonta Bay and Port Hughes.

Only scant traces of the former mining complex are visible today. The underground works are refilled with water and are unlikely to be safely accessible again in the future. The low topographic relief of the area allows the skimping heaps, sorting floors and other mining ruins such as Richmans Concentrating Plant and Hughes Enginehouse to dominate visually. However, the regeneration of the once dense scrub has reclaimed many of the former ruin sites so that the above ground signs of demolished structures are almost completely obscured.

4.1.5 Current Land Tenure and Management

The ACMS-Moonta boundary contains both private and public land. By proportion, the Crown is the majority landowner, as indicated in the map below. The areas in red demarcate Crown land. The areas in purple is land owned by the Copper Coast Council, the areas in orange are freehold, and the area in yellow is owned by the National Trust. The map is somewhat deceptive in that most of the land owned by the Crown is the responsibility of either the National Trust or to individual owners on a yearly licence or lease agreement.



Map showing current land tenure arrangements. Supplied by Copper Coast Council

4.1.6 Chapter Outline

This chapter is organised into precincts that recognise the historic development sequence and character of each area, as is described in the map below. It addresses the historic structures and sites within the subject area, with greater detail provided where there is a concentration of remnant features.

Each historic area section includes:

- > Background with a separate history
- > Description, including description of the surviving fabric and its context
- > Table of current condition and integrity

The areas do not necessarily correlate to current planning precincts, however this research has influenced our thinking on future planning precincts. This is further explained in Chapter 8 Planning Precinct Policies.

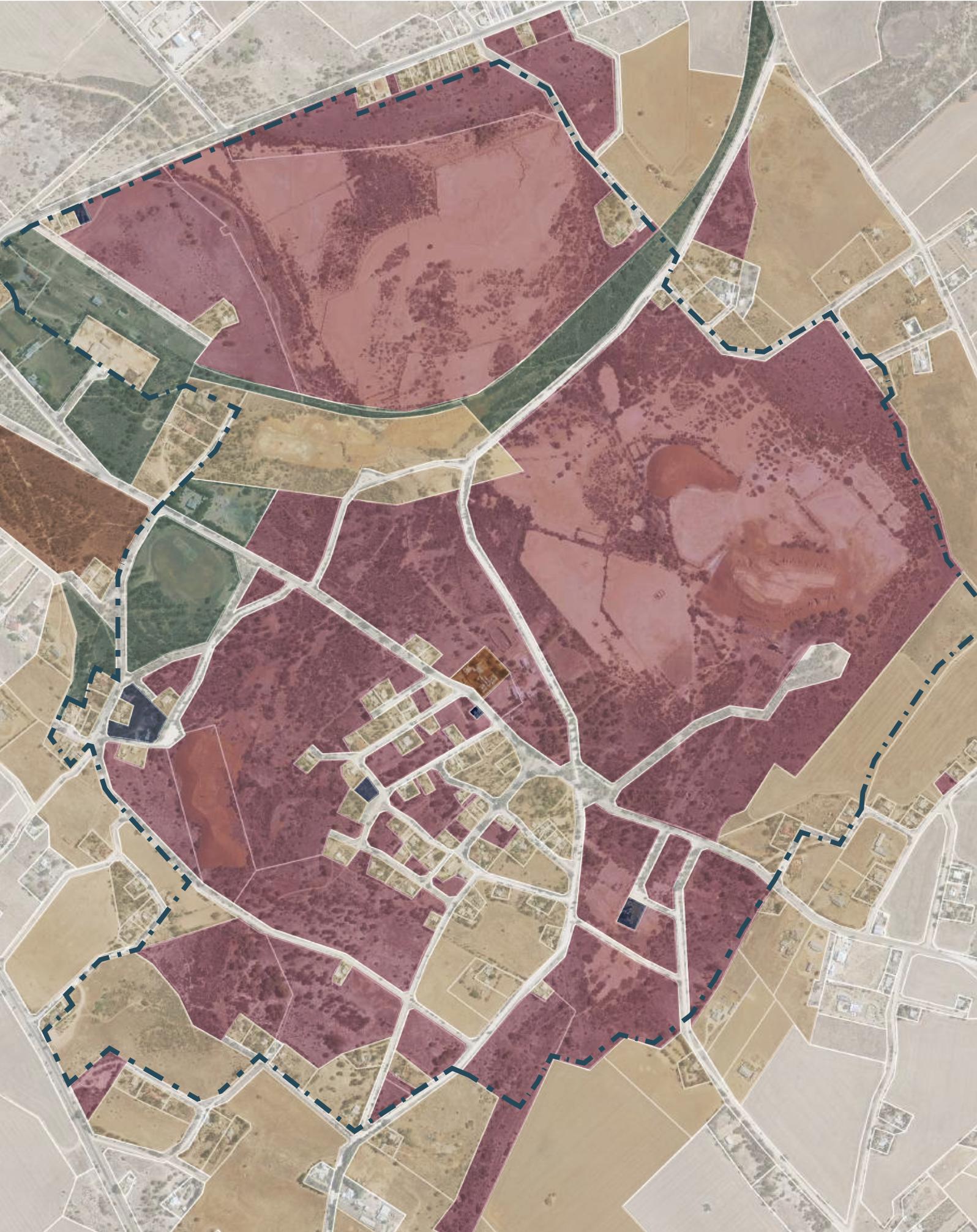
Land Tenure Plan

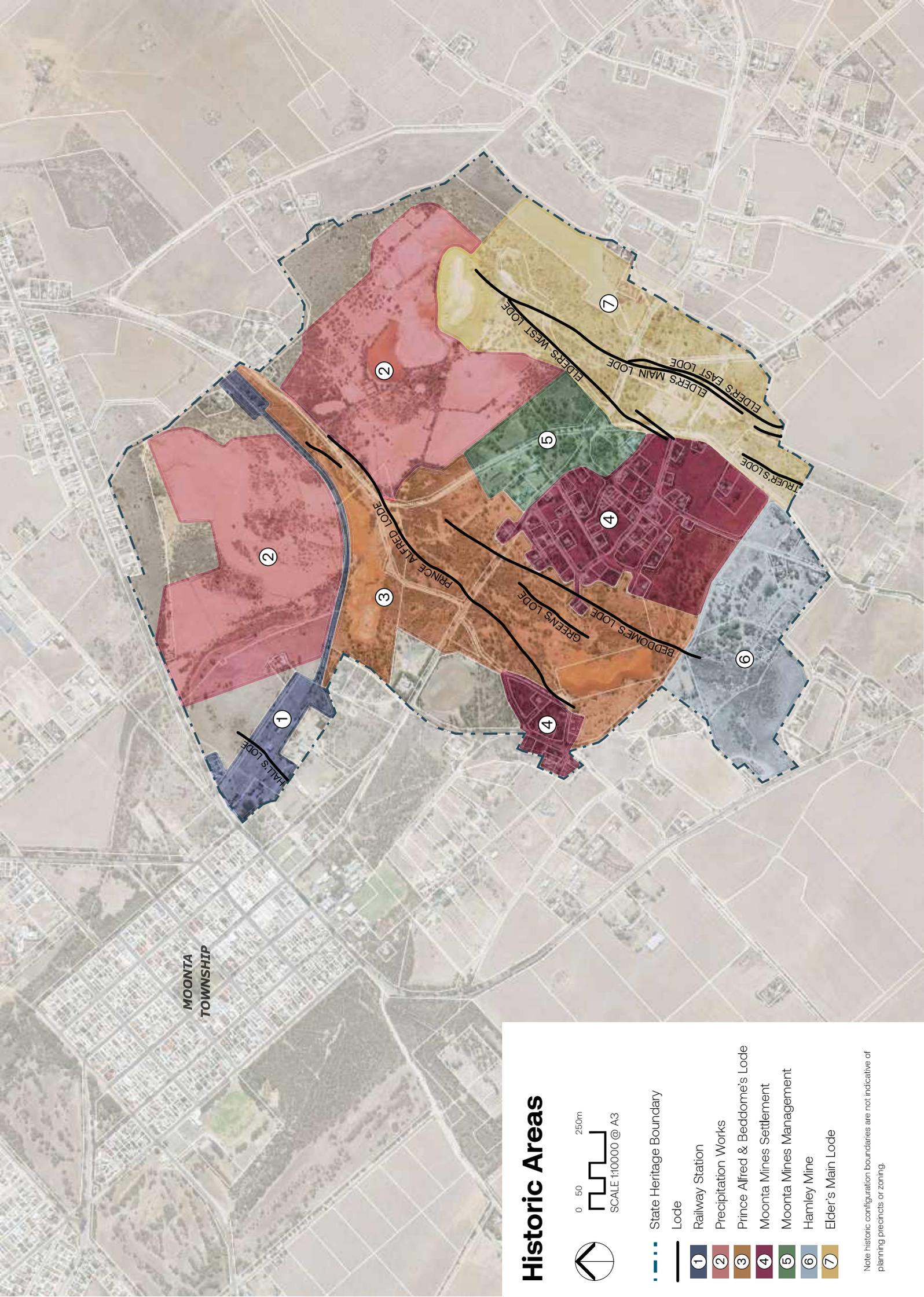


0 50 250m
SCALE 1:10000 @ A4

-  State Heritage Boundary
-  National Trust of SA
-  Minister for Sustainability (Crown Land)

-  Non-Ratepayer
-  General Ratepayer (Private)
-  Copper Coast Council





MOONTA
TOWNSHIP

Historic Areas



-  State Heritage Boundary
- Lode**
-  1 Railway Station
-  2 Precipitation Works
-  3 Prince Alfred & Beddome's Lode
-  4 Moonta Mines Settlement
-  5 Moonta Mines Management
-  6 Hamley Mine
-  7 Elder's Main Lode

Note historic configuration boundaries are not indicative of planning precincts or zoning.

4.2 Framework for Measuring Condition and Integrity of Values

This report has adopted the state of the environment guidelines for measuring the condition and integrity of historic heritage places.

As previously described, in November 2019 a physical survey was undertaken to assess and record the condition of significant buildings and sites. Various individual places are specifically referenced in the National Heritage values, but other potential places were identified as part of the preparation of the historic summary and through overlay mapping. Most sites within the ACMS-Moonta are publicly assessable apart from the interiors and rear gardens of private dwellings. In such cases a judgement was made on the overall condition and integrity of the structure based on those areas visible from the street. Not all dwellings were surveyed but a sample set of structures have been included to represent the Moonta Mines Settlement Area so as to understand the condition and integrity of the cottages in general. With respect to sites that do not retain a use, and are ruins, the assessed condition and integrity ratings are weighted towards the place's remaining ability to retain and convey its former use and the perceived risk of further loss of this ability. More detailed explanations regarding the factors that affect the place's condition are provided below.

In preparing the previous 1985 Conservation Management Plan a physical survey was undertaken of all historic sites at ACMS-Moonta. It ranked sites for 'Intactness' under six levels: 'Complete', 'Substantial', 'Partial', 'Vestigial', 'Non-existent'; and 'Condition' under four levels grading from 'Poor' to 'Very Good'. There were no accompanying definitions to describe the categories and therefore assumptions have been made about their equivalence. For the purposes of establishing trends in future reviews, these categories have been translated and included for each site as per the following table:

4.2.1 Condition

Rating	Guideline	1985 Equivalent
Poor	There are signs of damage from water penetration, rot, instability or structural failure of buildings, or erosion or major disturbance of sites. Might include the loss of a roof, fire damage, wall collapse or subsidence, major rising or falling damp damage, or major disturbance or damage to a site. Internally, walls, floors or joinery are missing, or in dilapidated condition. Loss of significant fabric, including landscape elements, movable objects, archaeological deposits, etc.	Poor
Fair	A site retains its important features, including (where relevant) landscape elements, vegetation, associated movable objects etc. but these are in need of conservation action and maintenance. A building is structurally sound, but has had inadequate maintenance and is in need of minor repair. Internally, walls, floors and joinery are in need or minor repair, painting etc.	Fair
Good	A site has its important features well-maintained. A building is structurally sound, weathertight, and with no significant repair needed. Internally, walls, floor and joinery are well maintained.	Very good Good

4.2.2 Integrity

Rating	Guideline	1985 Equivalent
Low	A site has had important features (such as structures, machinery, archaeological deposits etc.) removed, or a new structure covers the site. A building has major elements that would contribute substantially to its heritage values, removed or extensively altered. Original cladding of walls or roof may have been replaced with newer materials or removed entirely, interiors may have been removed or destroyed, or re-arranged with the insertion of a new interior.	Non-existent Vestigial
Medium	Where the values of the place do not relate directly to fabric (such as in a place valued for association with an historic event, community associations or use), judgement must be made on the impact of changes in diminishing the ability of the viewer to understand the associations of the place. There has been some loss of important elements, but the site or building still retains sufficient significant fabric for its values to be understood and interpreted. Intrusions are not substantial.	Partial Substantial
High	The features that contribute to the value of the place are very largely intact and not compromised by significant removals, modification or additions.	Complete

4.3 Description and Condition

4.3.1 Moonta Railway Station (including disused railway line within the Moonta Mines State Heritage Area) (c.1866) (SAHR 10187)

Background

In 1861, “The Kadina and Wallaroo Railway and Pier Coy” Bill passed through the South Australian Colonial Parliament and became a private Act. This approved the construction of a 5ft-3in [broad] gauge horse worked light railway [tramway] from Wallaroo Mines at Kadina over some five miles of undulating countryside to the Wallaroo smelters and the 800 feet long pier at the port”.²⁹⁶ It was highly successful and in turn “prompted the Company to announce that it intended to proceed with the construction of a branch 5ft-3in gauge horse railway from Port Wallaroo to the rapidly expanding mining centre of Moonta 10 miles to the south”.²⁹⁷ On 11 July 1866 the Wallaroo to Moonta horse-drawn tramway was opened.²⁹⁸ The “Moonta terminus of the railway was in the vicinity of Moonta Mines at a location known later as Yelta Siding. The principal traffic at the time of the opening was the carriage of copper ore to the Port Wallaroo Smelters”.²⁹⁹

On 7 February 1868, the Company constructed an extension to the horse railway from Moonta Mines to the township of Moonta.³⁰⁰ Shortly after, in 1870, the “5ft-3in [broad] gauge horse railway was extended westwards from Moonta Town ... to a headland in Moonta Bay known as the “Old Landing Place””.³⁰¹ Although, Moonta Bay was too shallow to develop as a significant port, it was used for freight as early as 1865 and a short jetty was constructed soon after.

Rail development around the Moonta area continued and on 2 February 1877 it was reported that the “horse railway extension was rapidly approaching Moonta Beach. Passenger services to the Beach were operating regularly by August 1877”.³⁰² In 1878, a “new 1,720ft long jetty was completed at Moonta Bay and during July 1879 work gangs were busy breaking stone and forming cuttings to enable the 5ft3in [broad] gauge horse railway to reach this jetty. In the meantime the “Register” for 25 October 1877 reported that the Railway and Pier Company had commenced work on the Moonta Mines to Yelta Siding line which would enable the lucrative mines traffic to be diverted from Port Wallaroo to Port Moonta pier. This was a shrewd move on the part of the Company”.³⁰³

Concurrently, government railways and tramways were being developed north of Adelaide and on “1 January 1870 the South Australian Railways opened an isolated 3ft6in [narrow] gauge horse railway from Port Wakefield, ... to the wheat area of Hoyleton. In March 1876 an extension of 13 miles to Blyth was available for traffic and the Port Wakefield system was converted to steam locomotive working soon after. On 9 October 1878 a 34 mile 3ft6in [narrow] gauge railway extension westward from Port Wakefield to Kadina opened for steam locomotive working. ... The isolation of this area came to an end on 15 January 1880 when the 3ft6in [narrow] gauge tracks reached the 5ft3in [broad] gauge Adelaide to Burra steam railway at Hamley Bridge”.³⁰⁴ In the meantime, the Kadina and Wallaroo Railway and Pier Company “opened negotiations with the [South Australian] government regarding the sale of their horse drawn railway to the South Australian Railways [but by] ... October 1877 ... these negotiations had fallen through”.³⁰⁵ Later, negotiations recommenced and were successful. The “Wallaroo-Kadina-Moonta horse railway was purchased by the S.A.R. for £90,000 on 1 March 1878”.³⁰⁶ Thus, the government now owned the tramway between the mine and the smelter. The Moonta Railway Station Goods Shed dates from this period.³⁰⁷

The “S.A.R. extended their 3ft6in [narrow] gauge steam railway from Kadina to Port Wallaroo on 15 January 1880 but the 5ft3in [broad] gauge horse tramway was retained for local traffic operating parallel to the new undertaking. The S.A.R. continued with horse railway construction at Moonta Bay. ... and the Moonta Jetty extension was opened for traffic on Boxing Day 26 December 1879. The 5ft3in [broad] gauge horse worked railway between Port Wallaroo-Moonta Mines-Moonta Town-Moonta Bay remained in operation until Monday 11 November 1891 when steam operation on 3ft6in [narrow] gauge tracks commenced between Wallaroo and Moonta Town”.³⁰⁸ The “mining companies at Moonta had employed three steam locomotives for shunting their 5ft3in [broad] gauge sidings between 1885 and 1892 and these units were converted to 3ft6in [narrow] gauge after 1892”.³⁰⁹ In addition, in the mine, a “0.6 metre rail system operated on ore floors”.³¹⁰

On 31 July 1891, it was reported that “plans had been completed for a wooden railway station building at Moonta Town”.³¹¹ Although, some sources state that this station was erected in 1878.³¹² The “Moonta Town steam railway station of 1891 stood at Blyth Terrace between Ellen Street and Blanche Terrace but this was relocated east of Blanche Terrace during 1908”.³¹³

The “broad gauge Moonta Mines to Moonta Bay railway via Yelta sidings and Moonta Town carried considerable local passenger traffic but the Moonta Town to Moonta Bay section was not converted to 3ft6in [narrow] gauge when the Moonta Mines railway sidings were altered ... [thus it was] decided to develop the remaining broad gauge line into a passenger horse tramway system. The “Yorke Peninsula Advertiser” for 9 August 1895 reported that plans had been completed to connect the Moonta Bay to Moonta tramway to East Moonta by a new route along George St Moonta Town. The approach of the Moonta Bay horse line at the western end of town was diverted in George Street and then extended eastwards along North Terrace (Moonta Mines) to East Moonta terminating at the junction of Verran Terrace and Deeble Street. A passing loop was constructed on the single track roadside line at Harvey Street near the school at Moonta Mines. During 1896 a new tram shed was erected at the eastern end of George Street and at the same time a branch tramway opened to Hamley Flat. This new line was largely on private right of way terminating at the Mitchell and Treuer Streets intersection in the “occupation leases”. The Tramway from East Moonta to Moonta Bay was 4 miles 2 chains in length while the Hamley Flat branch accounted for an additional 1 mile 10 chains. The capital cost of the tramway amounted to £11,034 and the six tramcars were valued at £1524 each”.³¹⁴

The current Railway Station building (SAHR 10187) was built in c.1908 and was opened in April 1909. It replaced the earlier timber station. The Station was designed by Engineer-in-Chief, Alex Moncrieff and was a standard design which was also used for other towns in South Australia such as Penola and Wallaroo Railway Stations. The “building has a bold and unique appearance and is creditable alike to the Engineers-in-Chief’s department and to the draftsman who prepared the plans”.³¹⁵ with large arched head windows which are repeated to the platform and road frontages. It was constructed by contractors Messrs. J. A. Gambling & Sons of Adelaide. It was built when the “price of copper was booming, and Moonta was a prosperous rural centre with a large mining population”.³¹⁶

In 1909, the following newspaper report described the station. On the ground floor a “large pen waiting room, on one side the stationmaster’s office and a parcels’ room on the other side is the ladies’ waiting room with ladies’ lavatory upstairs, this part being two storey. The rooms are all large, and lofty and well lit and ventilated. There is a wide verandah all round outside supported on flying wrought iron brackets. The men’s lavatory and lamproom is a separate erection and is up to date throughout. The whole premises drain into septic tanks. The station will be lit with acetylene gas and is to be the model for future stations of the class.”³¹⁷

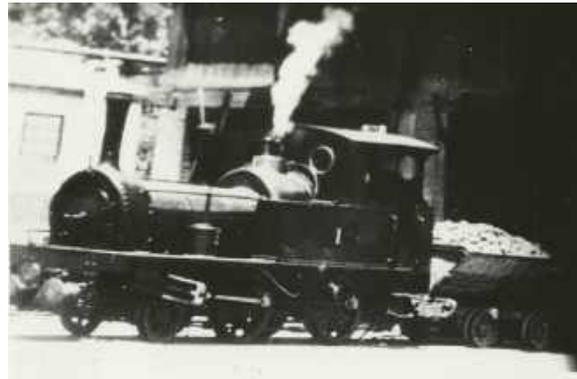
Following the closure of the mine in 1923, the use of the tramways and railways declined. In 1927 the main line was converted to broad gauge. The “Moonta [horse-drawn] tramway ... closed on 30 April 1931 ... The Moonta tramway system served a population of some 12,000 people in the 1890-1910 period ... It is recorded that during the Christmas-New Year period in 1896 the trams carried over 10,000 people to Moonta Bay. ... After the closure of the tramway in 1931 double decker cars 5 and 6 were transferred to the S.A. R. tramway at Victor Harbor to work the summertime tourist service to Granite Island”.³¹⁸ Both tramcars were withdrawn in the mid 1950s.

In 1979, the Moonta Railway Station was closed, and 23 July 1984 the line officially closed. In 1985 most the Moonta-Wallaroo line outside the Moonta Mines State Heritage Area was removed. In 1997, the Station re-opened as the Moonta Station Visitor Information Centre. The toilet block was partly refitted to include a women’s portion and access toilet. Original corrugated iron partitions survive in the men’s portion. There is also an adjacent Grain Stacks Area (the earliest photo of which is dated c.1910) and a crane which was used for unloading heavy goods and appears to have been used for grain handling. The signal box has been demolished.

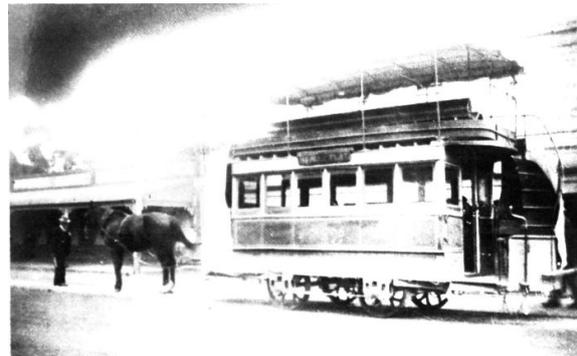
The area also includes a portion of the Tourist Railway line with the station being a point of interest on the tour. The tourist line crosses over the main lines and its alignment has no relationship to any of the original lines.



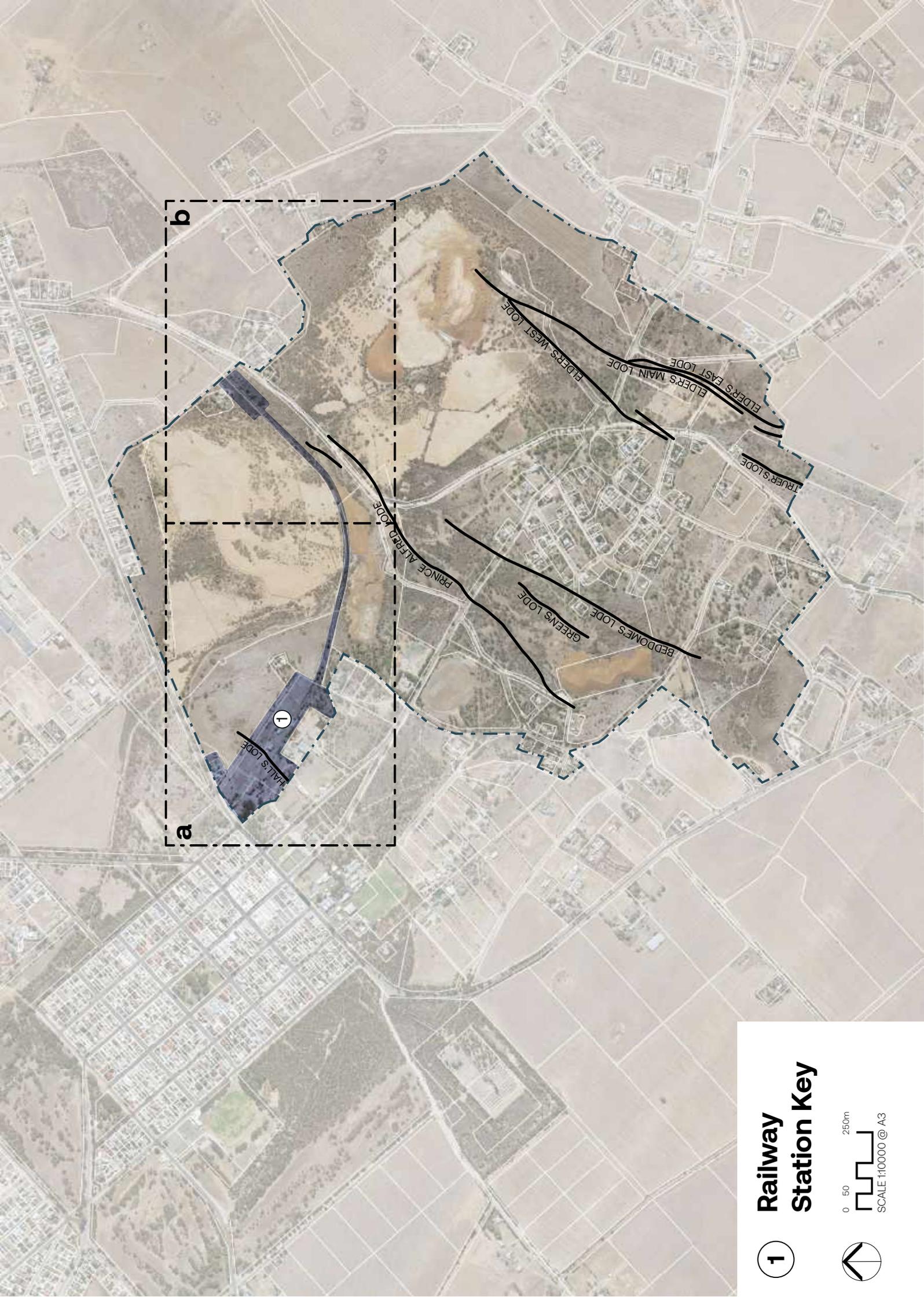
Moonta Railway Station, c.1910.
Source: SLSA B 12652.



“Locomotive at the mines at Moonta”, c.1910. Source: SLSA B 36081.



“A horse tram bound for Hamley Flat outside the Moonta Hotel at the George Street, Blanche Terrace intersection, circa 1925”. Source: The National Trust of South Australia, Moonta Branch cited in “The Horse Tramways of the Moonta District”, Trolleywire: Journal of Australian Tramway Museums, October 1980, p14.



b

a

1

HALT'S LODGE

PRINCE ALFRED LODGE

GREEN'S LODGE

BEDDOMES LODGE

TRUER'S LODGE

ELDER'S WEST LODGE

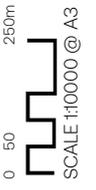
ELDER'S MAIN LODGE

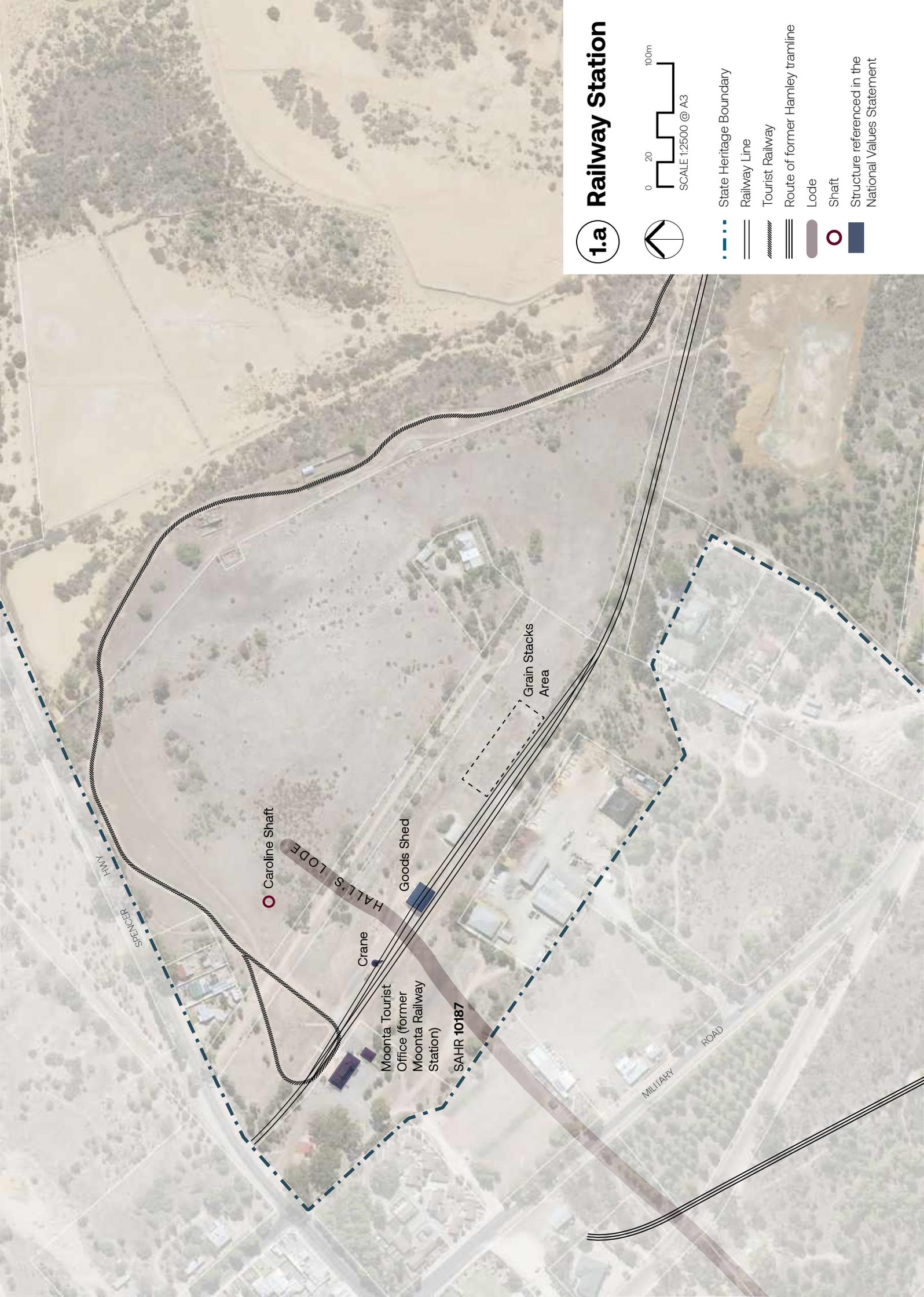
ELDER'S EAST LODGE

ELDER'S LODGE

Railway Station Key

1





1.a

Railway Station



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Railway Line
-  Tourist Railway
-  Route of former Hamley tramline
-  Lode
-  Shaft
-  Structure referenced in the National Values Statement

Caroline Shaft

HALL'S LODGE

Goods Shed

Crane

Moonta Tourist Office (former Moonta Railway Station)

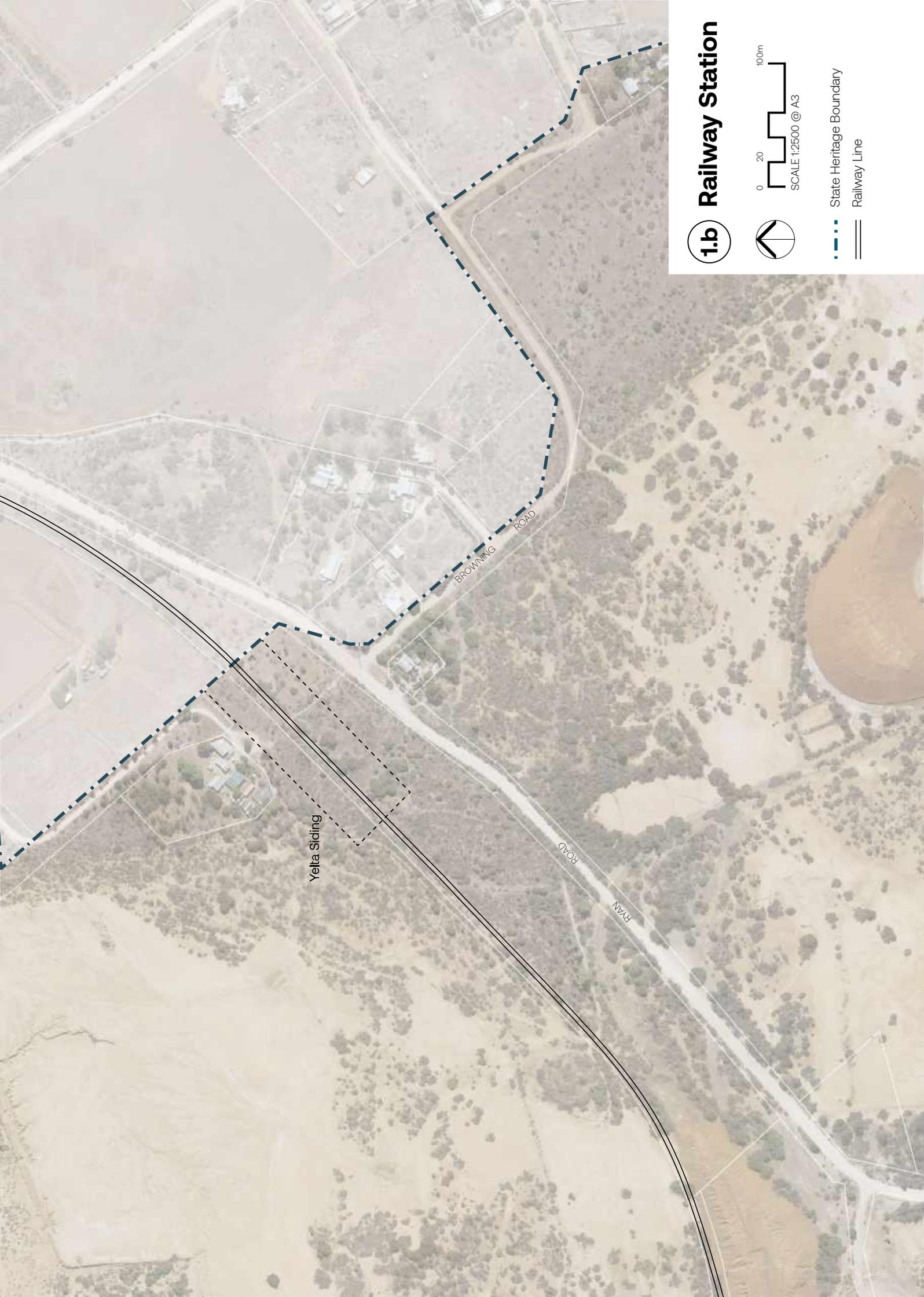
SAHR 10187

Grain Stacks Area

SPENCER HWY

MILITARY ROAD

MILITARY ROAD



1.b

Railway Station



0 20 100m
SCALE 1:2500 @ A3

- State Heritage Boundary
- Railway Line

Yelta Siding

BROWNING ROAD

RYAN ROAD

Fabric Description

The Railway Station consists of the c.1910 Federation Arts and Crafts style station building, including the nearby toilet block; the c.1878 goods shed; and rail lines, including about 1.5km of the main Moonta-Wallaroo line and spur lines in front of the station for shunting and servicing trains.

The station building is constructed of limestone with red brick quoins and detailing and is notable for the large arched head windows which are repeated to both the platform and road frontages. It has a corrugated iron roof that incorporates louvred dutch gables with eaves supported on brackets. The surrounding verandah is supported on flying iron brackets. Chimneys are ornately detailed and constructed of red brick.

The goods shed is a timber framed and corrugated iron clad barrel vaulted structure built on top of a siding constructed of hardwood sleepers reinforced by rail lines driven into the ground. It was a common form of railway goods shed built in the 1860s-1880s in the expansion of the railways to regional South Australia with its form modelled on older stone goods sheds. Similar sheds are at Quorn and Balaklava. There is a hand operated goods crane nearby.

The rail lines extend from in front of the station building through to the Moonta to Kadina Road, passing by the goods shed. About 1.5km is inside the ACMS (Moonta) area, and a further 700m reaches beyond.



c.1908 Station



c.1908 Toilet Block



Crane, Goods Shed, main line to the right of the photograph, and two service lines



Rail lines adjacent Ryans Heap

Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Historic layout of the Station and visual relationship to mining activity	not reported on	not reported on	–	Good – No new structures have been introduced to the site. A risk that further regrowth of native vegetation over the rail lines will obscure the rail corridor. In places further away from the station the line has become impassable
Station Building fabric, inc. Toilet Block	Fair	High	Good – The station building has an active use and is well maintained. Rising damp and salt attack to select areas Brick arches appear to have been repointed using grey cement Station sign frame in poor condition	High – Downpipes to verandah replaced with PVC both sides Refit of toilet block has reduced integrity but is an appropriate re-use.
Crane & Goods Shed fabric	not reported on	not reported on	Fair – The shed is used by the National Trust as a workshop and storage. Surface rust to walling in select areas to Goods Shed Timber louvres to Goods Shed in poor condition. Timber rot to base and steps to crane and surface rust Termite attack is a significant risk as has been observed at similar goods sheds in other locations in South Australia	High – Some replacement of walling and external timbers in like for like materials. Unpainted PVC downpipes detract from character. Siding appears reconstructed.
Rail lines	Good	High	Good –	High – At risk of regrowth of native vegetation. Some sections are impassable

4.3.2 Precipitation Works

Background

Ruins of precipitation works

In 1900, the Moonta Mining Company contracted a Spanish mining engineer, Senor Antonio Delgado, from the Rio Tinto mine in Spain, for two years to “establish a leach-precipitation process to extract copper from the tailings [at Moonta]. This process was called cementation”.³¹⁹ This was highly desirable given that by the late 1890s, “tailings from Moonta’s three ore concentrating plants (Richmans, Ryans and Hancocks) formed four large heaps containing 1.5 million tonnes of coarse residue assaying about 0.9% copper. In addition, slimes areas contained 330 000 tonnes of fine residue assaying 3.5% copper”.³²⁰ Tailings and slimes were the two waste products from the ore concentrating process. In 1901, the Precipitation Works was established to extract copper from the tailing heaps, and in 1903 the “plant came into full production”.³²¹ The terms precipitation, leaching and cementation were often interchanged.

Tailings Heaps

To extract copper from the tailings heaps, a “solution of saltwater and sulphuric acid [was pumped] over the tailings heaps”.³²² This solution percolated through the tailings heaps. “Stone walls and gutters were built round the heaps, the tops were levelled and set out in four metre square shallow dams, and terraced to control the gravity feed of solution. These heaps ... survive today as significant heritage landforms”.³²³ The copper in solution flowed into open ditches and could then begin the cementation process.

Slimes

Delgado “had no experience in leaching slimes but he hoped to improvise a method for their successful treatment, which added considerably to the cementation resources”.³²⁴ During ore concentration a “large volume of very fine powder was produced ... this waste material was called slimes”.³²⁵ It was carried from the concentrating plant in suspension in water and directed via wooden launders which “poured into vast pans or “dams” where it dried forming an impervious, clay-like surface. Slimes dams covered over twenty-four hectares of Moonta Mines in 1923”.³²⁶ The cementation treatment was used to recover the copper in the slimes. The slimes dams were ploughed to hasten oxidation, then “surface material was collected by horse-drawn scoops and transferred to rail hoppers for conveyance to a mixing plant. The material was slurried with acidic sea-water then settled out through labyrinth tanks and ponds, so that the copper liquor”³²⁷ could begin the cementation process.

Cementation Process

Once the copper was in solution from both the tailings heaps and slimes settling dams, the Cementation process began. The copper in solution entered the Clarifying Tanks, then the Precipitation Tanks and Open Canal where scrap iron, including some redundant mine machinery, was eroded and precipitated copper, the spent liquor was collected in the Settling Tanks, treated and re-entered the system. The precipitated copper sludge was then physically removed from the tanks and channels. It was washed and dried and filled in jute bags and transported by rail to the Wallaroo smelter for “conversion to copper”.³²⁸

The process required a large volume of sea water and a 12-inch cast iron pipe which was wood-lined to prevent corrosion was constructed from Rossiter’s Point to Ryans Pumping Station at the Cementation Works. The stone tanks were also wood lined for the same reason and their construction was “quite unique in that no nails, screws or bolts were used to secure the wood to the inside of the tanks, the wooden planks were joined with wood dowels and then sealed with black pitch”.³²⁹

Approximately, “13 000 tonnes of copper were recovered from tailings and slimes between 1901 and 1923”.³³⁰ In 1943, former Mine Captain Oswald Pryor stated that the “precipitating plant was probably a copy of one in Spain, but it is unique in Australia, and many mining and metallurgical heads came here to inspect it”.³³¹ After the mine closed in 1923, the Moonta Copper Recovery Company continued to operate the cementation process until 1944. Flotation eventually superseded the cementation process. The “remains of the channels, cementation tanks, wash and dry house and pumping station can be viewed from the tourist railway which departs from the Moonta Mines Museum”.³³²



“Slimes were carried off in water which was poured into dams ... This photograph shows slimes discharge from Richman’s plant c.1900”. Source: “Slimes”, Moonta on site heritage signage.



Ryans Tailings Heap, c.1904. Source: SLSA B32480



Richmans Tailings Heap, c.1914. Source: SLSA B12758



"Precipitating Tanks and Canals at the Cementation works at Moonta Mines", c.1902. Source: SLSA B 12756.



"Looking north-west over the Government Railway from the top of Ryan's no. 4 tailings heap. On the left is the cementation, precipitating and pumping plant", c.1911. Source: SLSA B 5905/1.



"Canals, showing method of cleaning out precipitate at the Cementation works at Moonta Mines", 1910. Source: SLSA B 12761.



"Circulating Pumps for Cementation works at Moonta Mines", 1902. These pumps were used to circulate the leaching liquors over the tailings and slimes. Source: SLSA B 12755



"Precipitating Tanks, copper being removed from one of the tanks at the Cementation works at Moonta Mines", c.1910. Source: SLSA B 12762.



“Ploughing Slimes to aid oxidation”. Source: SLSA B 12759.



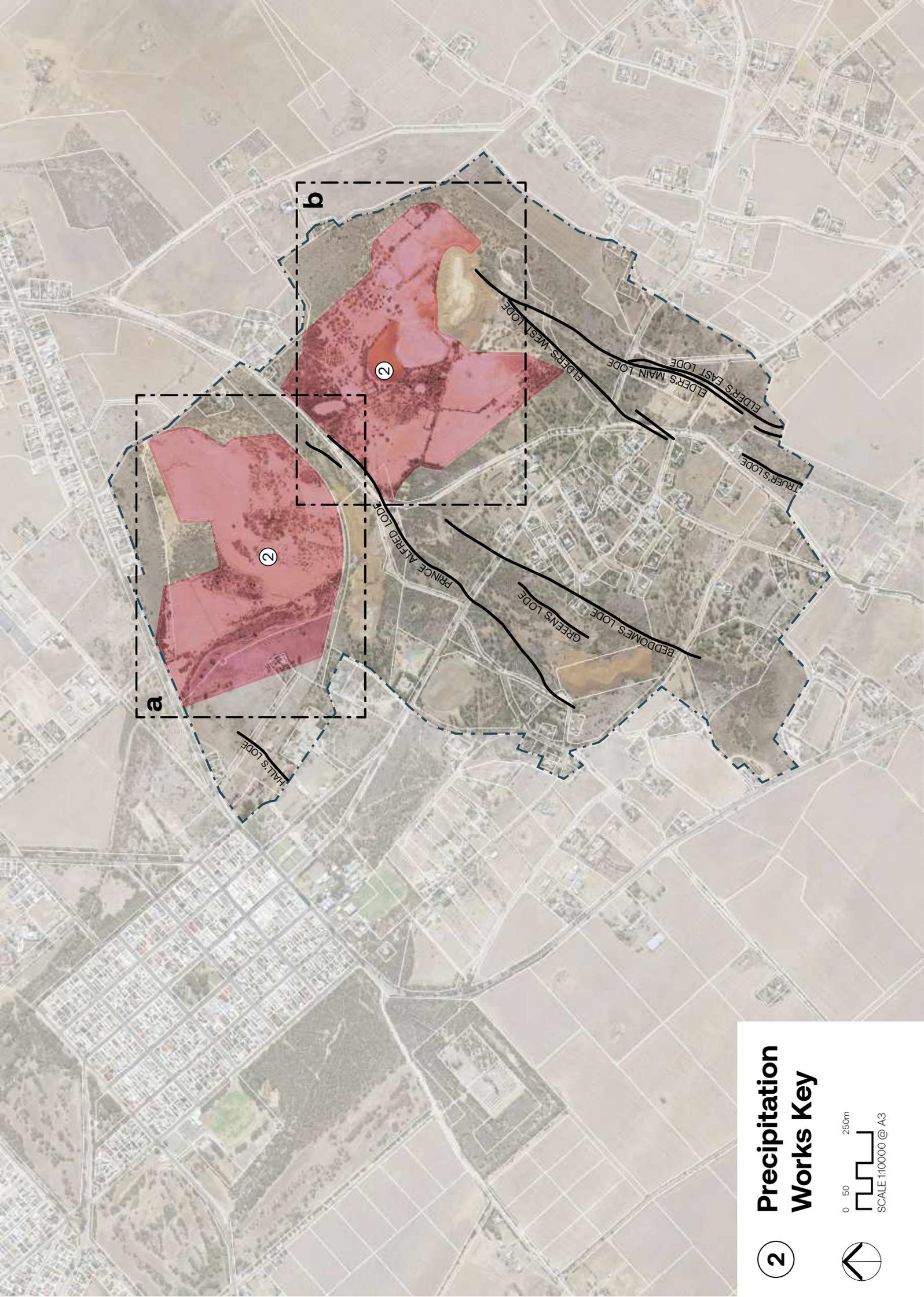
“Three large boilers on a platform and a chimney stack are seen in front of the pumping station. Railway tracks are in the foreground. [Caption on photograph] ‘Moonta Mines: Ryan’s Pumping Station 1901-06 / Built 1901 for pumping leaching liquors over old tailings dumps for the purpose of extracting copper by the cementation process / Capacity 35,000 gallons per hour (Oswald Pryor 12-2-52)’”, c.1901. Source: SLSA B 12609.

Fabric Description

The Precipitation Works is a landscape of ruined structures, constructed topographic features, and a network of channels and piping that stretch across the entire mining area. In all areas there is evidence of the precipitation process. However, the most understandable and largest remains of structures are concentrated in the area north of Ryans tailings heap where the copper conversion and recovery process were located. Evidence of the precipitation works at Hancocks and Ryans heaps is described in the Beddome’s Lode and Elder’s Main Lode sections.

The fabric in this area consists of the Pump House ruins, Washing and Drying House ruins, Sample and Tool House ruins, Precipitating Tanks ruins, slime ponds with surrounding earth dam walls, and the ruins of stone lined channels. Portions of the original rail line also survive. Corroded piles of scrap iron and the smashed remains of the hundreds of metres of terracotta pipes that conducted the liquors are strewn across the site.

Outside of this particular site there is also evidence of the process. Channels formed from fine tailings criss-cross the top of the tailings heaps and show how the acidified sea water was distributed. At the bottom of the heaps portions of stone lined channels that carried the precipitate back to the works survive. This is particularly evident at Hancocks tailings heap where the precipitate was collected in a stone lined tank to be pumped back.

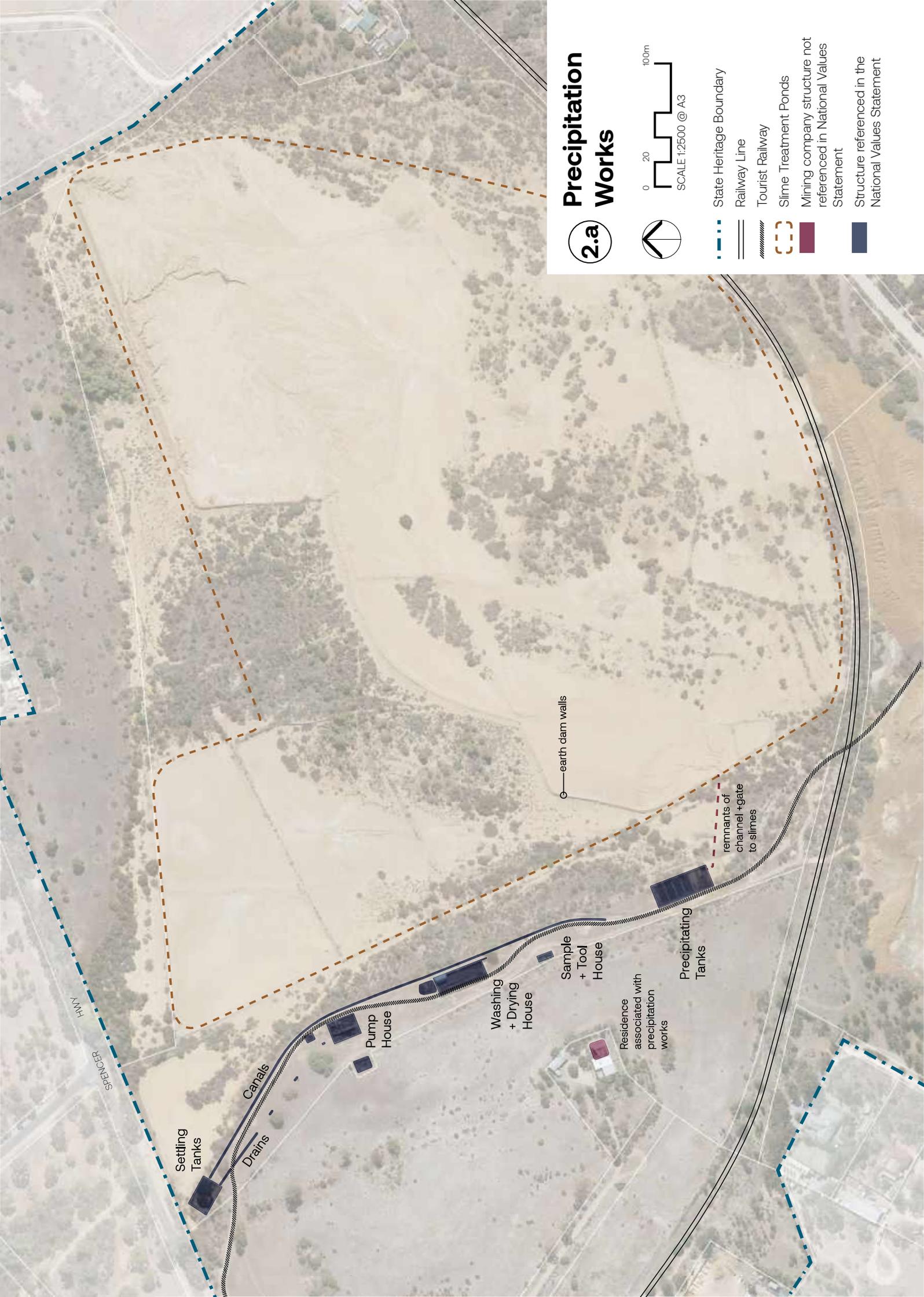


Precipitation Works Key

2

0 50 250m
SCALE 1:10000 @ A3





Precipitation Works

2.a



-  State Heritage Boundary
-  Railway Line
-  Tourist Railway
-  Slime Treatment Ponds
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement

SPENCER HWY

Settling Tanks

Drains

Canals

Pump House

Washing + Drying House

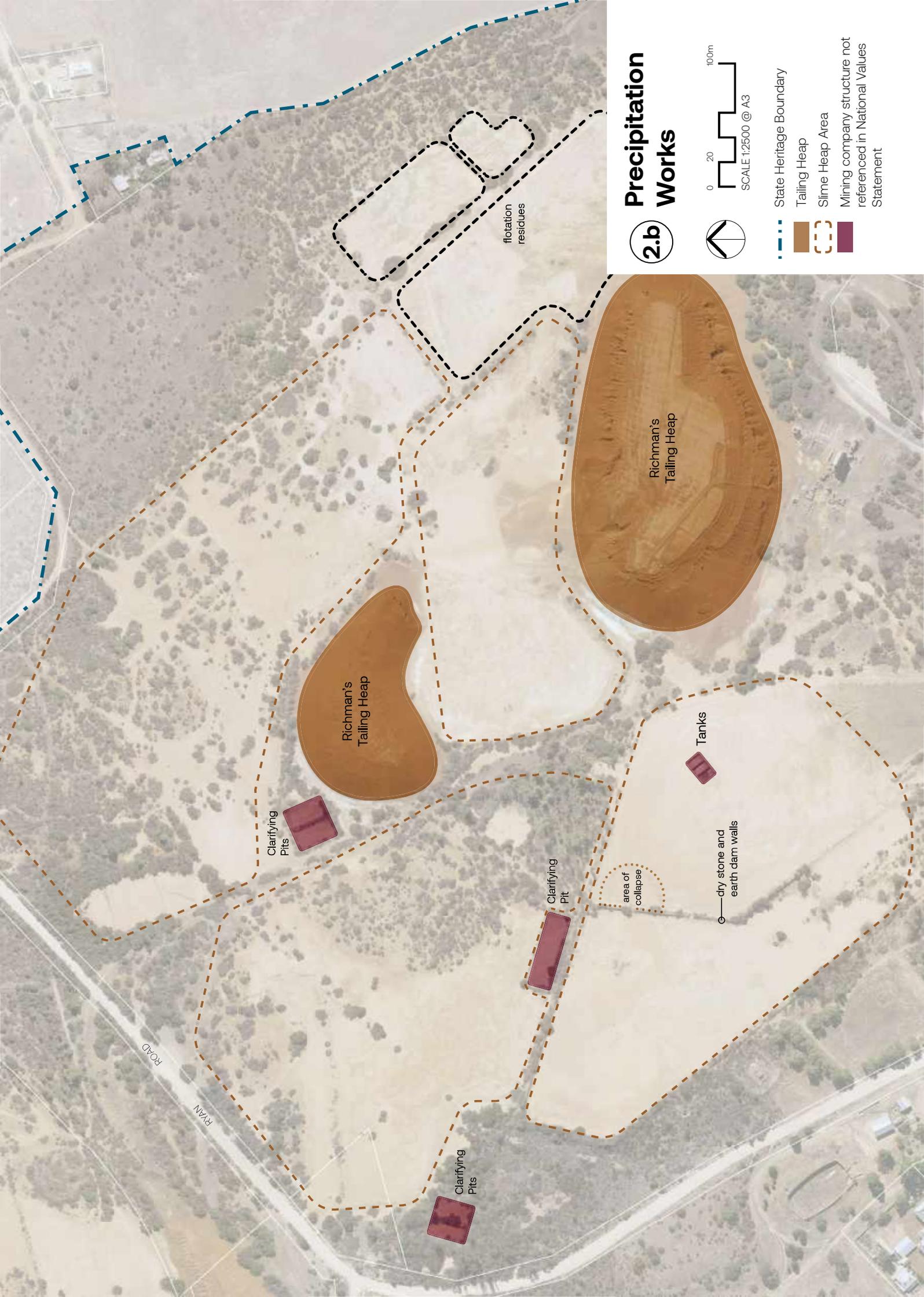
Sample + Tool House

Residence associated with precipitation works

Precipitating Tanks

earth dam walls

remnants of channel + gate to slimes



Precipitation Works

2.b



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Tailing Heap
-  Slime Heap Area
-  Mining company structure not referenced in National Values Statement

ROAD

RVAN

Richman's Tailing Heap

Richman's Tailing Heap

Clarifying Pits

Clarifying Pit

Clarifying Pits

Tanks

area of collapse

dry stone and earth dam walls

flotation residues

Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Historic layout of the Precipitation works and visual relationship to mining activity	- not reported on	- not reported on	Fair – Most features are extant, but at risk of further degradation and loss from further collapse, uncontrolled surface water erosion, weathering and vegetation regrowth. No conservation or maintenance is observable to the fabric.	Fair – No new structures have been introduced to the site. A risk that further collapse, loss of fabric and regrowth of native vegetation will degrade the understanding of the precipitation process.
Settling tanks fabric	Poor	Medium	Poor – Walls have further degraded and collapsed since 1985 Uncontrolled intrusive woody plant growth has destabilised walls	Low – Walls in places are barely discernible from the surrounding terrain. There is existing interpretive sign with the name and date of the structure nearby
Precipitation Tanks fabric	Fair	Medium	Fair – Approximately half of the stone walls are collapsed or buried. Stormwater wash from the slimes to the east is causing erosion and the deposit of sediment over the ruins. Timber tank linings generally in fair condition where they survive. At risk of further deterioration.	Medium – Combined, the original construction and former use surviving tanks is discernible. There is existing interpretive sign with the name and date of the structure nearby
Precipitation canals and earthenware pipes used for the precipitation of copper and to carry liquors	Poor	Low	Poor – Except for the channels that are adjacent the precipitation tanks, most of 1km of canals have collapsed or are filled with rubble. There are only scant remains scattered about of the earthenware pipes used to carry the liquors from the heaps.	Low – Not easily understood. There are vestiges of iron scrap and stone paving that mark the channel alignment
Tool and Sample House Ruins – storing materials and samples 1901-1923. From 1925-1943 Office for Copper Recovery Company	Poor	Low	Poor – Three standing walls in similar condition to 1985, but further degraded. No conservation works or ongoing maintenance is evident. At risk of further collapse.	Low – Former use is not conveyed by the fabric There is existing interpretive sign with the name and date of the structure nearby

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Washing and Drying House Ruins – used to wash and dry the copper precipitate from the tanks and canals	Good	Medium	Fair – Most sections of stone walling in good order. One wall leaning out. Red brick quoining severely eroded. Some masonry stabilisation work has occurred.	Medium – Most original fabric standing. Brickwork of the furnace and chimney is largely missing due to erosion. Site has good interpretation with wall mounted boards with text and graphics explaining the cementation process.
Ryans Pumping House Ruins – Enginehouse, boiler house, chimney, used to pump sea water to tailings heaps and slime ponds. Oil engine used from 1924	Poor	Medium	Poor – Standing masonry walls are in poor condition and further collapse has occurred since 1985. No stabilisation works have occurred. Brickwork to chimney bases is severely eroded. At risk of further collapse.	Medium – Enough fabric survives to understand the former layout and use. The stone base for the chimney is about 30% complete. Pre-1923 ruins are obscured by later concrete floors. There is existing interpretive sign with the name and date of the structure nearby
Seawater Reservoir – used to store saltwater pumped from Moonta Bay	Good	High	Good – The Reservoir stands almost intact with only minor breaches of the walls.	Medium – A lesser component in the operation of the works.
Slime Heaps – used as a deposit of reprocessed slimes.	Fair	High	Fair – Stormwater erosion has broken down pond dam walls, causing further damage through scouring at those locations. Deep gouges are visible from unauthorised vehicle traffic. The area is fenced but the fence has been taken down in places.	Medium – The slimes are shallow pans to promote the evaporation of water from the concentrating process. They cover several hectares with retaining walls, settlement tanks and slime pits. The areas were reworked for the cementation process from 1901. Little grows in the ponds and they remain significant visual elements in the landscape.



Ruins of precipitating channels at Ryans Heap



Channels formed on top of Hancocks Heap to distribute the acidified sea water.



Ruins of precipitation tanks. The stone walled tanks were timber lined



Detail of timber lining to tanks. Timber pegs were used in preference to iron as the copper bearing liquors quickly corroded the more reactive iron to precipitate copper



Ruins of sample and tool house



Ruins of Pumping Station



Ruins of washing and drying station. The sludge collected from the tanks and canals contained mud, rusted iron and precipitated copper which had to be washed and dried.



Ruins of precipitation settling tanks – the final stage of settlement of solids from liquor before it was recirculated.



Settling tanks associated with the Precipitation Works near to Richmans Tailings Heap No.1



Slime pond walls were constructed of either dry stacked attle stones or sand filled hessian sacks run through with timber stakes - outline of bags visible in this instance.

4.3.3 Beddome's (Prince Alfred) Lode, Greens Lode, and Fergussons Lode

Background

The Moonta mine “comprised more than ten individual lodes over a strike width of one mile, oriented north-south, and dipping westerly at 50° to 70° ... [The Moonta lodes] were exceptionally rich, yielding sulphide ore of 20 to 30% copper”.³³³ The main lodes, or orebodies, were focussed around two main areas: Beddomes Lode, Greens Lode, and Fergussons (or McDonnells) Lode to the west, and Elders Main (or Taylors) Lode, Elders West Lode, and Treuers Lode to the east. Each lode or orebody was worked as a series of individual mines. “The shafts, Enginehouses, processing areas, supporting functions and administrative facilities are all located in a pattern which is oriented to the underground lines of lode”.³³⁴ Places specifically referenced in the National Heritage Values which were established around Beddomes Lode, Greens Lode, and Fergussons (or McDonnells) Lode include: Ryans Shaft (1861); Ryans Tailings Heap (1864-1906); Hancocks Tailings Heap (1874-1900), and the Assayer's Residence and Office (1863).

Ryans shaft (1861) (Part of SAHR 13975)

In 1861, Ryans Shaft was commenced on Fergussons (McDonnells) Lode. This Lode was mined between 1861 and the 1890s.³³⁵ Ryans Shaft was located near the site where shepherd Patrick Ryan first discovered copper ore on 13 May 1861. The shaft was “sunk to a depth of only 35 metres as it was on the margin of the economic ore zone”.³³⁶ In 1864, Ryans Enginehouse was constructed north east of Ryans Shaft and in 1865 the first crusher and processing (dressing/concentration) plant was erected nearby. The engine was a 32-inch horizontal steam engine. Initially, the engine was used to power pumps in Dominicks Shaft and to power the concentrating plant. The “engine was also used for pumping from several shafts”.³³⁷ In 1871, new concentrating works were erected which included the renowned Hancock jig.³³⁸ The waste (tailings or skimps) from the concentrating plant were dumped on Ryans Tailings Heap. Ryans Enginehouse was demolished in 1906 when mining ceased in the area however there is still evidence of the rectangular slime pits near Ryans Shaft which were used to “precipitate fines from liquors”.³³⁹



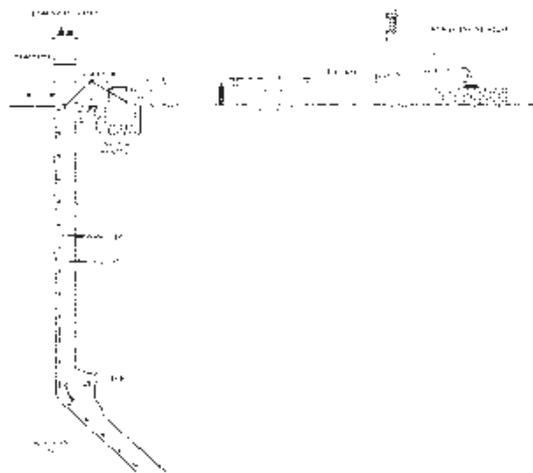
“Miners and boys at Ryan's Enginehouse, Moonta Mines”, c.1900. Source: SLSA B 30595.



“Northerly view of the workings near Ryans Shaft, 1865. At right is Ryans Enginehouse connected by a line of flat rods to Dominicks Shaft (left), the large head frame (shears) being used to lower long pump rods. In the foreground is Youngs Shaft and adjacent horse whim”. Source: “Ryans Walk”, Moonta on site heritage signage.

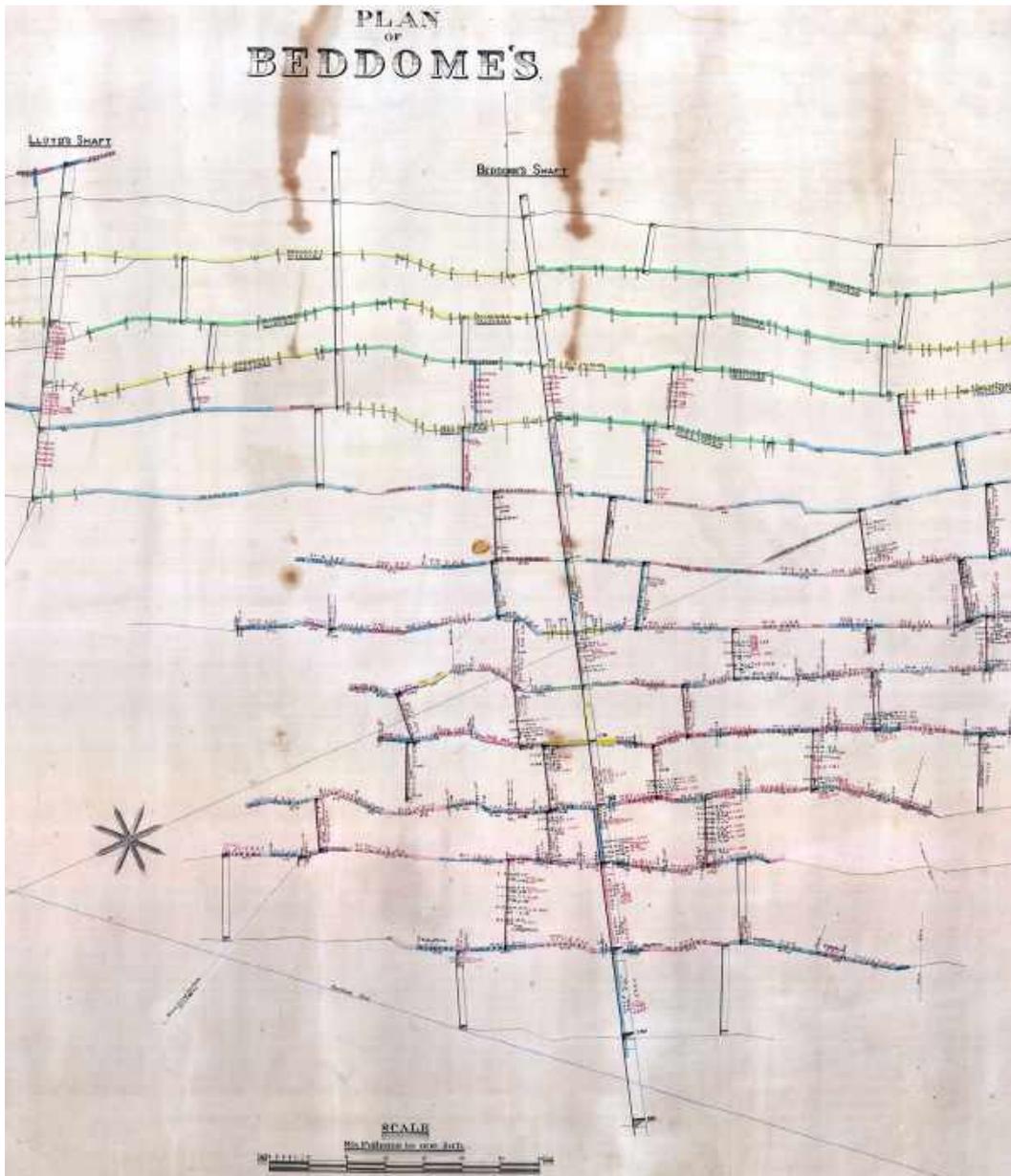


“Ryans Enginehouse and concentration plant, c.1880. Ryans Shaft is to the right of the photo. The buildings are from the left: Boilerhouse, enginehouse, crusherhouse and jiggerhouse. At right, above the ground, are flat rods which oscillated on rollers and operated pumps in Dominicks Shaft. In the foreground bagged concentrate is being loaded onto the horse-drawn mine railway system to be conveyed to the Wallaroo Smelting Works”, c.1880. Source: “Ryans Shaft and Enginehouse”, Moonta on site heritage signage.

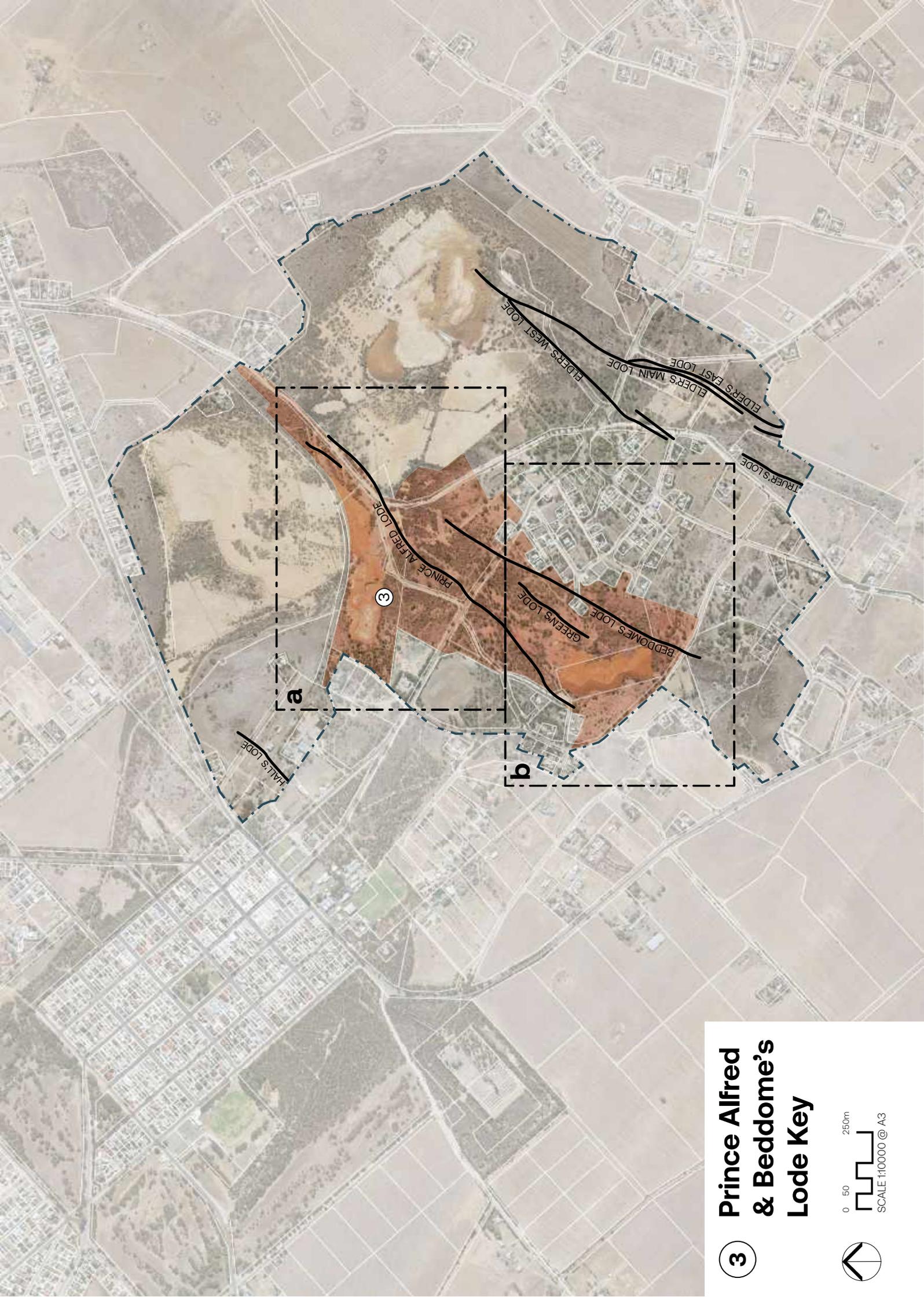


“This diagram shows how Ryans Engine worked pumps in Dominicks Shaft [constructed 1863] by means of a line of flat rods”. Source: “Dominicks Shaft” Moonta on site heritage signage.

**Swanbury
Penglase**



Beddomes Shaft Plan, c.1895

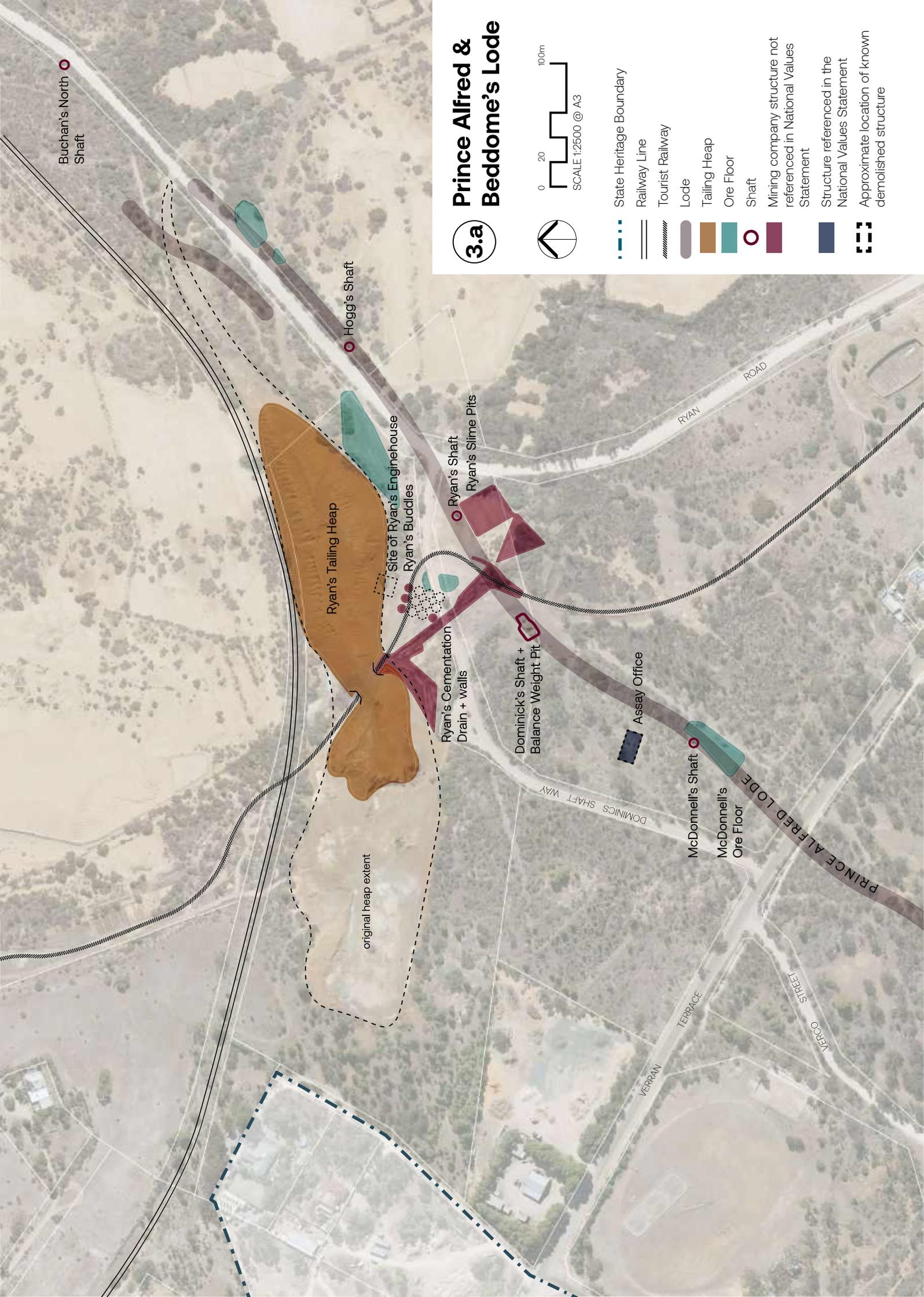


Prince Alfred & Beddome's Lode Key

3

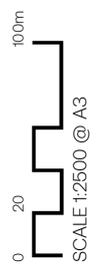
0 50 250m
SCALE 1:10000 @ A3





3.a

Prince Alfred & Beddome's Lode



- State Heritage Boundary
- Railway Line
- Tourist Railway
- Lode
- Tailing Heap
- Ore Floor
- Shaft
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure

Buchanan's North Shaft

Hogg's Shaft

Ryan's Tailing Heap

Site of Ryan's Enginehouse
Ryan's Buddles

Ryan's Shaft

Ryan's Slime Pits

Ryan's Cementation
Drain + walls

Dominick's Shaft +
Balance Weight Pit

Assay Office

McDonnell's Shaft

McDonnell's
Ore Floor

original heap extent

RYAN ROAD

DOMINICKS SHAFT WAY

VEPRAN TERRACE

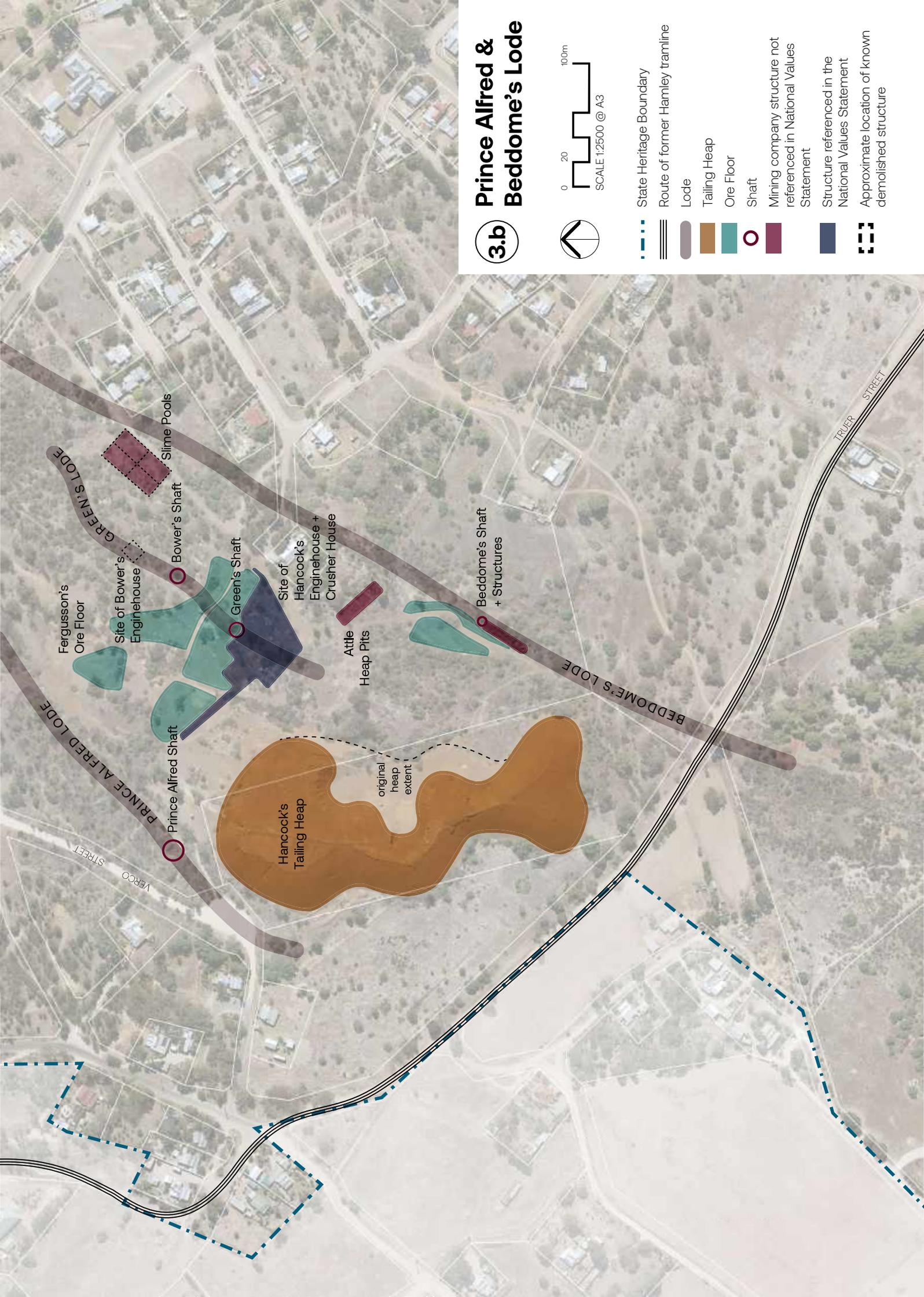
VECCO STREET

PRINCE ALFRED LODGE

3.b Prince Alfred & Beddome's Lode



- State Heritage Boundary
- Route of former Hamley tramline
- Lode
- Tailing Heap
- Ore Floor
- Shaft
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure



Ryans tailings heap (1864-1906) (Part of SAHR 13975)

From 1864 to 1906, the tailings (crushed waste rock or skimps)³⁴⁰ from Ryans processing (concentration) plant were transported on rail trucks and dumped on Ryans Tailings Heap. Similar tailings heaps were formed near Hancocks and Richmans concentrating plants. The combined tailings ultimately reached 1.5 million tonnes.³⁴¹ In 1901, the Moonta Mining Company established a “leach-precipitation process to extract the remaining 1% copper from the tailings. The surface of the dump was divided into irrigation furrows and leaching liquors – a mixture of sea water and a little sulphuric acid – were pumped to the top of the heap through a series of cast iron pipes lined with wood. The liquors were distributed over the heaps and percolated through the tailings into drains at the base, then flowed to a system of precipitation tanks and channels filled with scrap iron, which precipitated the copper”.³⁴² From c.1901 to 1943, leaching was carried out on the tailings to extract the last remaining copper. In c.1900, a stone tunnel was constructed to “enable two heaps to be joined as one and allow passage for trains and pipelines to the Precipitation Works on the other side. The tunnel was restored and a narrow gauge railway line reconstructed in 1985 to carry tourists to the Precipitation Works interpretive area”.³⁴³

After the closure of the mine, the skimps were quarried for various uses, including as road base but also by private individuals such as gravel in gardens etc. This was formalised in 1946 when the government proposed a 26 acre dedicated stone reserve be formed where Ryans heap is located controlled by the local Council. The result has been that the west end of the heap has been significantly altered in shape whilst the east end of the heap remains.



“Ryans heap and tunnel, c.1910. The stone-lined tunnel was built to allow passage of mine trains, pipelines and drains to the Precipitation Works. The mine train carried tailings for dumping. Note the seawater pipe in the left foreground”. Source: “Ryans Tailings Heap”, Moonta on site heritage signage.



Timbering visible above water level in Ryans Shaft



Ryans tailings heap viewed from the south side of the railway tunnel. Ryans shaft ore floor is in the foreground

Site of the assayer's residence (1863)

The Moonta Mining Company built several mine-related residences. In 1863, the single storey Assayer's Residence and attached two storey Assay Office was constructed near Fergussons Lode. "Captain H.R. Hancock was appointed as the first assayer in 1862 at a salary of £250 per year. He was replaced by Captain [John] Bennett in June 1863 when Hancock accepted the management of the nearby Yelta Mine, returning as general superintendent of the Moonta Mine in 1864".³⁴⁴ Joseph Jolly was another of the Mine's assayers.

The Assay Office was used to "carry out analysis of dressed ore from nearby ore floors. Assay of the ore was significant to both the company and the tributers (miners who excavated ore) – tributers received no wages, payment being based as in Cornwall upon assays of the amount of copper metal contained in the ore. Sampling and analysis were carried out by a qualified assayer employed by the company. Miners were often dissatisfied with assays of their ore – this led to a major industrial strike at the Burra Mine in 1848. Dressed (concentrated) ore from each party of tributers was placed in separate heaps on paved ore floors awaiting sampling. This was carried out at the end of each two month period or 'take'. A canvas bag was used to convey a representative sample to the assay office where it was dried, weighed and then assayed. The ore heap was then weighed, enabling the total value to be calculated. The miners were then paid a previously agreed percentage of this value".³⁴⁵ It appears that the residence did not remain at the site of the office, as the assayers residence was later identified as being on top of a sandhill of Verco Terrace northwest of Hancocks heap. The site of the original Assayer's Residence and Office (Part of SAHR 13975) was apparently demolished after the closure of the mine with only the base of the walls now visible above ground level.



"Moonta Mines Assay office and Residence", c.1900. Note – Two storey assay office is attached to single storey assayer's residence. A winding rope in the foreground operated a winding gear in McDonnells Shaft. Source: SLSA B 21313.

Hancocks tailings dump (including the tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks enginehouse and crusher house) (1874-1900)

Henry Richard Hancock sought to further increase the mine's capacity to crush and concentrate ore and in 1871 he purchased a second-hand Scottish 35-inch beam rotative engine for £748 from Melbourne. The engine arrived at the mine in May 1872. In December 1872, the construction of a new enginehouse was commenced by "Messrs Nettleton and Thorne under the supervision of Mr Maddern. The crusherhouse, Boilerhouse and stack were erected by the same builders".³⁴⁶ The "plans for the machinery were drawn by chief engineer May, but the machinery was not fitted until 1874, due to other more urgent engineering work on the mine".³⁴⁷

Hancocks Enginehouse, as it became known, was designed by chief Engineer Frederick May and constructed by Nettleton & Thorn.³⁴⁸ The ornamental character of the building compared to the other utilitarian buildings was largely due to the corrugated iron 'Mansard' roofs which were the idea of Captain Hancock, described as "ornate vaulted roof ... with a viewing platform which was floored with lead".³⁴⁹ The Boilerhouse was sited one side of the Enginehouse while the two storey Crusherhouse, with a similar vaulted roof, was located on the other side with an adjacent timber jiggerhouse. There was an inclined tramway to the Crusherhouse for the ore trucks.

In 1874, it was reported that the Enginehouse "is 40 feet long, 39 feet high, and 12 feet wide. The dimensions of the boiler-house are 44½ feet long, 18½ feet wide and 16½ feet high. The crusher-house is 33 feet long, 30½ feet high, and 19½ feet wide, whilst the jigger-house is 24 feet in length, 22 feet in width, and 20 feet in height. The last named building is of wood, the others are built of a durable, slightly brecciated sandstone, taken from the beach near Port Hughes. The boiler-house stands to the east of the engine-house, and on the opposite side are the crusher and jigger houses. At the north end of the boiler-house is the stack, which rises to the height of about 70 feet. In the construction of this stack a novelty was introduced in the shape of a massive iron top, weighing several tons, which was cast in sections at the mine foundry ... The engine-house consists of two storeys, the engine-room and the bob-room. They are well lighted, clean and airy; the walls neatly stuccoed and painted with an ornamental bordering of plaster at the top. The roof, which is of galvanised iron, rises a few feet in the form of a dome, above is a platform floored with lead, from whence a magnificent view is obtained of the surrounding country".³⁵⁰



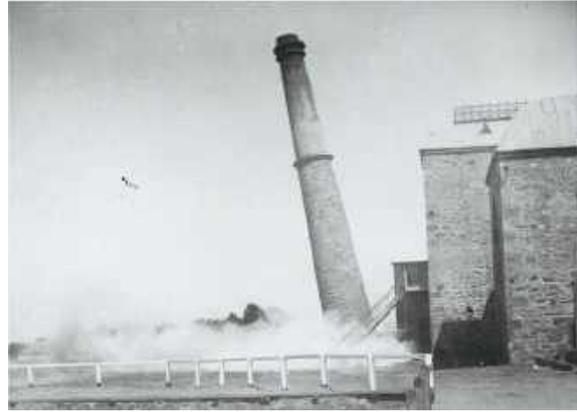
"Moonta Mines: Hancock's engine, crusher and jigger houses", c.1900. Source: SLSA B 34857.

The engine was also named Hancocks Engine after Captain Hancock and was commissioned in 1874. It powered crushing and concentrating plant. "Hancocks Engine powered, via lines of flat rods, pumps in Greens, Prince Alfred and Beddomes shafts and also a rock breaker, two sets of Cornish crushing rolls in the crusherhouse and jiggling machinery in the wooden jiggerhouse. It also hauled ore trucks up two inclined tramways from the north end of the crusherhouse. Horizontal tramways to the south moved ash from the boilers, and tailings from the jiggerhouse to respective heaps".³⁵¹ Once the surrounding lodes were exhausted the plant was dismantled. About 1905 pumping stopped and in 1906 Hancocks chimney was dramatically demolished. The demolition of the Enginehouse soon followed.

From 1874 to 1900, tailings from Hancocks processing plant were dumped at Hancocks Tailings Dump. The National Heritage Values references the remaining mining infrastructure in this area including "tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks enginehouse and crusher house".³⁵²



"Hancock's crushing and sorting plant at Moonta", c.1900. Note – Photo possibly inadvertently mirrored. Source: SLSA B 35676.



"Hancock's Enginehouse situated at Green's shaft, Moonta Mines" during demolition in 1906. Source: SLSA B 25648.



"Hancocks Tailings Heap ... showing how the acidified sea water was pumped to the top of a tailings heap for the leaching phase of the cementation or precipitation process". Source: "Hancocks tailings Heap", Moonta on site heritage signaga.

Fabric Description

Ryans shaft (1861) (Part of SAHR 13975)

The fabric in the area around Ryan's Shaft consists of the ruins of Ryan's shaft, Dominick's shaft, including its balance weight pit, McDonnell's shaft, cementation drains, slime pits and various ore floors developed alongside the ore hauling shafts. The site of Ryans Enginehouse is known to exist in the area but is understood to be under Ryan's tailings heap.

Further to the north, along Beddome's load are two further shafts: Hogg's shaft, and Buchan's North shaft, and their associated ore floors. Hoggs shaft is fenced and marked. Buchan's North shaft is not marked or fenced.

Ryans tailings heap (1864-1906) (Part of SAHR 13975)

Ryans Heap consists of a large tailings heap about 300m long in the east west orientation, and about 80m wide at its widest point. About 40% of the original extent of the heap has been removed. There is a stone-lined tunnel which was originally built to allow passage of mine trains, pipelines and drains to the Precipitation Works. The roof of the tunnel is constructed of closely spaced rail lines supported by steel I beam bearers set on top of the stone walls. The precipitation tunnels survive and are open at both ends.



Ryans tailings heap viewed from the north side of railway tunnel with lower stone retaining walls.



View towards the north from the northern end of Ryans tailings heap. Stone walled channels associated with the Precipitation Works are to the right of the image. Richmans tailings heaps are visible in the distance



Eastern end of Ryans tailings heap where quarrying has occurred.



Very few above ground features are remaining at the site of the Assay Office of what was a substantial building



Ruins of Dominicks Shaft and Bob Balance



Detail of Dominicks Shaft Bob Balance Pit showing advanced weathering to timber



Ore floor at McDonnell's shaft. A central depression is a common element of the ore floors



The collapsed remains of McDonnell's Shaft



Ore floor off Ryans Rd, associated with Hogg's shaft



Rubbish dumped in Buchanan's Shaft, unfenced adjacent Ryans Rd

Site of the assayer's residence (1863)

There is little remaining fabric at the site of the Assay Office. The site can be determined only by the remains of a few lines of footings and solid floors.

Other Associates Structures

Most of the fabric associated with the industrial structures at the southern end of Bedomme's Lode has been demolished and little remains above ground to demonstrate the scale of the mining operations. The most impressive structure is Hancocks tailings heap. It is about 300m long in the north south direction, and about 100m wide in the east west direction, and about 20m high. Extensive quarrying of the skimps has occurred to the east side of the heap after the mine closed.

Of the major ore hauling shafts in the area, only the Prince Alfred shaft remains open. Bower's shaft, Green's shaft, and Beddome's shaft are all collapsed. Ruins of former structures in the area include the ruins of Hancock's Enginehouse, including various stone retaining walls, the ruins of Bedomme's Enginehouse, attle heaps, the outline of slime pools, and wire rope remnants, several extensive ore floors survive.. Vegetation has grown over most sites and confuses any former visual relationship of the mine layout. Nearby Bedomme's is a structure for which the former use is unclear, and requires further investigation.



Collapsed remains of Prince Alfred Shaft. The 'Assayer's Residence' is in the background



Hancock's Heap from the north-east. at the trail head to access the top of the heap



Hancock's Heap from the north. A stone walled tank to collect the copper bearing liquors for precipitation is in the foreground



Unfenced trial shaft to the south of Prince Alfred shaft



Looking north from the southern end of Hancock's heap. Portions of the heap appear to have been mined



Extensive ore floors near to Hancock's Heap. The ruins of Hancock's Engine House are in the background



Foundations of Hancock's Engine House and Crusher House



Ruins of Bedomme's Winding House



Ore floors near to Bedomme's Shaft and Engine House. Hancock's Heap is in the background



Ruins at Bedomme's Shaft

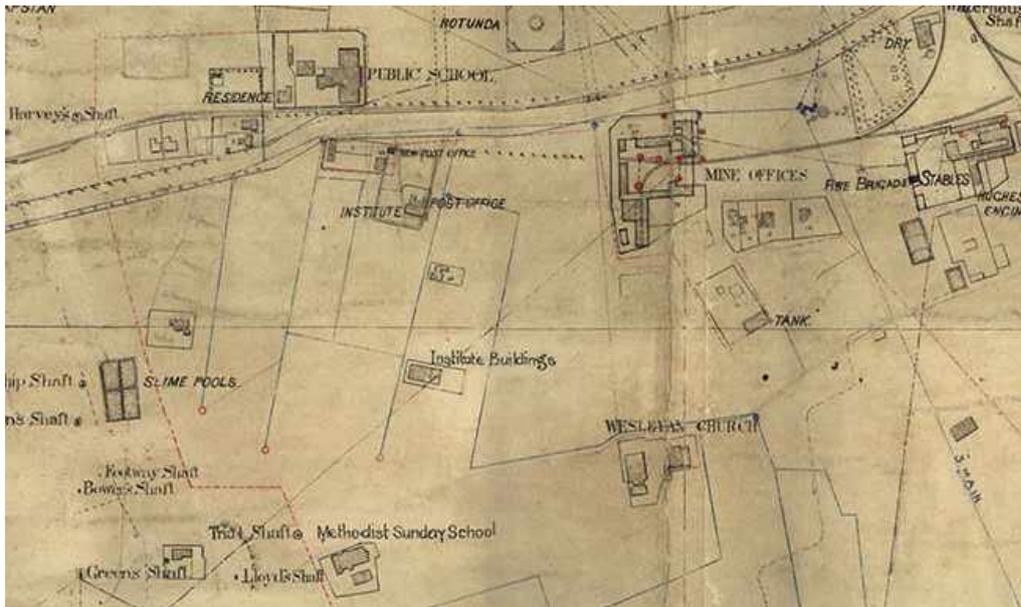
Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Ryans shaft (1861) (Part of SAHR 13975)				
Ryans Shaft – used for raising ore to the surface	Fair	Medium	Fair – The shaft is open, but sides are self-retaining. At risk of collapse from erosion.	Medium – The shaft is fenced and open. Timbering is visible at about 4m below the surface, just above the water line. A marble tablet mounted on a concrete monument is nearby
Dominick's Shaft – used for raising ore to the surface and pumping, includes balance bob pit and nearby attle heap	Poor	Medium	Poor – Advanced weathering to timber supports to balance bob Masonry is in poor condition and deteriorating from erosion and weathering – at risk of further collapse and loss. Shaft noted as blocked with rubbish in 1985. Rubbish is still visible although the area has since been fenced.	Medium – Stonework at the top of the shaft is partially complete. Risk of further loss from erosion and weathering leading to further collapse. The balance bob pit is a unique feature that does not occur elsewhere in the ACMS-MOONTA
McDonnell's Shaft – used for raising ore to the surface, includes ore floor and attle heaps	Poor	Low	Poor – Other than a depression, there is no extant fabric of the former shaft Fair – Ore floor is in fair condition, but regenerating scrub is destabilising the stones	Low – Shaft is closed by collapse. Good – The ore floor is extensive and one of the best examples of their construction method with a distinct drainage channel
Ryans Tailings Heap (1864-1906)(Part of SAHR 13975)				
Ryans Heap – fine material from concentrating process and later precipitation process, inc. tunnels	Fair	Medium	Fair – Materials has been mined from the heaps for road dressing Much of the stone walls which once surrounded the heaps have also been taken. Extant stone walls best represented around tunnel entries and include the liquor collecting sumps. The tunnel walls are generally in good condition. Greatest threats are further loss from erosion, exacerbated by uncontrolled pedestrian traffic	Medium – Integrity has been degraded by a loss of material to repurposing and erosion.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Site of the assayer's residence (1863)				
Site of Assay Office and Residence – used for analysis and assay of samples from the mine	Poor	Low	Poor – Few surviving masonry elements in poor condition.	Low – The site can only be determined by the remains of some wall footings and floors. The 1985 survey reported assay pots on the ground with clinker from assay furnace. These artefacts are no longer visible. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Hancocks tailings dump (including the tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks enginehouse and crusher house)(1874-1900)				
Green's Shaft – used for raising ore to the surface c.1870-c.1905, including adjacent ore floors and retaining walls	Poor	Low	Poor – A shallow depression marks the shaft location. It is overgrown with trees and scrub. A large sorting floor is adjacent in fair condition. Area is characterised by several stone retaining walls to about 3m high. The walls are in poor condition and at risk of collapse from erosion and loss of mortar.	Medium – The ore sorting floors indicate the extent of activities. Most associated building elements have been lost and their layout is not evident. Limited interpretation signage which does little to explain the importance of the mining activities in this area.
c.1870 Bower's Shaft – used for raising ore to the surface c.1870-c.1905, including adjacent ore floors & enginehouse	Poor	Low	Poor – A shallow depression marks the shaft location surrounded by a wide spread of attle.	Low – Assists in defining the extent of mining activity in the area The outline of Bower's enginehouse reported in 1985 barely visible due to extensive vegetation regrowth. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Ruins of c.1872 Hancock's Enginehouse – Used for crushing and jigging ore and concentration	Poor	Low	Poor – Portions of building outline barely discernible on the ground. Evidence of chimney base and flue lines. Large lime concrete foundation and many bolts 30 to 60mm standing from bases for engine, crusher and other equipment. Overgrown by vegetation regrowth.	Low – Majority of built elements lost in demolition phase. Large 30–60mm hold down bolts protruding from heavy footings surrounded by attle mark the site. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Tanks near Hancock's Enginehouse	Fair	High	Good – Condition good except for minor breaches in walls and revegetation	Medium – Three tanks, each about 15mx10mx2m high in good condition but use and association is unclear
Lloyds shaft – about 100m west of the site of the Methodist Sunday School	Poor	Medium	Not found	Not found
c.1870 Bedomme's Enginehouse ruins	Poor	Low	Poor – Portions of building outline barely discernible on the ground. Large lime concrete and attle foundation and bolts 30 to 60mm standing from bases for engine. Overgrown and at risk of collapse from erosion and weathering	Low – Majority of built elements lost in demolition phase. Large 30–60mm hold down bolts protruding from heavy footings surrounded by attle mark the site. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Bedomme's Shaft	Poor	Medium	Poor – Only a depression remaining with walls falling into the shaft	Low – completely collapsed and filled with attle
Ruins near Bedomme's Shaft – use unknown	Poor	Medium	Fair – Ruined walls to 2m high, some of which have collapsed into the shaft. A large ore floor is adjacent	Low – Reported in 1985 to possibly be part of centrifugal separator, the exact use is unknown and requires more research. The structure does not appear on the 1897 or 1913 maps.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Hancock's Heap – fine material from concentrating process and later precipitation process	Fair	Medium	<p>Fair –</p> <p>Materials have been quarried from the east side of the heap for road dressing</p> <p>Much of the stone walls which once surrounded the east side of the heap have also been removed but these remain on the west side along with pits associated with leaching process.</p> <p>Greatest threats are further loss from erosion, exacerbated by uncontrolled pedestrian traffic</p>	<p>Medium –</p> <p>Major visual feature of the area.</p> <p>Integrity has been degraded by a loss of material to repurposing and erosion.</p> <p>Outline of pit to collect liquors is extant</p>



Plan showing the Wesleyan Church, Methodist Sunday School (Former Primitive Methodist Chapel), and Institute Buildings (Former Bible Christian Chapel), 1897. Source: SLA Drawing N1900.

4.3.4 Moonta Mines Settlement

Background

The 1860s-1870s were a busy time when the Moonta Mines settlement rapidly developed. It was a time when Methodism made its mark on the Yorke Peninsula. Following the commencement of mining, the Methodist chapels were some of the first buildings to be constructed in the centre of the settlement. These initial timber buildings were soon replaced with larger and more impressive stone buildings. The three main chapels were the Wesleyan Chapel (1865), the Primitive Methodist Chapel (1866), and the Bible Christian Chapel (c.1865). By 1875, there were fourteen Methodist chapels in the Moonta area and twenty-four in the wider district.³⁵³ The settlement reportedly included housing for up to 6,000 people. Dwellings included those such as the Miner's Cottage (c.1870). Although the total number cottages was never calculated, in 1899 it was reported by connection to water services that the number was around 700.

Following a visit to the mines in 1899, a newspaper reporter described the settlement in the following way,

From the bob platform at Pranker's enginehouse, which is near the centre of the mines, close by the school, a very comprehensive view can be obtained, and among the smaller houses of the miners can be distinguished 16 churches and one building which has been a church. All of them are large and comfortable buildings, the Wesleyans, Primitives, and Bible Christians being the only denominations represented on the mines with the exception of the Salvation Army. Pranker's is the centre of a circle having a radius of two miles, which practically takes in all the congeries of settlements. Northward are to be seen the large stacks of Yelta, then come Ballarat Row, East Moonta, Moonta Mines, Hamley, Moonta town across the plain, the Cross Roads near the Yelta railway-station, and then Yelta again.

No order has been observed by the miners in the building of their cottages, and except that they are numbered as belonging to the Beetaloo water district, the highest number being 700, there is no means of identifying them. The flat-topped tailings heaps are the highest elevation. Generally, the cottages consist of four rooms, with double gable ends, and a verandah, the door being in the middle of the front, with a window on each side. Sometimes there is but one gable, the back part being a lean-to. The walk from the Hamley tram terminus to the Moonta mines office is through streets formed by the tree-trunk fences of the bewildering confusion of cottages. There is no attempt at a rectangular survey, but the tracks wind in and out through the dust in a most perplexing fashion. Each cottage is detached, and cosily enclosed, and though there is no pretence outside, all are comfortable within. Mr. R. Hooper's residence, near the Hamley tram, is protected by a neat verandah, over which blossoming convolvulus is climbing. The big, broad, brown stone bulk of the Wesleyan Church forms a prominent landmark, the original chapel of weatherboards and shingle, which once stood near the State school site, having been removed to a site behind the newer edifice.³⁵⁴

As mentioned earlier, in 1985 a complete survey of all cottages across the ACMS-Moonta. This included the outlying cottages at Yelta, Hamley on Lancelot Road and East Moonta on Barkla Street, as well as the Railway Cottages facing the Moonta to Kadina Road. Within the Moonta Mines settlement, the survey assessed and reported on about fifty cottages. The majority were found in fair to good condition and medium to high integrity.

Moonta Mines Methodist Church (Former Wesleyan Chapel)(1865)
(SAHR 10114)

In March 1863, shortly after mining commenced, a timber Wesleyan Chapel was built at Moonta Mines. However, not long after there were plans for a more permanent stone chapel. On 7 August 1865, the foundation stone was laid by Captain Hancock, a devout Wesleyan, at the new stone Wesleyan Chapel (SAHR 10114) at Moonta Mines. Hancock was also a preacher at the Chapel. "Hancock's reputation as a preacher on northern Yorke Peninsula was almost as formidable as it was as a mine captain".³⁵⁵ Approximately 1,000 to 1,200 people attended the foundation stone ceremony. It was reported that "[w]e believe it will be the largest chapel out of Adelaide, it being estimated to hold 750 persons. Mr F. May is the architect, and Mr. S. Rossitor the builder. It will be completed in the early part of November".³⁵⁶

The new Wesleyan Chapel at Moonta Mines was opened on 26 November 1865. "In the leased mining areas at Moonta the ... [Wesleyan Chapel] was the focus of the settlement".³⁵⁷ It "formed an integral part of the Cornish lifestyle".³⁵⁸ The cost of the new chapel was £1395. "The design is gothic, its dimensions are 75 by 45 feet in the clear. Externally it has no architectural embellishments but has a very neat and pleasing appearance. The fittings, plans of which were furnished by Mr P. Kneale, of Thebarton, are of an exceedingly chaste character. The whole is of cedar, the end of seats have Gothic heads, and the backs, which are panelled, have a sufficient incline so as to make them extremely easy to sit in. The platform and communion, which are not yet finished, will be a most handsome piece of work. The newells [sic] and balusters of communion will be turned, and a Gothic frieze run through them. The front of the reading desk on platform will have three Gothic pannels [sic], scotia moulded, with half balusters plaited, on the framing of pannels [sic]. Newells [sic] and balusters of the same design as communion will continue round the platform. Above the railing there will be a carved moulding six inches deep, of the same width as panels. The platform will be lined with rich crimson damask".³⁵⁹

In 1872, due to increasing numbers in the congregation, it was agreed that the Chapel should be altered to provide further accommodation. It was decided that a gallery should be added, and the existing Chapel floor should be lowered to accommodate this, and a recess at the end of the Chapel behind the pulpit should be designed to accommodate the large choir. The alterations were undertaken by contractors Messrs Hague and Lake. The plans were drawn by Mr F. May. Around 1,100 people could be accommodated, although some reports claim 1,250 people could be seated. The cost of the alterations was £1,100. The Chapel was re-opened on Sunday 23 December 1872.³⁶⁰ In the same year, two Sunday School halls were added which accommodated 120 officers and 649 students.³⁶¹ In 1876 the building was further renovated, including the revarnish of the internal woodwork, the exterior repointed and a bell turret erected to the roof, while the front was distinguished by the addition of an ornamental cast iron fence and gates.³⁶² In 1888, a pipe organ was bought with funds donated by Hancock.³⁶³ The church was "renovated throughout" in 1897.³⁶⁴

In 1900, the Wesleyans, the Bible Christians and the Primitive Methodists, joined to form the Methodist Union. The Wesleyan chapel became known as the Moonta Mines Methodist Church. After the mine closed in 1923, numbers declined and in 1945 there was no longer a Minister assigned to Moonta Mines. Additions were made to the east side of the hall in 1939 from materials salvaged from the former Primitive Methodist Church.³⁶⁵ The Church is still used for services for special occasions.



"Moonta Mines Methodist Church Interior c.1900. Built 1865. Gallery added 1872. Pipe organ added 1890. Seating capacity 1250. Organist on right H. Herbert". Source: Moonta on site heritage signage.



Moonta Mines Methodist Church complex from Bower St



Moonta Mines Methodist Church complex from the south

Moonta Mines Model Sunday School (Former Primitive Methodist Chapel)(c.1865-66)(SAHR 13110)

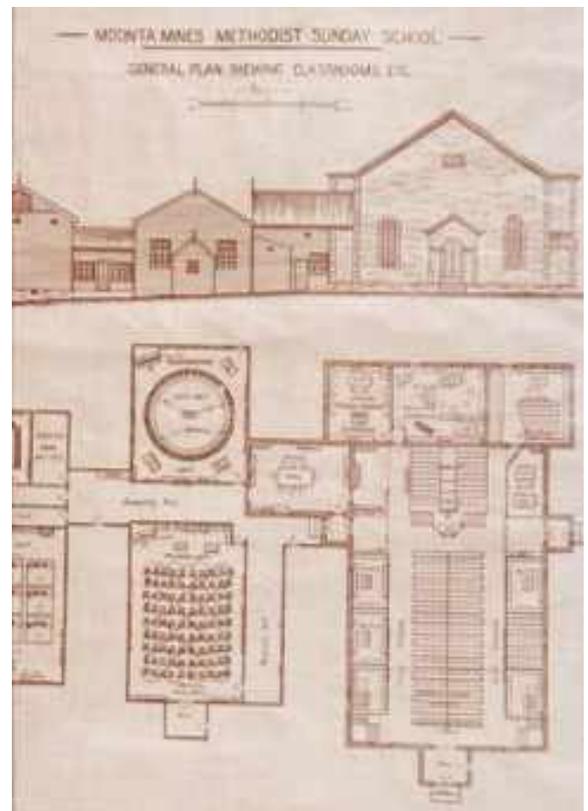
The Primitive Methodist Chapel was erected on the Moonta Mine settlement in c.1865-66 to a design drawn by architect William Lewis of Wallaroo Bay.³⁶⁶ It had the largest congregation of the three branches of Methodism at Moonta Mines. On 23 August 1865, it was reported that a “commodious chapel is in the course of erection for the Primitive Methodists”,³⁶⁷ with the corner stone laid on the 21 August by Captain Hancock.³⁶⁸ The building was described as “a mixed Italian style, 66 ft by 40 in the clear, the height of the walls 23 ft 6 from floor to ceiling, and 30 feet from floor to apex of roof; to be built of stone, with brick quoins and arches, and covered with galvanised iron, are of a chaste design, a neat and well proportioned porch, with two doorways for entrance to main building, gives a good effect to the whole: the floor will have a fall of 15 inches in the extreme length’ the furniture will consist of a neat rostrum with stairs on each side, leading from the vestry doors, to be of cedar, panelled and polished, the seats in keeping therewith, and the estimated cost is £1300”.³⁶⁹ The Primitive Methodist Chapel was opened in January 1866.³⁷⁰

In 1900, after the formation of the Methodist Union which was the amalgamation of the Wesleyan, the Primitive Methodists, and the Bible Christians, the building was used for a Methodist Sunday School. In 1907, Sunday School Superintendent, Henry Lipson Hancock (1867-1935) (Captain Hancock’s son who had also taken over as mine captain) introduced the Rainbow System of Bible Study which was a “graded educational system pioneered in the USA [United States of America] in which pupils advanced through a series of colour-coded levels”.³⁷¹ Lipson Hancock was also one-time Secretary of the World Sunday School Union.³⁷² In 1907 and c.1912-13, two new weatherboard Sunday School buildings were constructed to plans drawn by Lipson Hancock. In c.1915, the Sunday School had 88 teachers and 494 pupils.³⁷³ In 1918, Hancock reported that “during that year the Moonta Mines Model Sunday School had hosted over 7000 visitors, from various parts of the Commonwealth and overseas”.³⁷⁴

When the Mines closed in 1923, numbers declined, and Lipson Hancock left Moonta. In 1937, the ceiling of the Church collapsed. The building was demolished in September 1939,³⁷⁵ although some reports date the demolition as early as 1936.³⁷⁶ Some of the materials salvaged from the building were used to build additions to the hall at the Wesleyan Methodist Church at Moonta Mines. The site of the Primitive Methodist Church is also known as the Moonta Mines Model Sunday School Site (SAHR 13110) and is marked by wall remnants, foundations, rubble and trees.



“Moonta Mines Methodist Sunday School”, also known as the Primitive Methodist Church (now demolished), c.1900
Source: SLSA PRG 1185/7/1.



“Plan of Buildings”, c.1913. Source: “Moonta Mines Methodist Sunday School Album, 1913”, National Library of Australia (NLA) PIC/15646/26 LOC Album 1175.

Site of the Bible Christian Church (c.1865)

The Bible Christian Chapel was constructed c.1865, within the Moonta Mines settlement and opened in February 1866.³⁷⁷ After the formation of the Methodist Union which was the amalgamation of the Wesleyan, Primitive Methodist and the Bible Christians in 1900, it was used as a Church Hall (Victoria Hall) and Institute hall before being taken over in 1932 by the Rechabite Lodge who used it as a lodge room and dance hall.³⁷⁸ It was demolished in 1950. The site of the Bible Christian Church is now marked by a mound of earth (Part of SAHR 13975).

Historic miner's cottage and garden (Verco Street) (c.1870) (SAHR 10135)

The Moonta Mines settlement was home to several thousand miners during the peak mining period. One of the so-called Miner's Cottages built on the Mines settlement was reportedly constructed c.1870 by Mr John Wood, a local brickmaker, rather than miner, "who operated a small brickworks over the road".³⁷⁹ He "carried out his trade ... using clay from the large quarry in front of this cottage to the left".³⁸⁰ Although the cottage was built by a brickmaker, it was typical of the early miner's cottages and thus it is often claimed to be an "excellent example of the early miners' cottages that were once common throughout the mines area".³⁸¹ The house and brick kiln are clearly shown on the 1897 "Surface Plan of the Moonta Mines".³⁸² In 1967, the cottage was acquired by the Moonta branch of the National Trust. Conservation works have been undertaken to the house and fence. The garden was replanted to reflect a typical nineteenth century design. Currently, the house is a museum.³⁸³



"Moonta mines Institute building", c.1910. Source" SLISA B 24093.



"Club Room, Moonta Mines Substitute", c.1917. Source: D. Davidson, Esq., Pictorial Reminiscences of the Wallaroo and Moonta Copper Industry, 1917.



Scattered ruins at the site of the Bible Christian Church

Remnant route of the Hamley tramline (1896) (Part of SAHR 13975)

The 5ft 3in broad gauge horse drawn tram line linked Moonta township to the mines, and over time branch extensions were constructed to connect Moonta Bay, East Moonta, and Hamley Flat. This tram line was “based on an earlier horse drawn railway built in 1868. The railway was originally for the carriage of freight but gradually developed to also carry passengers. It became a horse drawn tramway for only passengers in 1892 after the main railway line was converted to 3ft 6in [narrow] gauge”.³⁸⁴

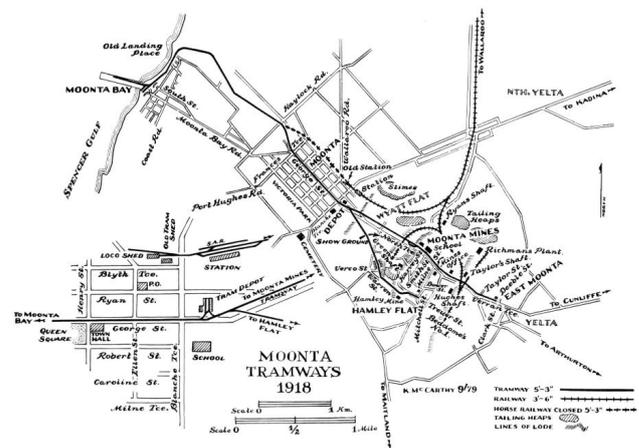
The horse-drawn Hamley Flat Tramline was built in 1896 and connected the Moonta township to Hamley Flat which was the site of many miners’ cottages, including for those who worked at the Hamley Mine.³⁸⁵ This branch tramway “line was largely on [a] private right of way terminating at the Mitchell and Treuer Streets intersection in the “occupation leases”. The Tramway from East Moonta to Moonta Bay was 4 miles 2 chains in length while the Hamley Flat branch accounted for an additional 1 mile 10 chains. The capital cost of the tramway amounted to £11,034 and the six tramcars were valued at £1524 each”.³⁸⁶

The Hamley Flat Tramline was well patronised. “Brief details of the winter timetable which commenced on 1 May 1903 give some idea of the service frequency on the horse tramway. Between 9.40am and 7.15pm on weekdays 12 up and down trips were worked on the main East Moonta to Moonta Town service while between 6pm and 11.15pm on Saturday evenings, trams operated every 15 minutes to serve that late night shopping evening when trading was carried out until 10pm. The Hamley Flat line operated with a similar frequency on Saturday evenings but only 4 return trips were made during weekdays in winter”.³⁸⁷

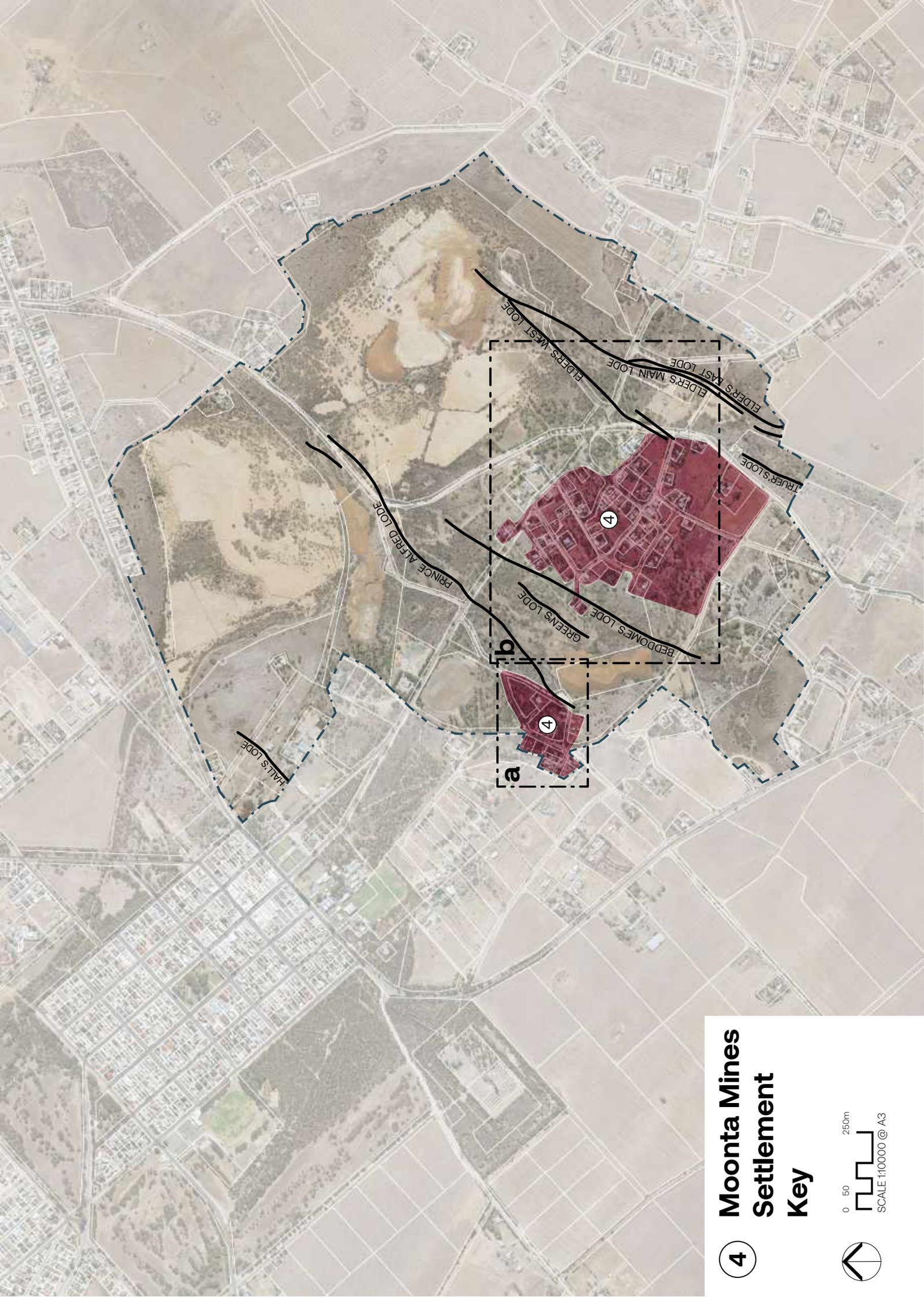
Following the closure of the mine in 1923, the use of the tramways and railways declined. The “Moonta tramway ... closed on 30 April 1931 ... The Moonta tramway system served a population of some 12,000 people in the 1890-1910 period ... After the closure of the tramway in 1931 double decker cars 5 and 6 were transferred to the S.A. R. tramway at Victor Harbor to work the summertime tourist service to Granite Island”.³⁸⁸ Both tramcars were withdrawn in the mid 1950s.



“Hamley Flat, Moonta. On the left: Hamley Mine; Enginehouse; blacksmith shop. The tramline was laid in 1896; the house with the cypress trees was known as “Spangler’s””, c.1895-96. Source: SLISA B 34846.



“The Horse Tramways of the Moonta District”, Source: Trolleywire: Journal of Australian Tramway Museums, October 1980, p13



Moonta Mines Settlement Key

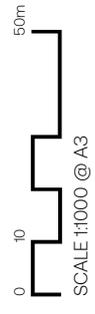


0 50 250m
SCALE 1:10000 @ A3

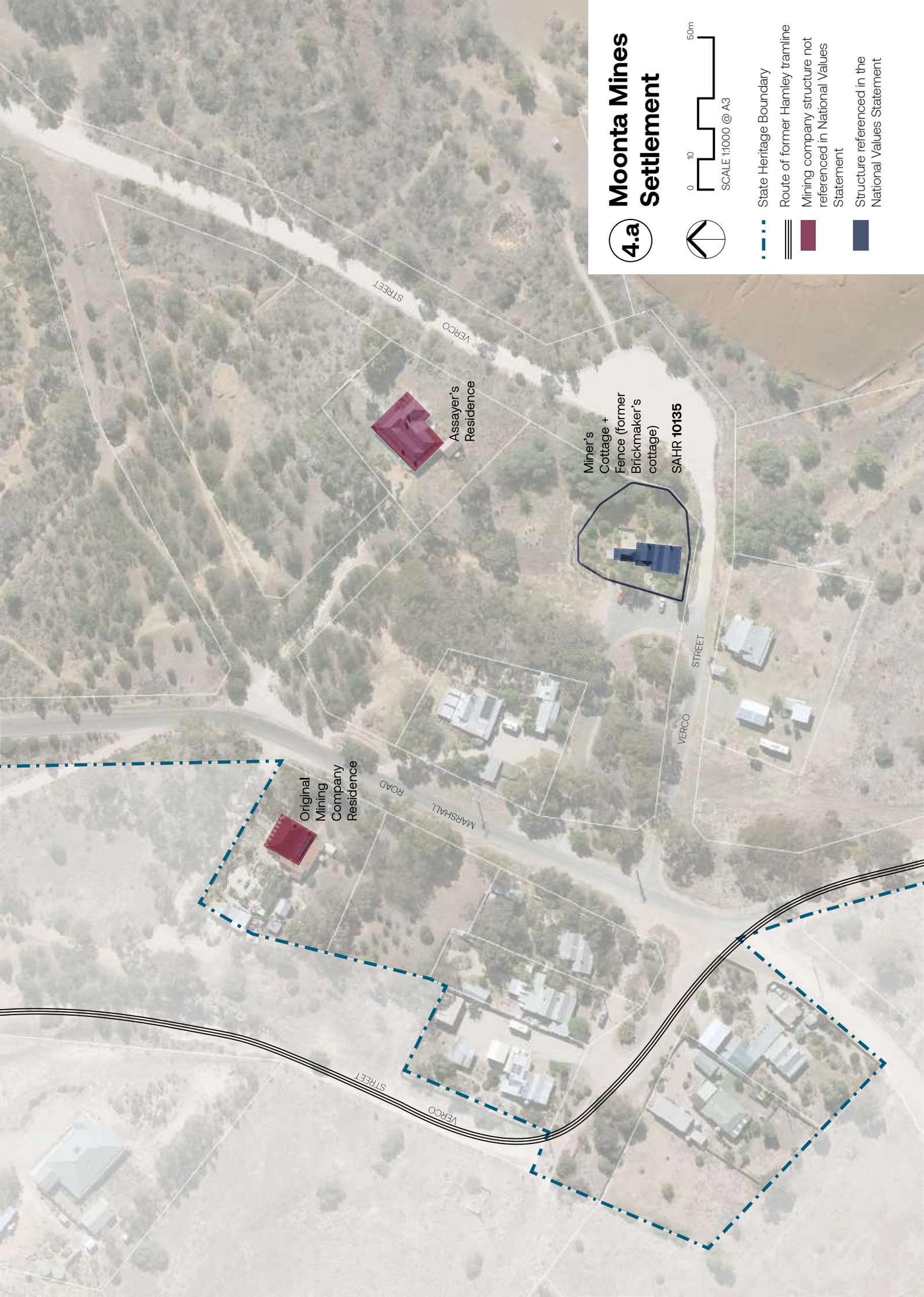


4.a

Moonta Mines Settlement



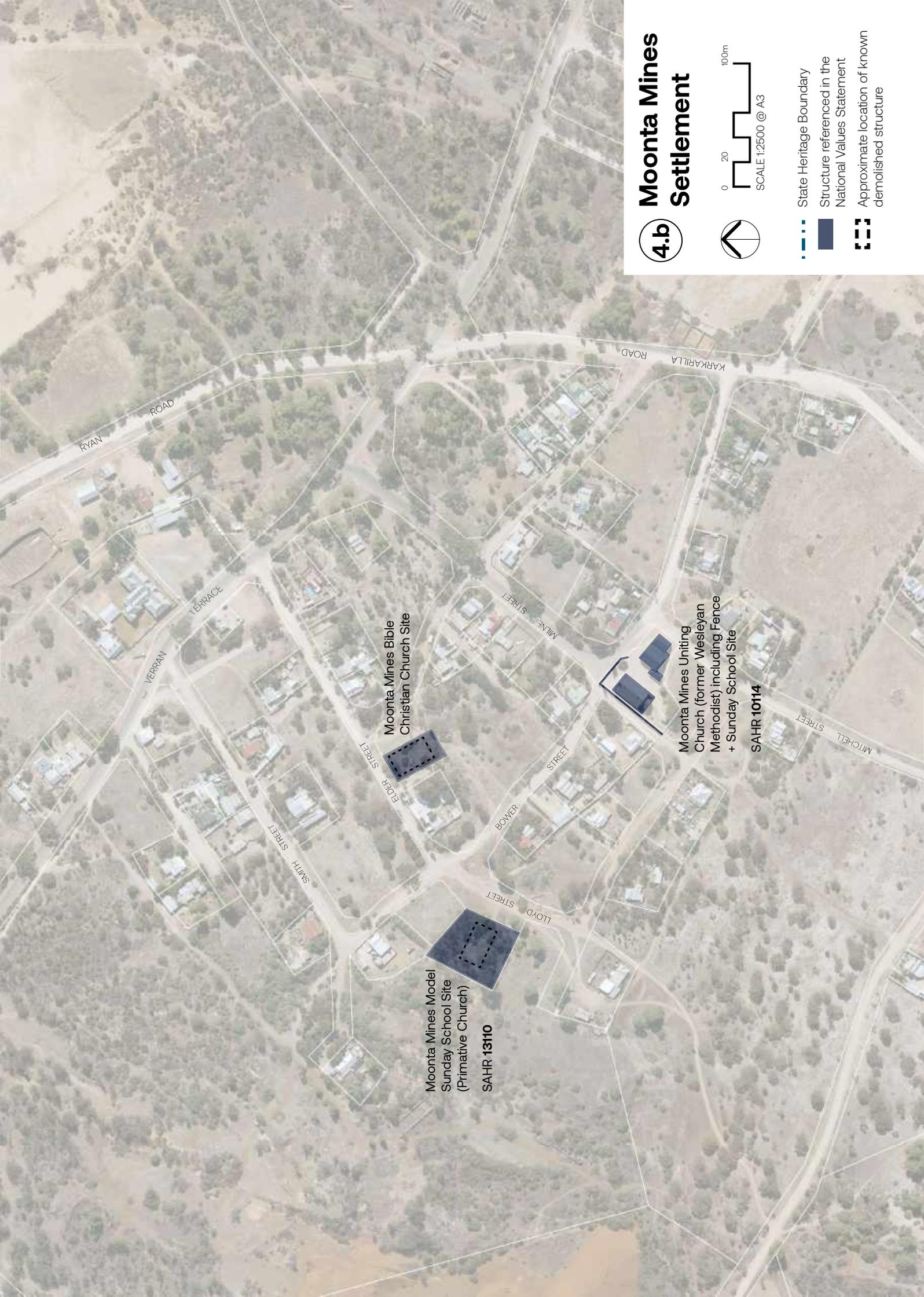
- State Heritage Boundary
- Route of former Hamley tramline
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement



Original Mining Company Residence

Assayer's Residence

Miner's Cottage + Fence (former Brickmaker's cottage) SAHR 10135



Moonta Mines Settlement

4.b



0 20 100m
SCALE 1:2500 @ A3

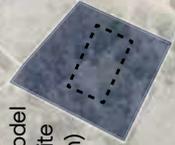
- State Heritage Boundary
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure

Moonta Mines Bible Christian Church Site



Moonta Mines Model Sunday School Site (Primate Church)

SAHR 13110



Moonta Mines Uniting Church (former Wesleyan Methodist) including Fence + Sunday School Site

SAHR 10114



Fabric Description

The settlement is a collection of small scale multi room cottages predominantly constructed of stone as many of those of more fragile materials have not survived. They are haphazardly arranged and do not appear to have been built to a planned pattern. Their visual context has been altered by the regrowth of native vegetation. The most prominent buildings in the settlement are those of the Moonta Mines Methodist Church complex.

There are also a small cluster of cottages to the west of Hancock's tailings heap, and outlying dwellings at East Moonta, to the east and north of Richmans heap, and to the south adjacent the Hamley mine.



Former Company Residence (occupied by Assayer) to the north of the National Trust Miner's Cottage



Former miner's cottage on Smith St



Former miner's cottage off Bower St, probable former Company building associated with the Hancocks and Beddomes mining infrastructure



Former miner's cottage on Bower St



Former Company Residence off Marshall Road



Former miner's cottage in the Moonta Mines settlement

Moonta Mines Methodist Church (Former Wesleyan Chapel)(1865)(SAHR 10114)

The Methodist Church complex consists of the neo-Gothic inspired Church, Church Hall and attached Sunday School Building, front fence and outbuildings.

The buildings have a similar construction, built from local stone walling with timber framed pitched roofs clad with corrugated iron. The Church is flush pointed rubble stone with ironed joints, rendered quoins and dressings to openings, moulded string courses, cornice and copings to gables. Window and door openings are pointed arches. Windows are multi-pane timber framed. There are wrought iron finials to the north gable and a bell tower to the south. Vertical rolled steel joists have been added to the side walls as restraints.

The Hall and Sunday School are limestone with flush pointing and brick quoins, all previously limewashed. The internal floor of the Hall slopes to the stage area.

The boundary fence consists of a limestone boundary wall to west side of the site and parts of north at the ends of iron fence. To the street boundary there is a wrought and cast-iron fence to north comprised of open pillars with cast bases and cappings with mouldings. The fretwork is wrought iron as are the fence panels and gates, with cast spear tops. Locks to side gates are inscribed with text 'J. Martin & Co Gawler 1875'



Moonta Mines Methodist Church from the south



Moonta Mines Methodist Church interior



Moonta Mines Methodist Church interior from gallery level



Church hall interior

Moonta Mines Model Sunday School (Former Primitive Methodist Chapel)(c.1865-66)(SAHR 13110)

There is little remaining fabric at the site of the Moonta Mines Model Sunday School. The site can be determined only by the remains of a standing portion of a wall and outline of stone wall bases.



Front fence to Methodist Church



Detail of front fence pedestrian gate



Single standing wall section at the site of the Moonta Mines Model Sunday School



Scatter ruins at the site of the Moonta Mines Model Sunday School

Site of the Bible Christian Church (c.1865)

There is little remaining fabric at the site of the Bible Christian Church. The site can be determined only by scattered stones.

Historic miner's cottage and garden (Verco Street) (c.1870) (SAHR 10135)

The historic miner's cottage is a single storey multi-gabled construction, built of a variety of walling materials, including limestone rubble, mud bricks, wattle and daub and a version of rammed earth. It has the typical local narrow pitched roof, with central gutters which were necessary due to a shortage of long timber and may have been two attached cottages or built in stages. The roofs were originally clad in timber shakes but these have since been overlaid with corrugated iron. All walls are lime rendered and washed.

The interior contains furniture, clothing and artefacts donated by descendants of mining families in the district. The collection includes a Thomas Bradford & Co. box mangle.

Surrounding the cottage is a reconstruction of a cottage garden, fenced by a stick fence. National Trust volunteers maintain the garden and open the cottage three afternoons a week to the public.



Historic Miner's Cottage from west



Historic Miner's Cottage from east, internal to the garden



Reconstructed stick fence and garden at the Historic Miner's Cottage



Rooms in the Historic Miner's Cottage have been dressed with period furnishings and objects



Rising damp and salt attack is a common dilapidation to the miners' cottages.

Remnant route of the Hamley tramline (1896) (Part of SAHR 13975)

The former rail route is most visible where it has been converted to a walking and cycling pathway alongside Hancocks tailings heap and extends outside the boundary of ACMS (Moonta) towards Moonta Town to the west, finishing at Verran Terrace. To the north of the Hamley Mine the route has been converted to an unsealed public road (Treurs Rd). The rail lines themselves appear to have been removed for the entire length of the route.



Interpretation along the former Hamley tramline



Route of the Former Hamley tramline, now a walking, cycling and horse trail

Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Moonta Mines Settlement – miners’ cottages	Fair – Good	Medium – High	Good – Most cottages in good repair and occupied. The fabric is generally suffering the typical dilapidations associated with their type: stormwater disposal failure, rising damp and salt attack and cracking. Some cottages not occupied and at risk.	High – Although the settlement represents only a small proportion of the number of cottages originally constructed, those that survive are good representatives of the haphazard nature of construction and layout. Their visual context has been altered by the regrowth of native vegetation.
Moonta Mines Methodist Church (Former Wesleyan Chapel)(1865)(SAHR 10114)				
Moonta Mines Methodist Church complex	Good	High	Good – Generally, all elements, including the interior, are in excellent condition and well maintained. Minor cracking to walling and corrosion to iron fence.	High – The complex retains high integrity and authenticity. Conservation works have been undertaken using best practice.
Moonta Mines Model Sunday School (Former Primitive Methodist Chapel) (c.1865–66) (SAHR 13110)				
Site of Moonta Mines Model Sunday School	Poor	Low	Poor – Few surviving masonry elements in poor condition. Remaining standing section at risk of collapse due to rising damp. No stabilisation works have occurred.	Low – The site can be determined by the remains of some wall bases. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Site of the Bible Christian Church (c.1865)				
Site of Bible Christian Church	Poor	Low	Poor – Only occasional evidence of wall alignments visible above ground level. Vegetation regrowth occurring within the remains.	Low – The site can only be determined by scattered stones and edges of footings. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Remnant route of the Hamley tramline (1896) (Part of SAHR 13975)				
Remnant route of the Hamley tramline	Poor	Low	Fair – The embankment is maintained as a walking and cycling path.	Low – The railway embankment is still visible in places where it has been converted to a walking and cycling path. In other areas the route has been converted to a road and it is no longer possible to discern from the physical fabric the route’s association with the tramline.

4.3.5 Moonta Mines Management

Background

As the mine developed, the Moonta Mining Company erected several mine-related structures which supported the functions of the mine. Located between the two main lodes and north of the mines settlement the structures accommodated staff or administrative functions including the General Manager's Residence (pre-1864-1875), and the Mine Offices (1875), while others directly related to mine activities such as the mine workshops, Reservoir (1873), and Powder Magazine (c.1875).

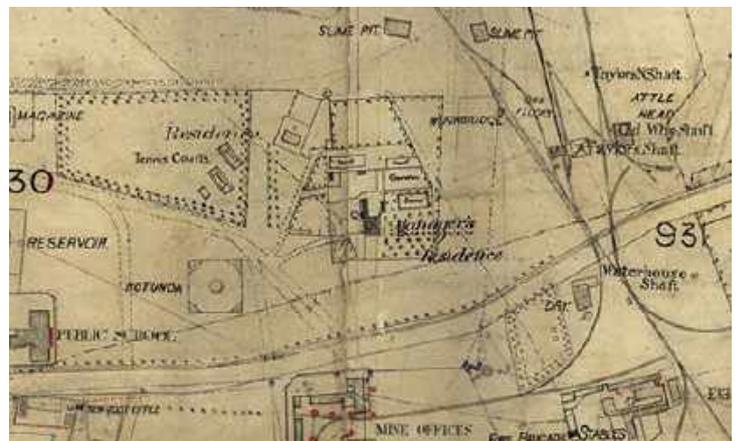
Site of General Manager's residence (c. pre 1864-1875) (Part of SAHR 13975)

According to former Mine Captain Oswald Pryor, the lower storey of the Manager's Residence was built prior to the appointment of Henry Richard Hancock in 1864.³⁸⁹ Approximately ten years later, c.1874-75, the upper storey was constructed. It was surrounded by a fenced area which contained a lawn, garden, and a "patch of original scrub".³⁹⁰ The dwelling was built to house the Moonta Mine General Manager or Chief Mine Captain. Henry Richard Hancock was Mine Captain from 1864 to 1898. Hancock's "large two-storied mansion, surrounded by native trees, was adequately staffed and connected by telephone to the stables where he had a special carriage".³⁹¹ His son, Henry Lipson Hancock (1867-1935) succeeded him and worked until the Mine closed in 1923.

The building appears to have been demolished as part of the liquidation of the mine infrastructure after the mine closure in 1923 and now is only evident by wall bases and paving. (Part of SAHR 13975) are extant.



"Superintendent and Staff at Moonta Mines", c.1865. Source: SLSA B12243.



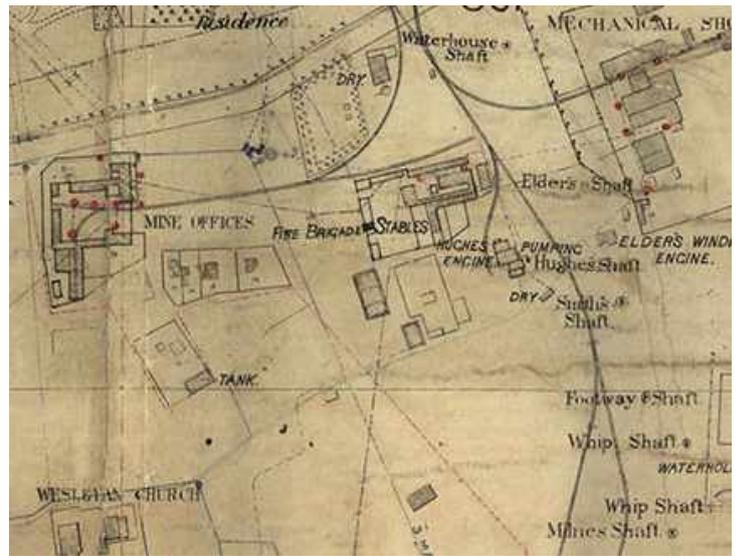
Plan showing Manager's Residence, c.1897. Source: SLSA Drawing N1900.



"Manager's Residence", c.1916. Source: SLSA B 12604.

Site of mine offices (1875) (Part of SAHR 13975)

In 1875, the two storey Mine Managerial Offices and Stores buildings were constructed. Captain Hancock “was able to view the whole mine area”³⁹² from the first floor. “The mine office was equipped with speaking tubes and from a look-out on its roof he could survey the surface workings. In his own room he had a ‘pulpit’ desk, his papers far above the range of prying eyes”. One of the lower rooms was used by the offices and other mine captains to consult and write. The narrow balcony was used for ‘survey day’.³⁹³ In addition to the offices, the complex included various stores which were built around a large enclosed courtyard, included all of the supplies required to run the mine, such as coke, timber and miners supplies. The building complex appears to have been largely demolished in the mid to late 1920’s to salvage materials as part of the liquidation of the mines assets after its closure in 1923. Now the site of the Mine Offices (Part of SAHR 13975) is comprised of ruins include partial bases walls, cellars and rubble.



Plan showing Mine Offices, c.1897. Source: SLSA Drawing N1900.



“Mine office at Moonta Mines”, c.1910. Source: B 12587.



“Mine Offices, c.1910”. Source: Drew, G.J., Discovering Historic Moonta: South Australia, p33.

Remnant water reservoir (Ryan road) (c.1873) (Part of SAHR 13975)

The water reservoir (Part of SAHR 13975) was built in 1873. On 11 July 1873, the Yorke's Peninsula Advertiser and Miners' News reported that a "large tank on Moonta Mines flat has been completed and the reservoir is ready for reception of some twenty thousand hogshead of water ... it is neither oval nor rectangular, ... the irregularity in form having been caused by the nature of the ground excavated. Approximately its dimensions are 180 feet long, 120 feet wide, and 9 feet deep. The tank will receive the drainage of an extensive area of ground, and with copious rains, will probably be filled before the winter is over".³⁹⁴

The tank was constructed from stone and rendered and was "covered by an iron roof and held 5 million litres for mining use, and for residents during water shortages".³⁹⁵ A "steam pump was used to pump water to boilers at Richmans, Taylors and Hughes Enginehouses ... [in addition large] underground tanks were located at mine buildings and churches and the miners had underground tanks at their cottages. Many children lost their lives falling into these tanks. At times of drought the Moonta Mining Co. distilled water and records show the price of this water in 1869 was 4 shillings and 6 pence ... a hogshead and miner's wages were 35 to 40 shillings ... a week. The government built 4 large tanks ... in 1874".³⁹⁶ Indeed, it wasn't until 1891 that reticulated water was supplied to the area from Beetaloo Reservoir.³⁹⁷

Ruins of the powder magazine (c.1875) (Part of SAHR 13975)

In c.1875, the Powder Magazine was constructed to store gunpowder for mine blasting. The building stored approximately 30 tons of gunpowder.³⁹⁸ This was originally placed in hand drilled holes to break apart the rock. A "storekeeper was in attendance at an early hour each morning. Nobody wearing boots was allowed to enter the magazine as a spark from boot nails could trigger an explosion".³⁹⁹ As technology developed, "Nitroglycerine was introduced in the 1870s and, later, dynamite was used in machine-drilled shot holes".⁴⁰⁰ In 1875, "the mine started to manufacture their own Patent Safety Fuse using machinery from England. They could make up to 5000ft of fuse per day if required".⁴⁰¹ The Powder Magazine (Part of SAHR 13975) appears to have been demolished as part of the liquidation of the company assets after the closure of the mine in 1923 with any ruined masonry wall and bases and solid floors remain extant.



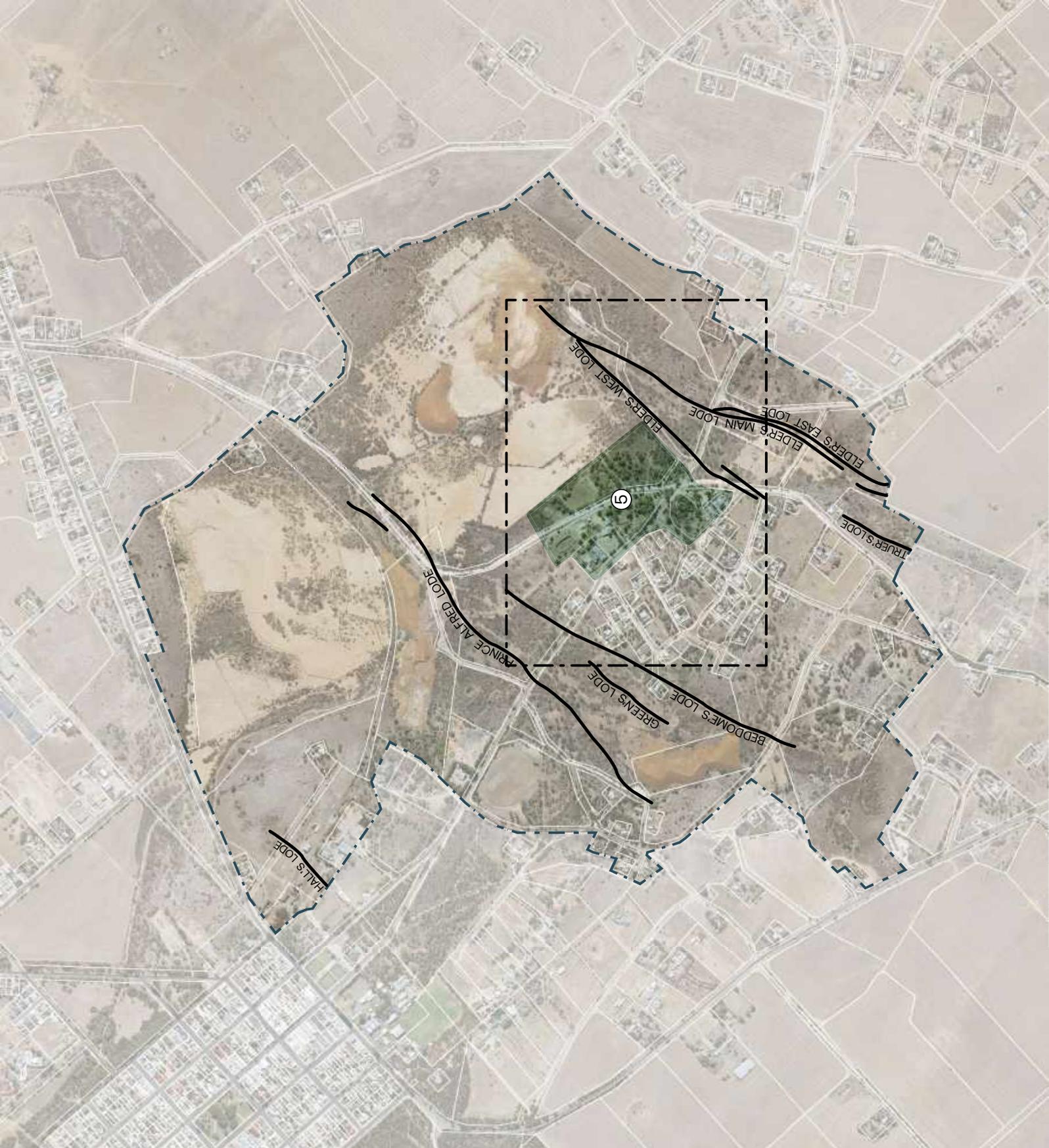
"Preparing for main level timbers", c.1917. Source: D. Davidson, Esq., Pictorial Reminiscences of the Wallaroo and Moonta Copper Industry, 1917.



Ruins of Powder Magazine

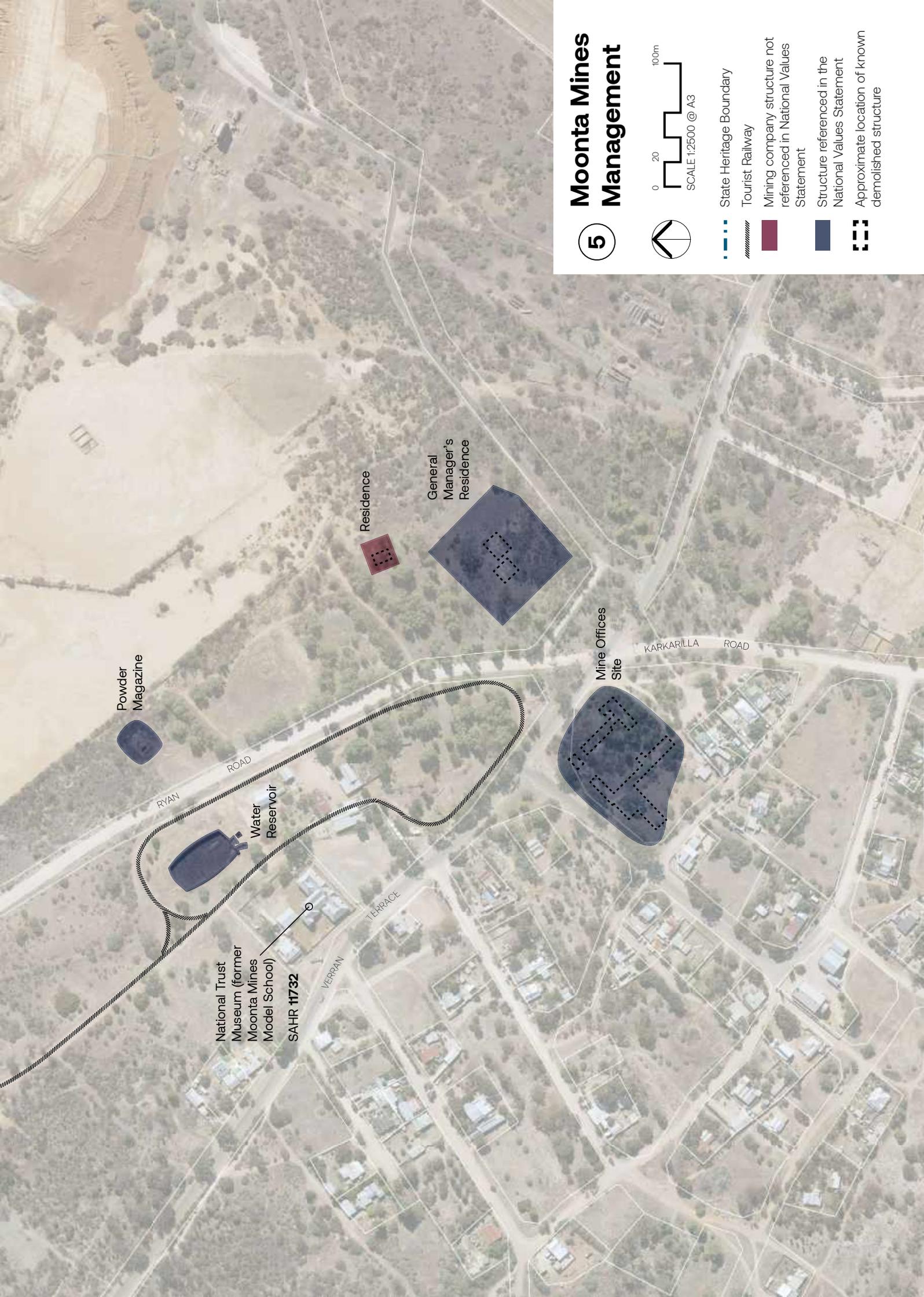


Ruins of Powder Magazine. A blast mound surrounds the site



Moonta Mines Management Key





5

Moonta Mines Management



-  State Heritage Boundary
-  Tourist Railway
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement
-  Approximate location of known demolished structure

Fabric Description

Site of General Manager's residence (c. pre 1864-1875) (Part of SAHR 13975)

There is little remaining fabric at the site of the General Managers Residence. The site can be determined only by the remains of a standing portion of a wall and the remains of solid floors.



General view of ruins of the General Manager's Residence



Cement garden paths, scattered stones and a small wall section are all that remains above ground of the General Manager's Residence

Site of mine offices (1875) (Part of SAHR 13975)

There is little remaining fabric at the site of the Mine Offices. The footprint of the various components can be determined only by a few wall footings, floors and depressions which form the remains of a number of cellars. The site is confused by vegetation regrowth. There is little information available to determine the function of the various parts of the complex.



Various ruined walls and footings at the site of the Mine Offices



Ruined basement walls at the site of the Mine Offices

Remnant water reservoir (Ryan road) (c.1873) (Part of SAHR 13975)

The ruins of the water reservoir consist of stone walls retaining the sides of a solid floored basin. Square stone footings are arranged in a matrix across the basin floor indicating the points at which a column was located to support the roof. The roof is not extant and there is little evidence other than the footing positions to indicate its form or construction. The stone walls extend above the ground level outside the basin to form a perimeter wall of about 1m high. The reservoir gate configuration is intact, but there is little evidence of pumping machinery.



Reservoir gates



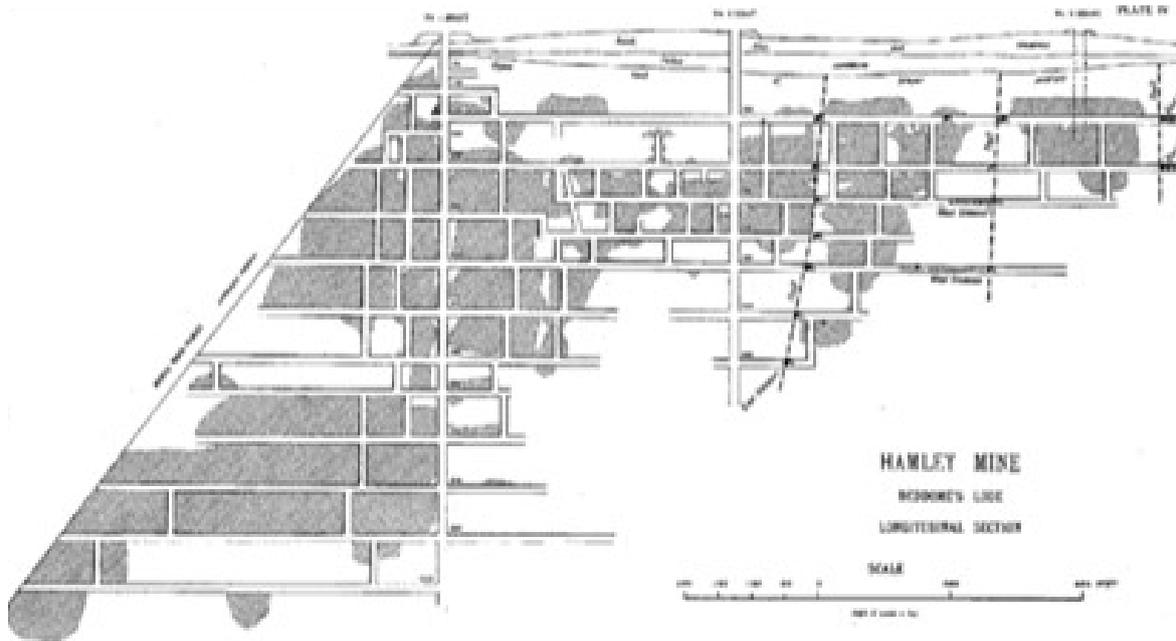
Reservoir from the north. The Moonta Mines School is in the background

Ruins of the powder magazine (c.1875) (Part of SAHR 13975)

There is little remaining fabric at the site of the Powder Magazine. The site can be determined by the remains of two standing walls, low ruined walls of the former surround wall, and blast mounding around the ruins.

Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Site of General Manager's Residence (c. pre 1864-1875)(Part of SAHR 13975)				
Site of c.1864 General Manager's Residence	Poor	Low	<p>Poor –</p> <p>Few surviving masonry elements in poor condition.</p>	<p>Low –</p> <p>The site can be determined by the remains of some wall footings and floors.</p> <p>There is no current interpretation of the site.</p> <p>The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.</p>
Site of mine offices (1875) (Part of SAHR 13975)				
Site of c.1875 mine offices	Poor	Low	<p>Poor –</p> <p>Few surviving masonry elements being mainly comprised of wall bases which are in poor condition.</p> <p>Vegetation growth within the complex is damaging remaining fabric.</p> <p>There is no fencing around the various basements which present a possible safety hazard.</p>	<p>Low –</p> <p>The site can be determined by the remains of some wall footings, floors and basements.</p> <p>Vegetation growth within the complex confuses understanding of the place.</p> <p>There is no existing interpretation of the site.</p> <p>The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.</p>
Remnant water reservoir (Ryan road) (c.1873)(Part of SAHR 13975)				
Ruins of c.1873 water reservoir	–	–	<p>Fair –</p> <p>Surviving masonry walls are in fair condition. Roof non-extant.</p>	<p>High –</p> <p>Despite loss of its roof, the major elements of the structure are almost complete and its former use and construction is easily understood</p>
Ruins of the powder magazine (c.1875)(Part of SAHR 13975)				
Ruins of the c.1875 powder magazine	Poor	Low	<p>Poor –</p> <p>Few surviving masonry elements in poor condition. The two standing walls are at further risk of collapse.</p>	<p>Low –</p> <p>The site can be determined by the remains of some wall footings and floors and blast mounding around.</p> <p>An interpretive sign nearby with the name and date of the building marks the site.</p> <p>The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.</p>



Hamley Mine, undated. Source: Drew, G.J., "Notes on the Moonta-Wallaroo District", 2014, p23.

4.3.6 Hamley Mine

Background

Site and remnant structures of the Hamley mine (1862)
(Part of SAHR 13975)

In 1861, ore was discovered south of the Moonta Mine on the site of the Hamley Mine. The Karkarilla Mining Company was established, with James Warmington as Mine Captain, and operations commenced in 1862. They "worked an extension of the main Moonta [Treuers] lode".⁴⁰² The mine buildings associated with this phase were located at the east end of the lease and hence were outside of the State Heritage Area. The company invested in machinery but the collapse of the copper pipe resulted in the company not being able to service the debt and mining operations were forced to cease. The company was remodelled in 1868 and became the Hamley Mining Company and they subsequently worked "an extension of Beddomes Lode".⁴⁰³ In 1874, a 24 inch horizontal engine named Taylor's Engine, was erected "to power winding, crushing and concentrating machinery. At peak production in the mid 1870s up to 200 men and boys were employed but the mine closed in 1888. It was reworked by tributers in the early 1900s and sold to the WMMS Co. in 1916. Total production is estimated of 10,000t of copper".⁴⁰⁴ Some reports state that from 1862 to 1888, the mine "produced about 40,000 tonnes of hand-picked ore from depths of up to 300 metres ... Notable mine captains were the father and son team of Thomas and Richard Cowling who managed the mine between 1878 and 1888".⁴⁰⁵

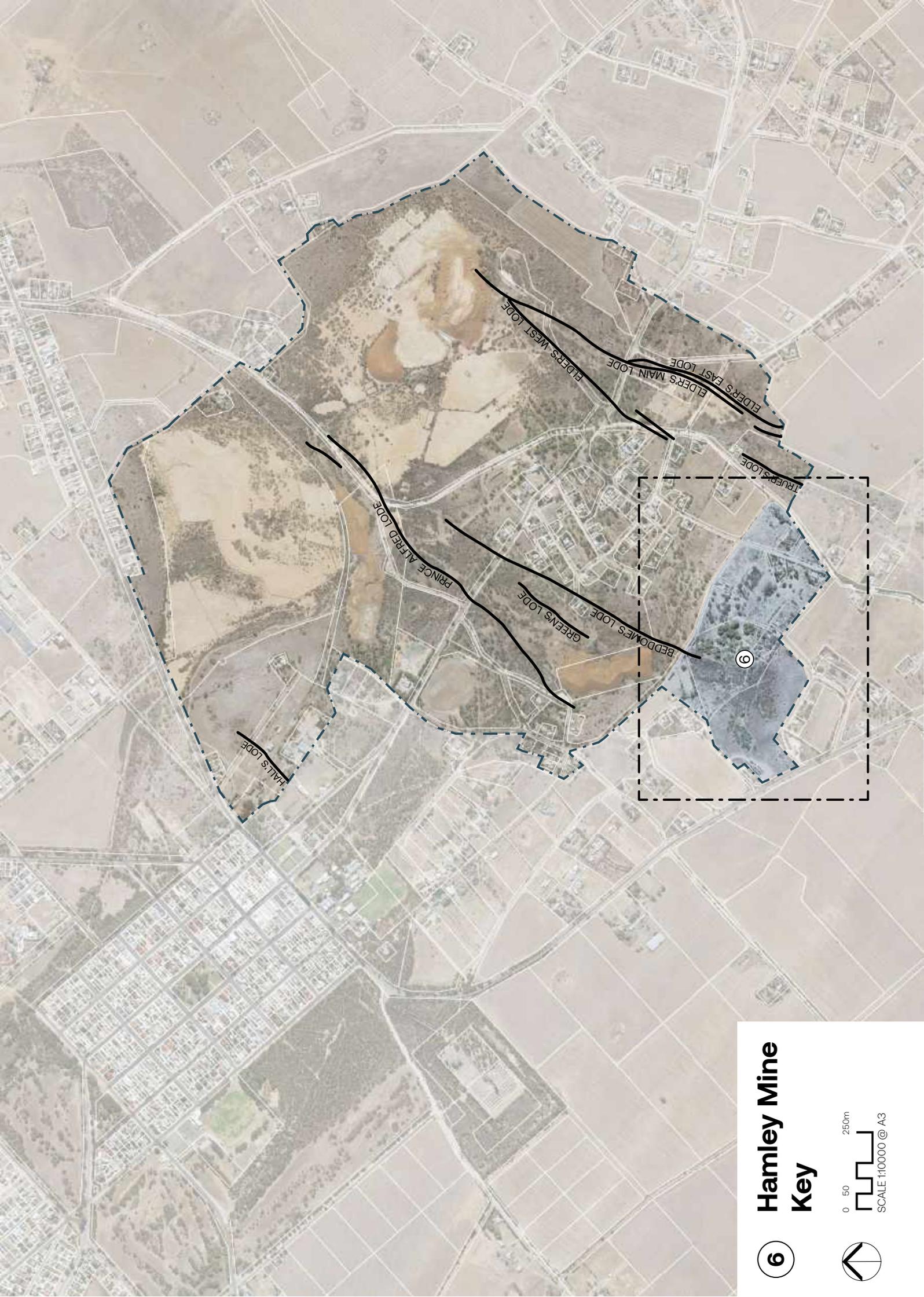
The few remnant structures of the Hamley Mine include stone paved ore sorting floors, engine crusherhouse ruins (erected in 1874) and mine shaft.



"Surface installations of the Hamley Mines", c.1916. Source: SLSA B 12602.



"Hamley Mine with a miner's house left foreground", c.1900. Source: SLSA B34851.

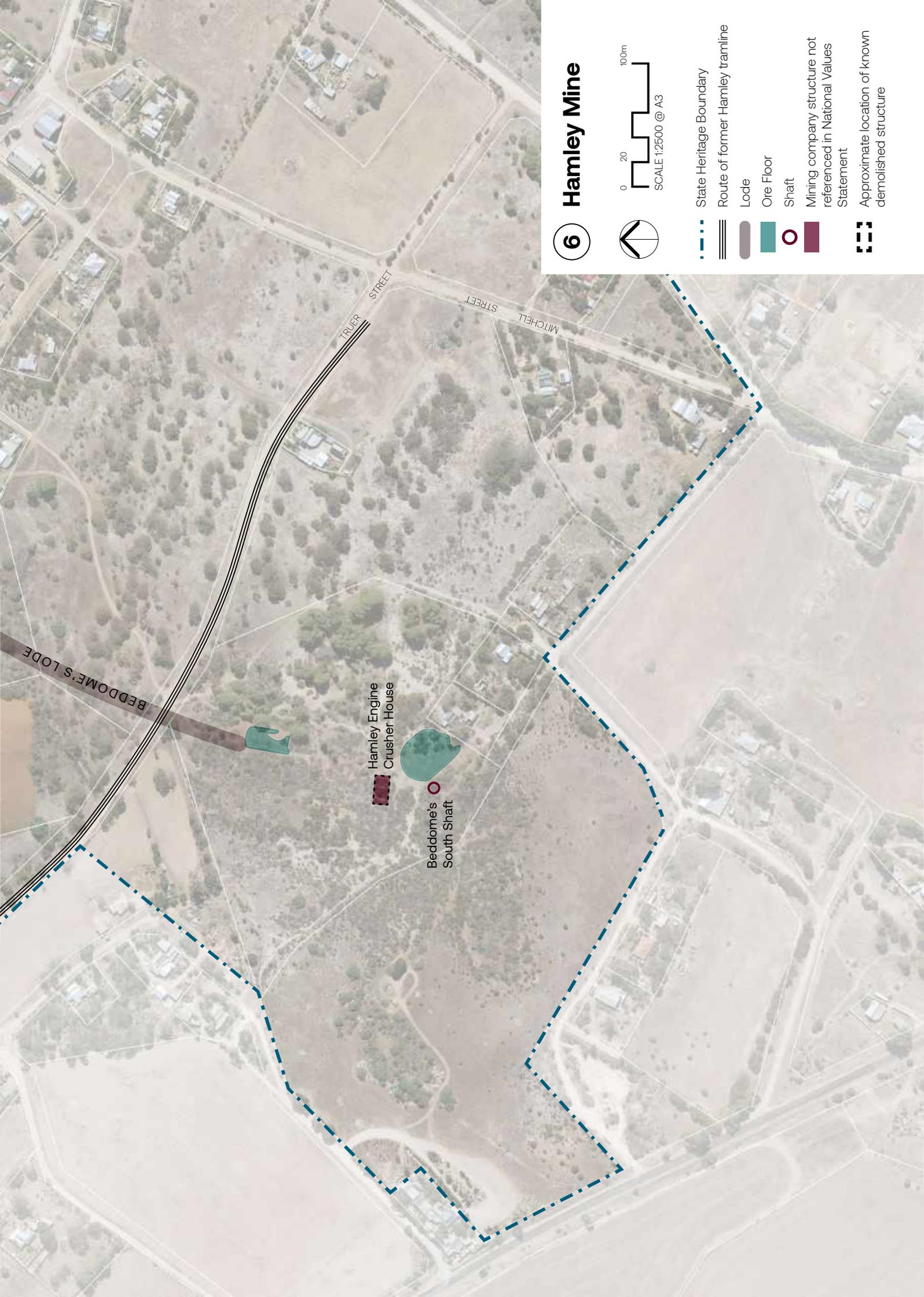


Hamley Mine

Key



0 50 250m
SCALE 1:10000 @ A3



6

Hamley Mine



-  State Heritage Boundary
-  Route of former Hamley tramline
-  Lode
-  Ore Floor
-  Shaft
-  Mining company structure not referenced in National Values Statement
-  Approximate location of known demolished structure

Hamley Engine
Crusher House

Beddome's
South Shaft

BEDDOME'S LODGE

TRUER STREET

MITCHELL STREET

STREET

Fabric Description

Site and remnant structures of the Hamley mine (1862) (Part of SAHR 13975)

There is little remaining fabric at the site of the Hamley Mine. The most noted are several large ore floors, with only few remaining wall and machine bases of the engine house could be established. Visual relationships between structures is confused by the level of thick regrowth scrub which conceals much of the site and impacts on the remaining fabric.



Remnant ore floor at Hamley Mine



Remains of footings and mounting blocks at the Hamley Mine site

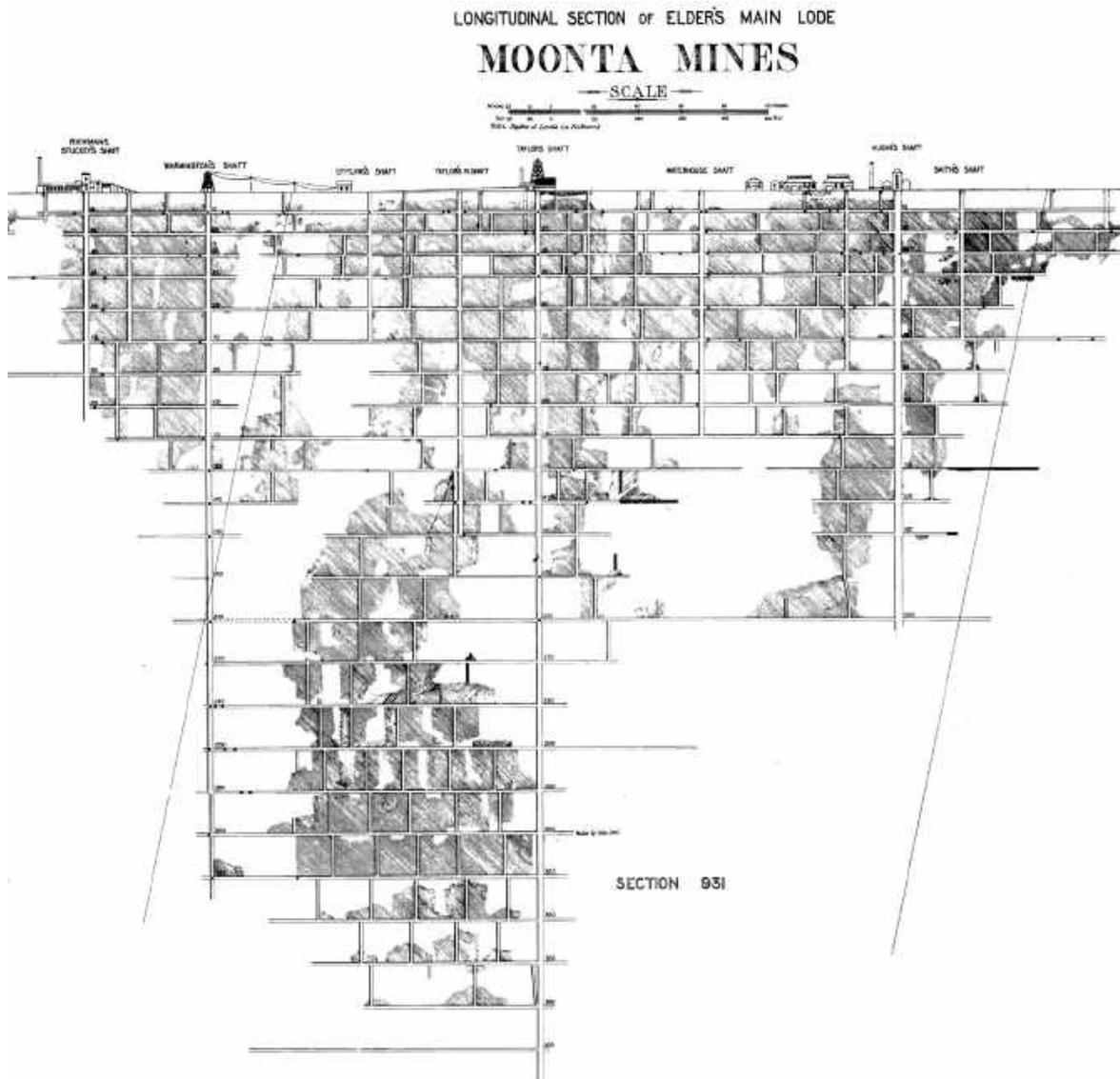
Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Site and remnant structures of the Hamley mine (1862) (Part of SAHR 13975)				
Ruins of Hamley Mine	Poor	Low	<p>Poor –</p> <p>Base of some walls and machinery mounts from the demolished enginehouse with large mounds of attle.</p> <p>Two separate large ore floors in fair condition is the most intact element although portions of the northern floor are beginning to break up which is exaggerated by erosion.</p> <p>Almost completely overgrown with regrowth vegetation which is damaging remaining fabric in places.</p>	<p>Low –</p> <p>The site can be determined by the remains of some wall footings and ore floors but orientation of the buildings and shaft locations are difficult to establish.</p> <p>Vegetation regrowth confuses orientations and original mining arrangement.</p> <p>No current interpretation occurs on this site.</p> <p>The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.</p>

4.3.7 Elder's Main Lode

Background

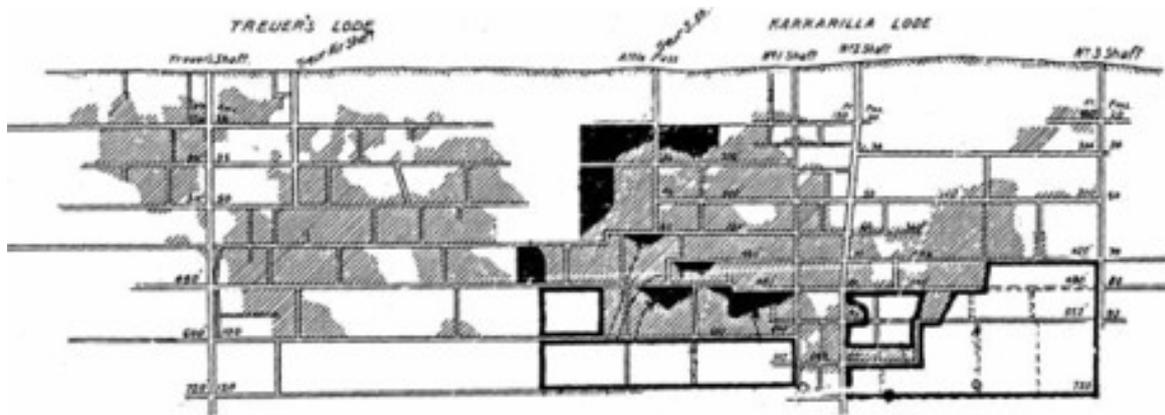
The Moonta Mine “comprised more than ten individual lodes over a strike width of one mile, oriented north-south, and dipping westerly at 50° to 70° ... [The Moonta lodes] were exceptionally rich, yielding sulphide ore of 20 to 30% copper”.⁴⁰⁶ The main lodes, or orebodies, were focussed around two main areas: Elders Main (or Taylors) Lode, Elders West Lode, and Treuers Lode to the east, and Beddomes Lode, Greens Lode, and Fergussons (or McDonnells) Lode to the west. Each lode or orebody was worked as a series of individual mines. “The shafts, Enginehouses, processing areas, supporting functions and administrative facilities are all located in a pattern which is oriented to the underground lines of lode”.⁴⁰⁷ At Elders Lode, “underground levels extended for a distance of 3000’ (905m) near the surface & 2000’ (610m) at a depth of 1600’ (488m). Shafts sunk to various depths on this line of lode were McCoulls, Stuckeys, Warmingtons, Stirlings, Taylors, Waterhouse, Hughes, Elders, Smiths, & Milnes”.⁴⁰⁸ Places which were established around Elders Main (or Taylors) Lode, Elders West Lode, and Treuers Lode include: Elders Enginehouse (1863); Taylors Shaft (1862); Hughes Enginehouse and stack (1865); Hughes Engine Pool (1865); Richmans Enginehouse and nearby Tailings dumps (1869); mine workshops (c.1865); and Treuers Shaft (1880).



Elders Main Lode, undated. Source: Drew, G.J., “Notes on the Moonta-Wallaroo District”, 2014, p15.



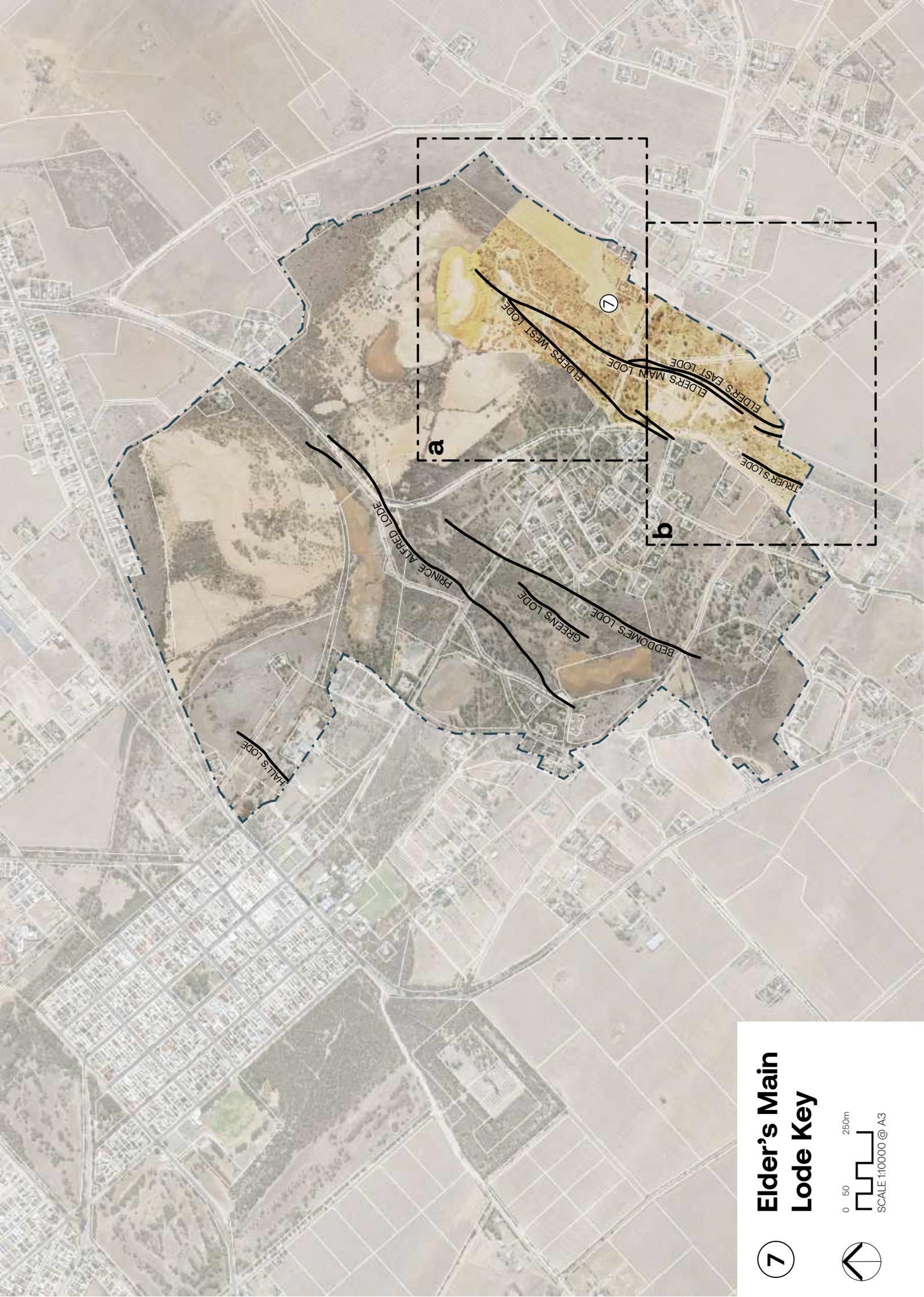
“Surface installation Treuers shaft, Moonta Mines ... Mr. Oswald Pryor 12-2-52”, c.1907. Source: SLSA B 12616.



Treuers Shaft, undated. Source: Drew, G.J., “Notes on the Moonta-Wallaroo District”, 2014, p18.

Treuers shaft (1880)

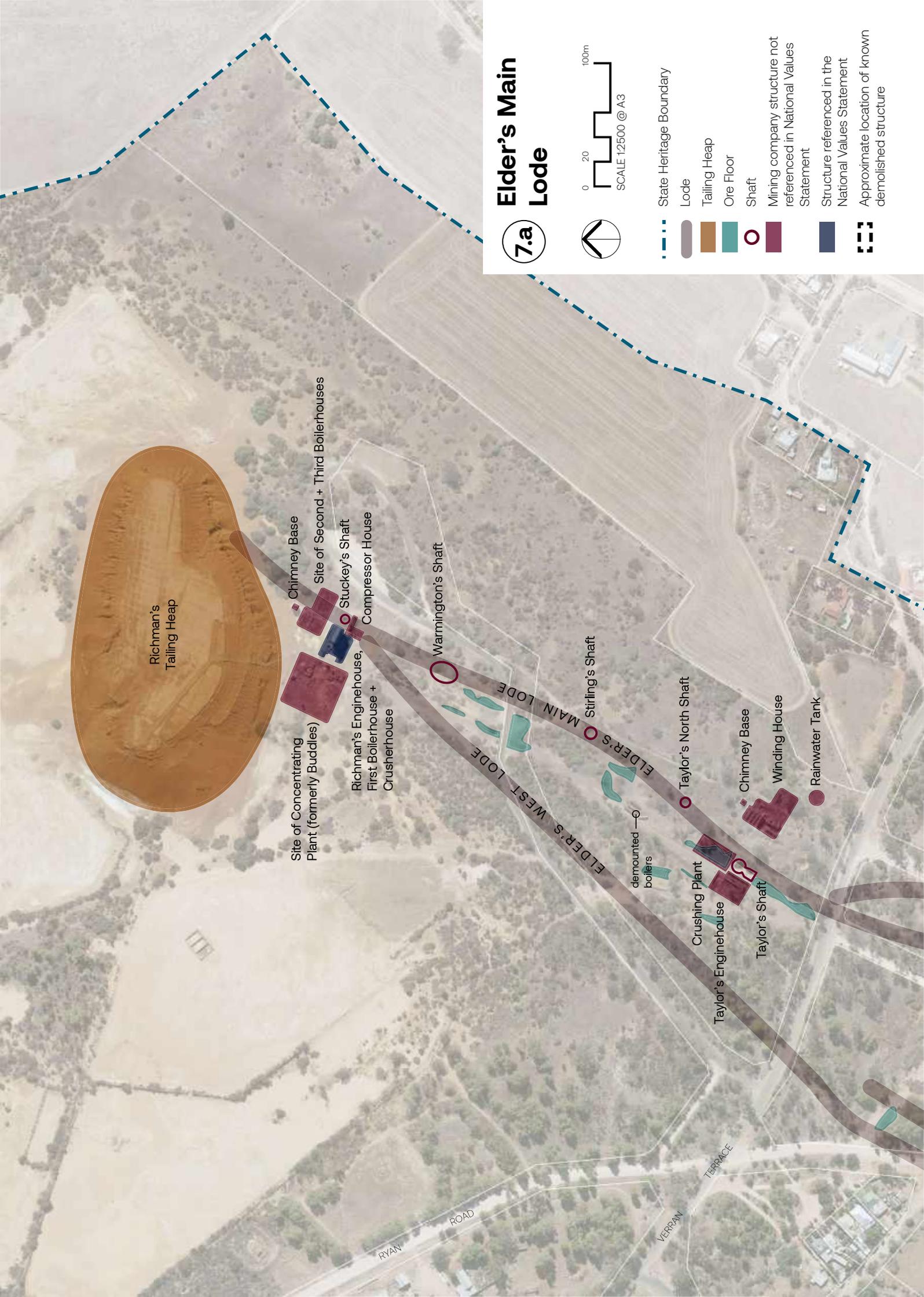
Treuers Shaft (Part of SAHR 13975) was constructed c.1880 and was named after Mr Von Treuer, one of the company Directors. It was sited on Treuers Lode at the southern end and “was worked to a length of 400m and to a depth of 220m”.⁴⁰⁹ It was a “major producing area after 1900. In 1906, a new headframe and winding engine were erected, replacing structures built about 1880. The foundations of these structures, which operated until 1923, still remain”.⁴¹⁰



Elder's Main Lode Key

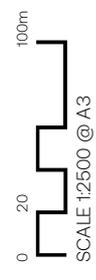
7





Elder's Main Lode

7.a



- State Heritage Boundary
- Lode
- Tailing Heap
- Ore Floor
- Shaft
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure

Richman's Tailing Heap

Site of Concentrating Plant (formerly Buddies)
 Chimney Base
 Site of Second + Third Boilerhouses
 Stuckey's Shaft
 Compressor House
 Richman's Enginehouse, First Boilerhouse + Crusherhouse

Warrington's Shaft

ELDER'S WEST LODGE
 ELDER'S MAIN LODGE
 Stirling's Shaft

Taylor's North Shaft
 Chimney Base
 Winding House
 Rainwater Tank

dismounted boilers
 Crushing Plant
 Taylor's Enginehouse
 Taylor's Shaft

RYAN ROAD

VERRAN TERRACE

Elder's Main Lode

7.b



State Heritage Boundary

Lode

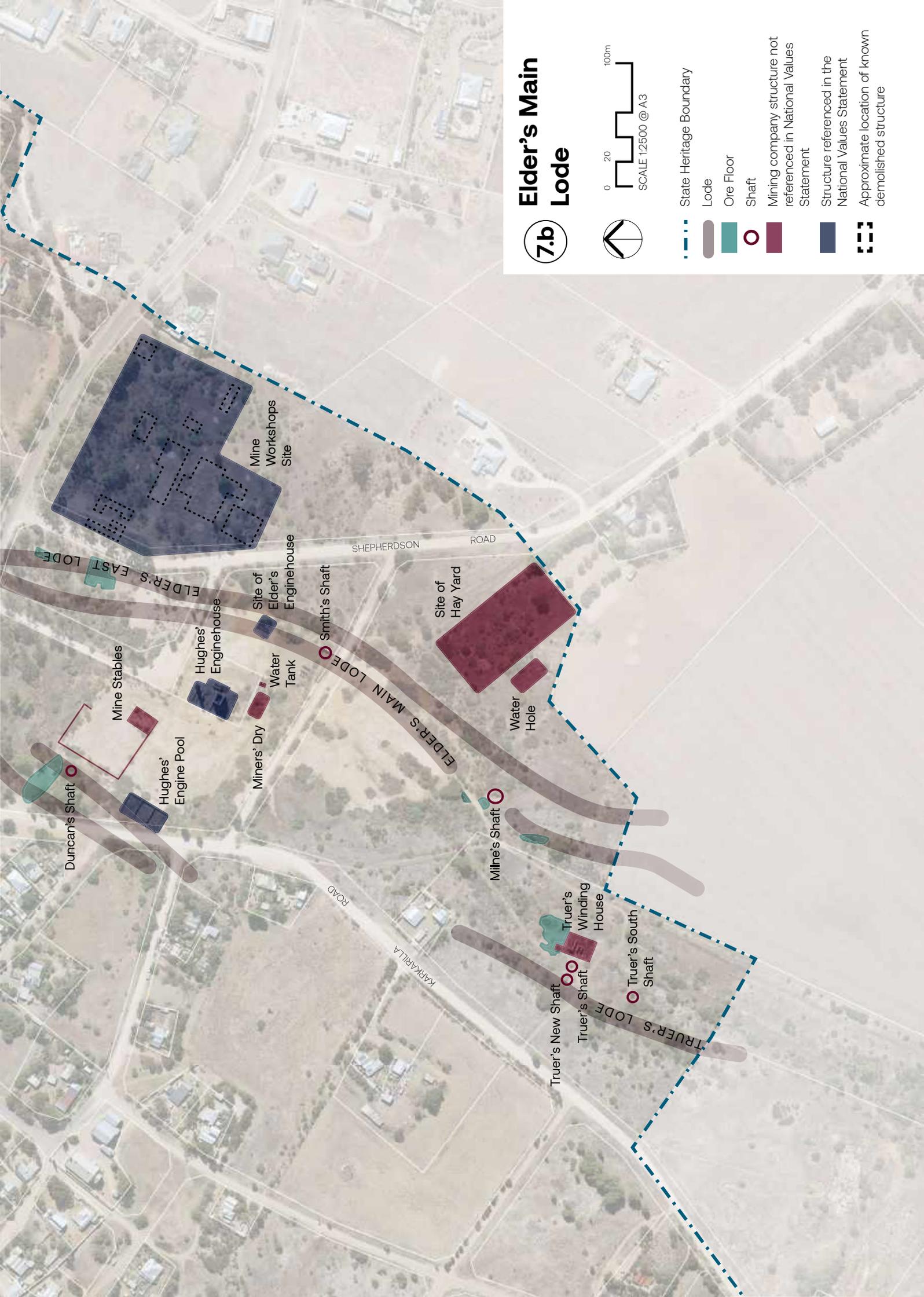
Ore Floor

Shaft

Mining company structure not referenced in National Values Statement

Structure referenced in the National Values Statement

Approximate location of known demolished structure



Ruins of Elders enginehouse (1863)

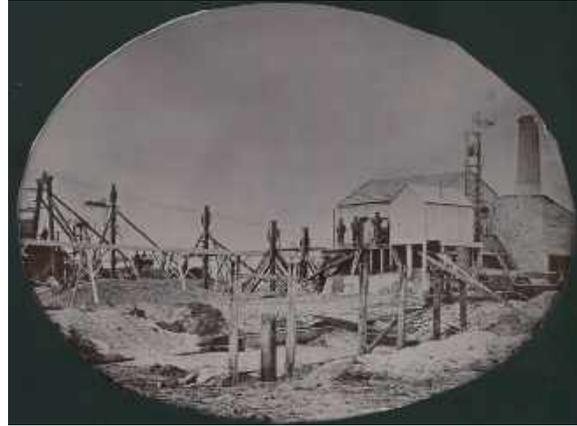
The first shaft to be sunk at the Moonta Mine was Elders Shaft on Elders Main Lode in 1861.⁴¹¹ The lode was sited approximately 800 metres east of shepherd Patrick Ryan's first discovery of copper ore. Initially, pumping and winding was undertaken by horse whim. The "shaft was operated by a double horse whim, which had two ropes; one for hauling the full kibble up from the shaft, the other for letting it down".⁴¹² Elder's Shaft is represented in the earliest-known image of the Moonta Mine, dated c.1862, a lithograph by artist William Wyatt.

In early 1863, the mine's first steam engine and boiler were purchased for £880. They were "installed in a small enginehouse near Elders Shaft by August 1863".⁴¹³ Elders Engine was imported from Harvey & Co. of Hayle, Cornwall, and was originally used at the New Cornwall Mine near Kadina,⁴¹⁴ but was re-used at Moonta Mine. Elders Engine was a "35 horsepower horizontal engine with an 18-inch cylinder and 4-foot stroke ... and was used initially for removing water from Elders Shaft. A still attached to the enginehouse produced water which sold at 7 to 8 shillings per hogshead".⁴¹⁵ In 1865, Hughes pumping engine was erected and consequently Elders Engine was no longer required for pumping instead it was only used for winding from up to six nearby shafts. By the late 1870s the engine was also used to power "double-decker man skips in Hughes Shaft, conveying men underground".⁴¹⁶

After 1900, "steam was supplied from Hughes Boilerhouse, and the engine continued to service Hughes Shaft until the closure of the mine in 1923. The enginehouse was subsequently demolished leaving only the winding drum mounting blocks".⁴¹⁷



Elders enginehouse ruins



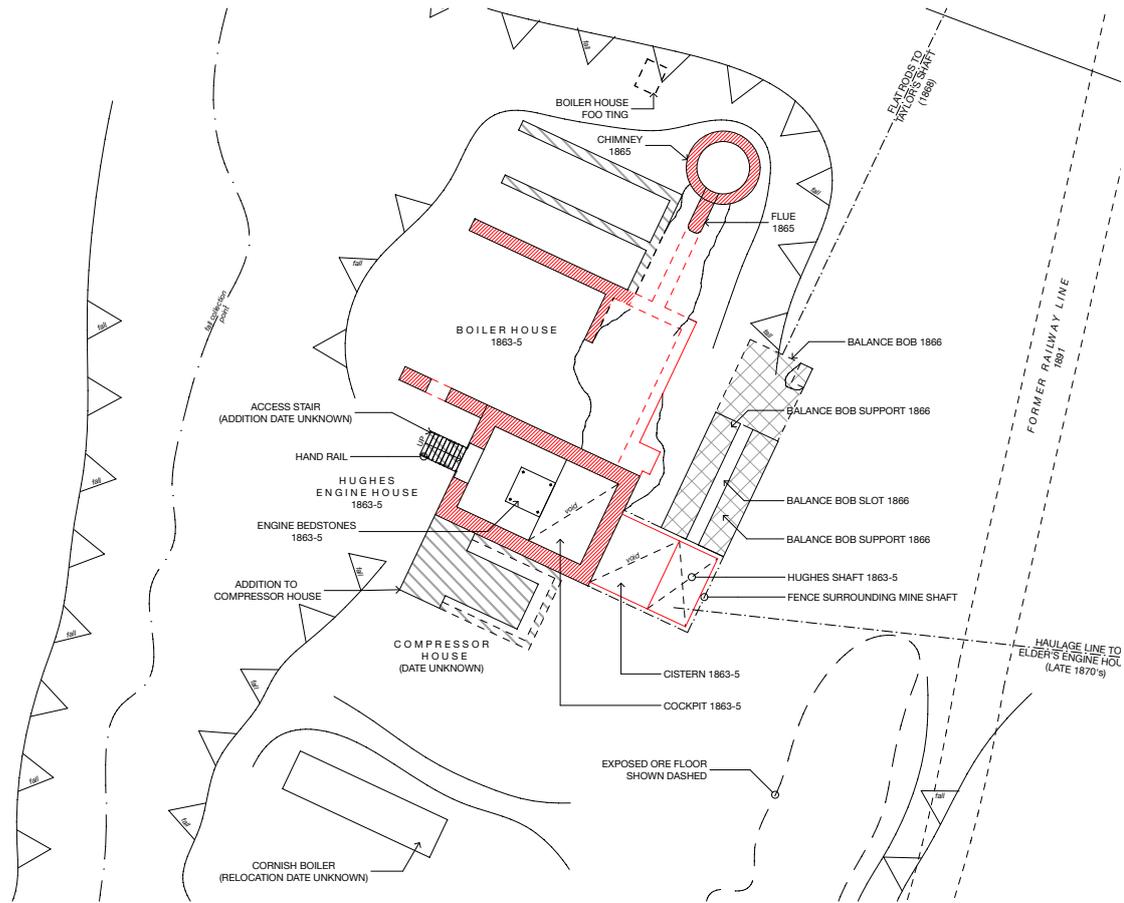
"Elder's Enginehouse and hauling appliances", c.1865-70. The posts support winding cable to Hughes Shaft. On the right is the Boilerhouse which is connected to the chimney. The frame near the enginehouse was used for the mine bell. Source: SLSA B 12570, and "Elders Enginehouse", Moonta on site heritage signage.



"Elders Enginehouse after renovation, c.1915. The large mounting block survives". Source: "Elders Enginehouse", Moonta on site heritage signage.

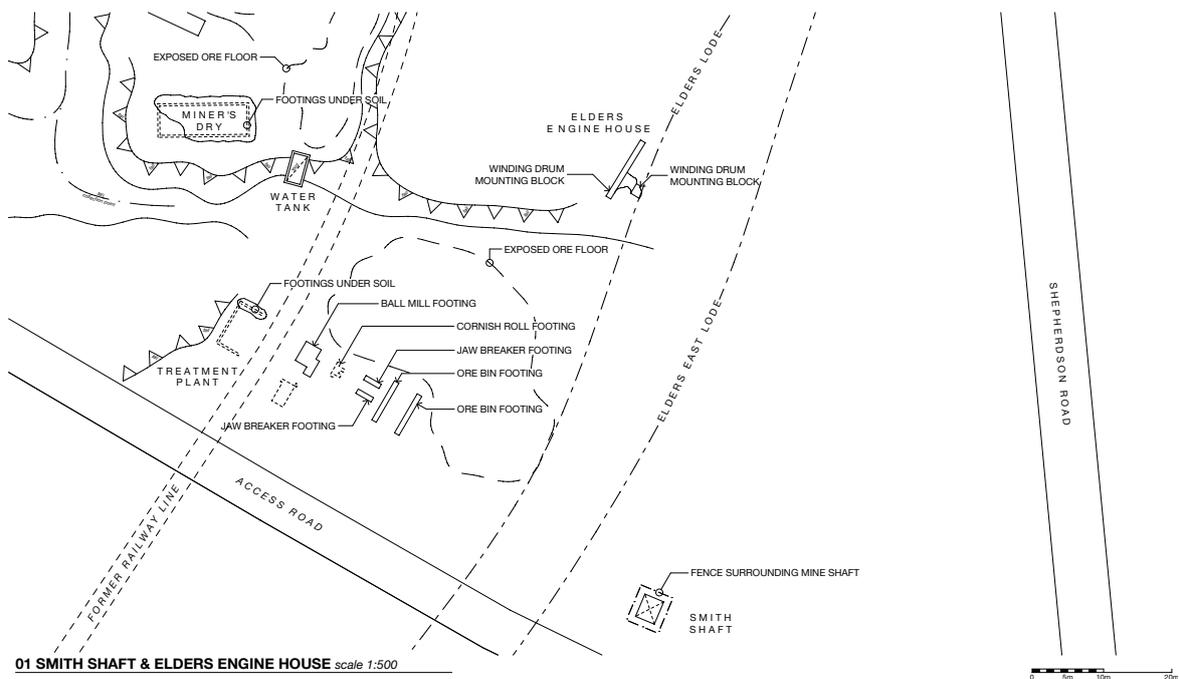


"Elders Enginehouse", c.1985. Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, n.pn.



01 HUGHES ENGINE HOUSE STAGES OF CONSTRUCTION PLAN scale 1:200

Stages of Construction of Hughes' Enginehouse and map of extant ruins. Source: Conservation Management Plan Moonta Mines Hughes' Enginehouse Precinct, 2012



01 SMITH SHAFT & ELDERS ENGINE HOUSE scale 1:500

Smiths Shaft and Elders Engine House Ruins. Source: Conservation Management Plan Moonta Mines Hughes' Enginehouse Precinct, 2012

Hughes enginehouse and stack (1865) (SAHR 10113)

Hughes Enginehouse “played a focal role in the operations of the Moonta Mine. Its function was to dewater the underground workings on the mine’s largest orebodies. These orebodies, known as Elders and Elders West Lodes, were worked over a length of 1 000 metres and to depths of more than 700 metres”.⁴¹⁸

Initially, water was controlled by Elders Engine, in March 1862, due to increased water in Elders Shaft, the Directors ordered a 60-inch Cornish pumping engine from Harvey and Co., Hayle, Cornwall, in addition to three Cornish boilers and pitwork. The order arrived in February 1863 “under charter to backload ore for Swansea”.⁴¹⁹

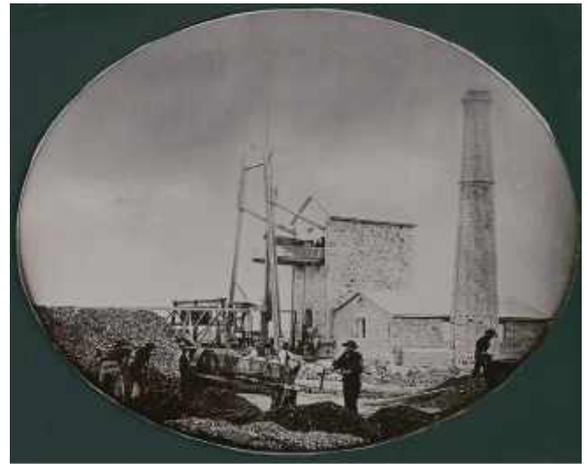
In 1863, Hughes Shaft, named after Director Walter Watson Hughes, was sunk on Elders Lode near Elders Shaft. Hughes Shaft was “sunk vertically for 128 metres and then inclined to the west at 60°, following the orebody to a total depth of 366 metres”.⁴²⁰ The shaft was designed so that “[w]ater drained to a sump at the bottom of the shaft and was pumped to the surface. The shaft was divided into three compartments: a pumping compartment containing the pump rod and pumping equipment (pitwork), a ladderway for pitmen and a winding compartment. Initially, winding was carried out by horse whim operating kibbles (buckets) but later Elders Engine was used to convey men to their underground workplaces via a double man skip”.⁴²¹

By September 1863, Hughes Enginehouse was under construction,⁴²² in preparation for the installation of the 60-inch pumping engine which was named Hughes Engine. By March 1865, Hughes Enginehouse was completed under the supervision of Chief Engineer Frederick May and costed approximately £7,000. It was ceremoniously started on 2 September 1865 by Captain Hancock and Chief Engineer May. Mr Glucas was the pitman. It was reported in the *Adelaide Observer* newspaper that the “masonry work in the engine and boilerhouse is of most massive and solid character, from designs which were sent out with the engine [from Cornwall]. Mr. John Beaglehole has been the contractor for not only this, but for nearly all the stone buildings on the mine”.⁴²³

John Beaglehole was born in Helston, Cornwall in 1831 and migrated to South Australia in 1849. He initially lived in Burra and worked as a building contractor however in 1860 he moved to Moonta and lived in Ryan Street. In 1863, he established his own business.⁴²⁴ He was “prolific at the Moonta Mines, being the contractor for construction of nearly all of the stone buildings on the mine. He was also the founder of the Moonta Wesleyan Sunday school and intimately involved in the Methodist Church in the district”.⁴²⁵ Beaglehole was an important Moonta resident; a local councillor and founding trustee member of the Moonta Institute and Cemetery. He died in 1910.

Hughes “engine consisted of a massive cast iron beam or bob mounted on the front of the bob wall of the enginehouse. One end of the beam was connected to a piston rod in a 60-inch diameter vertical cylinder. This was located on the large bedstones and anchored to a great mass of stonework by the four long cylinder bolts. The other end of the beam was connected to the pump rod which extended down the shaft. The engine lifted the pump rod (the indoor stroke) which fell by its own weight operating plunger pumps in the shaft (the outdoor stroke)”.⁴²⁶

The “enginehouse was an integral part of the engine, supporting the cylinder and beam, and sheltering them from the elements. It was divided into three storeys or chambers which allowed access to the various components for maintenance”.⁴²⁷ The chambers included: the bottom chamber housing the steam-jacketed cylinder; the middle chamber holding the cylinder cover and piston rod; and the top chamber “where the beam pivoted on the top of the bob wall”.⁴²⁸



Hughes Enginehouse, c.1864. Source: State Library of SA (SLSA) B 12588.



“Hughes’ Pumping Enginehouse at Moonta Mines”, c.1884. Source: SLSA B 10510.

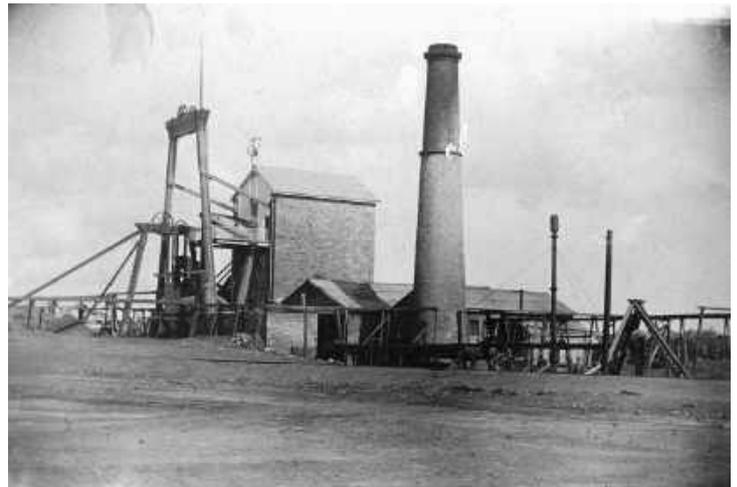
Hughes Enginehouse was built “using fossiliferous limestone from Boors Plains”.⁴²⁹ There was a semi-detached Boilerhouse to the northern side, which housed the three Cornish boilers. Further north was the tall chimney which was connected to the Boilerhouse. In 1866, a balance bob was added to Hughes Enginehouse. Hughes Engine had capacity for additional pumping. In 1868, flat rods which operated on rollers ran in a shallow channel on the ground were installed connecting Hughes Engine to an additional pump rod in Taylors Shaft. In 1873, flat rods were also connected to pumps in Duncans Shaft. Thus, for a period, the engine was pumping from three shafts. It was the “only beam pumping engine erected at Moonta and was sufficient to dewater most of the mine”.⁴³⁰

The “brackish water extracted from the mine was used in the ore crushing process and for firefighting. Excess water was run out to sea near Moonta Bay”.⁴³¹ Hughes Engine Pool stored water from the mine and used to store and cool the steam used to operated the pump.

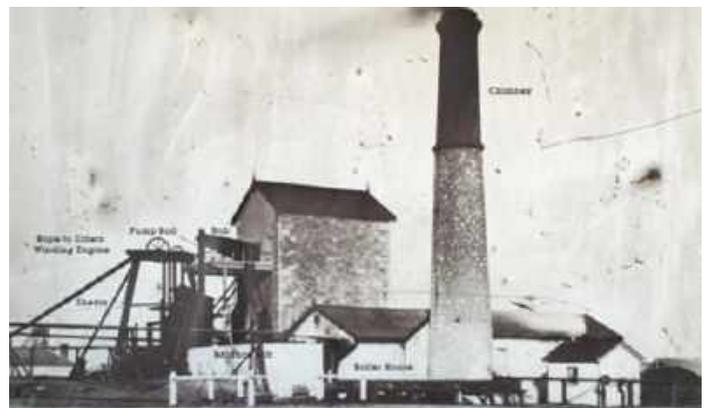
The engine became the “longest serving Cornish beam engine in Australia”,⁴³² operating from 2 September 1865 to 25 September 1923, a period of almost sixty years, when the mine closed. It “worked day and night from its installation ... until the mine’s closure”⁴³³, while the enginehouse remained essentially unchanged throughout this period, various modifications were made to the boilerhouse which was extended to five boilers, while a compressor house to produce compressed air for the underground rock drills was added to the south side of the enginehouse added before 1899. In 1925, the engine was removed for scrap. Much of the site around the enginehouse was buried in tailings from the floatation which was produced by the 1930’s reworking of Smith’s shaft and this included the base of the walls of the boilerhouse.

In c.1974, the National Trust stabilised Hughes Enginehouse and chimney (SAHR 10113), however the Boilerhouse had been demolished in 1925. In c.1992-93, further conservation works were undertaken which included stabilising the upper section of Hughes Shaft which had collapsed following the mine’s closure. Concrete pads, bearers and panels were constructed and a “timber frame and lining was fixed to the upper part of the reconstructed shaft to replicate the original timbering”.⁴³⁴ The work prevented further collapse of the shaft, condenser pit and balance bob supports.

Localised excavation also occurred around the west side of the structures at the same time which exposed the base of the boilerhouse walls.



Hughes Enginehouse, c.1900. Source: SLSA B 58893.



“Hughes Pump Enginehouse and Chimney circa 1906 ... The bob, shown here almost at the top of its stroke, drove the vertical pump rod. With each stroke the pump raised 300 litres of water to the surface and made 5 strokes per minute”. Source: “Hughes Pump Engine and Chimney”, Moonta on site heritage signage.



“Hughes Cornish Pumping Plant - pumping engine in background, stables enclosed by stone walls, in front”, c.1916. Source: SLSA B 9207.



“Miners at Moonta”, c.1910. Source: SLSA B 45889.



“Group of Cornish and Australian born descendants working at Moonta Mines”, Hughes Engine House and shaft in the background, c.1894. Source: SLSA B 12593.



“Group of Moonta Miners”, c.1895. Source: SLSA B 23893.

Associated infrastructure

The early development phase of the mine was reliant upon horse power, whether to drive whims or for transport around the site, so the development of stables was one of the earliest structures erected. A substantial stable and store of native pine and sawn timber had been built by April 1862.⁴³⁵ This structure was subsequently modified and adapted over time to incorporate stone buildings all surrounded by a stone boundary wall to form an inward looking complex. Besides the narrow timber structures containing the stalls, a large two level fodder store formed much of the east side of the complex.

East of the line of lode adjacent Milnes Shaft is the hay yard built by the mining company to store hay for the mine horses associated with the stables. Originally hay was stored in stacks built each year adjacent to the stable complex and these reached a tremendous size. In 1875 one of these stacks contained 400 tons.⁴³⁶ These large stacks were covered with roofs of iron. The more remote yard which was comprised of three evenly spread separate stacks raised up off the ground on permanent stone footings all serviced by a hoisting derrick appear to come about the following year.⁴³⁷

Waterhouse and Smiths shafts located to the north and south of Elders Shaft were amongst the earliest developed at the mine and were certainly in existence by 1862.

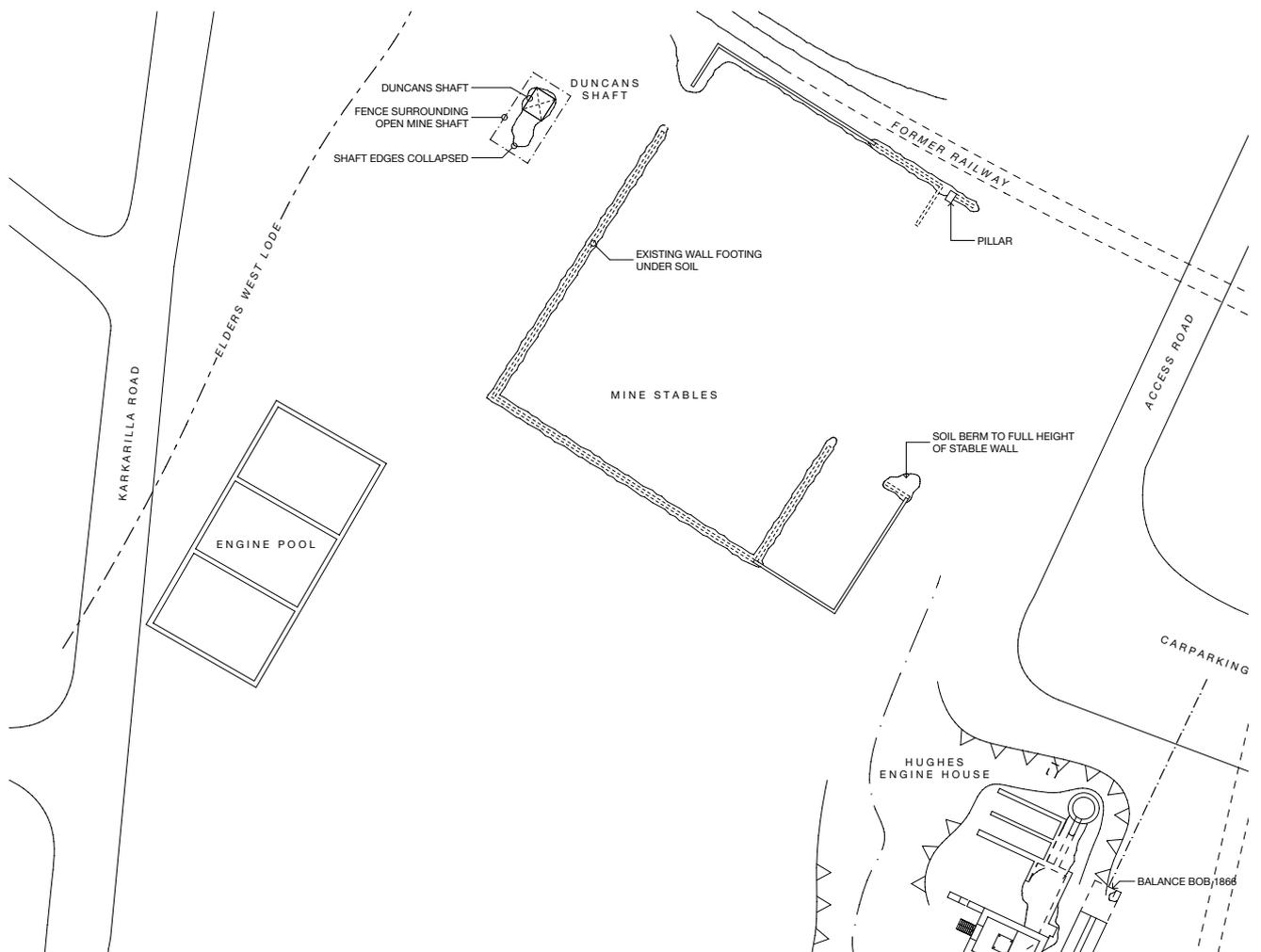
Duncan’s shaft, located to the west in close proximity to the stable resulted from the discovery of the Elders West Lode in 1872.⁴³⁸ These were all haulage shafts where ore was brought to the surface with winding eventually being operational from Elders Enginehouse. All as a result had large ore floor, adjacent the shafts where tribute ore was stored ‘at grass’. Smiths shaft was reworked as part of an unemployment relief scheme.

Hughes engine pool (1865) (Part of SAHR 13975)

The Hughes Engine Pool is located to the west of Hughes Enginehouse and was built c.1865. It was used to store water which had been pumped out of Hughes Shaft by Hughes Engine. The water was transported via an above ground timber "launder" or trough. ⁴³⁹ The pool was constructed from stone and "divided into three internal compartments, each measuring 18 metres by 10 metres and 2 metres deep". ⁴⁴⁰ Steam from the engine was also condensed in the pool.



Hughes Enginehouse and environs, c.1910. At the centre is the walled stables area behind which a wooden trough takes water pumped from Hughes Shaft (left) to the engine pool (right). In the background is Treuers Shaft and Salvation Army Barracks surrounded by cottages of Moonta Mines settlement. In the foreground is a 'miners dry' or changeroom. Source: SLSA B27805



Map of extant fabric of Hughes' Engine Pool and the Mine Stables. Source: Conservation Management Plan Moonta Mines Hughes' Enginehouse Precinct, 2012

Site of the mine workshops (c.1865)

In c.1865, the first Mine (Mechanical) Workshops were constructed. They were used for building and repairing mining equipment and machinery. This large-scale complex grew in size and complexity over time to eventually include: “a fitting shop, blacksmith’s shop ... pattern store, moulding shop ... and a locomotive workshop ... The workshops employed up to 300 men and boys and were the largest mechanical workshops in the southern hemisphere”.⁴⁴¹ The Moulding Shop measured 65 x 40 feet and included three furnaces which could manufacture castings weighing up to 10 tonnes.⁴⁴² The Pattern Store measured 70 x 30 feet. It comprised two floors and a cellar. Patterns were produced for pulleys sized from 2 inches up to 6 feet and spurwheels up to 10 feet in diameter. The Blacksmiths Shop was 130 x 50 feet and contained 18 forges, a faggoting furnace, and 2 steam hammers. The Fitting Shop housed machinery including: 9 lathes (one of which could bore wheels 12 feet in diameter); farriers; wheelwrights; carpenters; and locomotive shops. There were approximately 300 horses kept at the mine for uses such as horse whims, ploughing slimes, and pulling the Captain’s trap which meant the Farrier was an important part of the workshop.⁴⁴³ The site of the Mine Workshops (Part of SAHR 13975) remains.



“Machine Shops at the Mines”, c.1884 Source: SLSA B 10514.



“Miners at the Mechanical Workshop in the Moonta Mines”, c.1910. Source: SLSA 30597.



“Apprentices and other staff outside Moonta Mines Engineering Shop”, c.1890. Source: SLSA B 26969.



“Panoramic view of maintenance shops”, with notes by Oswald Pryor, c.1908. Source: SLSA B 12603.



“Moonta Mines stables and mechanical shops”, c.1898. Source: SLSA B 34863.

Taylor's shaft (1862)

Taylor's Shaft was sunk in 1862 and was the Mine's deepest shaft at a depth of 2520 feet "at a point below Moonta Mines School".⁴⁴⁴ It was named after "John Taylor, a partner in Elder, Stirling & Co ... which part financed the Wallaroo and Moonta mines. Hauling was originally by horse whim but in 1865 Prankerds 30inch Cornish beam winding engine was erected nearby and operated until 1901. The water supply was from a dam a few hundred meters to the east ... Water was pumped out by the engine in the Hughes Enginehouse connected to Taylor's by flat rods which passed through a culvert under Verran Terrace. A nearby pit was the entry and exit for miners to access the man skips mounted in the shaft. In 1874 the crank in Prankerds engine broke and a skip of ore plunged 150 fathoms to the bottom".⁴⁴⁵



: "Taylor's Shaft, headframe and ore sorting plant, c.1910". Source: Drew, G.J., *Discovering Historic Moonta: South Australia*, p33.



"Taylor's Shaft", c.1985. Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, npn.

Richman's enginehouse and nearby tailings dumps (1869)

There were three concentrating plants at the Moonta Mine namely Richman's, Hancock's, and Ryans. Around 1865, Hancock suggested that another engine should be purchased to increase the mine's capacity to crush and dress low-grade ore. A 32-inch Cornish beam rotative engine was bought from the local Kurilla Mine owned by Elder Smith & Co. for £2,100. Richman's Beam Rotative Engine, as it became known, powered crushing and dressing machinery. The "building of an enginehouse for the new engine, named Richman's after a director, began in July 1867 at Stuckey's Shaft near the northern end of Elders Lode. By June 1869, the enginehouse, built from stone from Moonta Beach, was nearing completion and the crushing and winding machinery, which had been made in the Moonta workshops, was being fitted under the supervision of Frederick May. The engine started operations near the end of 1869".⁴⁴⁶ The distinctive enginehouse with its flat roof and parapet was designed by engineer May and he also supervised its construction. "The crusher was started in December 1869 and the first Hancock jig was added in 1872 ... In 1875, two circular buddles were erected on Richman's dressing floors to concentrate the slimes from the jiggers ... In the 48 years of operation, Richman's Engine served the progression of concentrating processes from jigs and buddles, to Wilfley tables and finally to flotation".⁴⁴⁷

Richman's concentrating plant "operated from 1869 until the mine closed in 1923, crushing and concentrating ore from nearby shafts ... Waste from the plant was dumped on the large tailings heap behind the enginehouse".⁴⁴⁸ In 1986, Richman's Enginehouse (Part of SAHR 13975) was stabilised and is extant. "Surrounding the enginehouse are other ruins including foundations and bases of crushers, jiggers, buddles, elevators, air compressors and boilerhouses".⁴⁴⁹



"Richman's Enginehouse and Ore Concentrating plant", c.1884. Source: SLSA B 10513.



Richmans, c.1900. Source: SLSA B 34838.



"Buddles at Richman's concentration plant, looking west", c.1898. Source: SLSA B 34862.



"Richmans concentrating plant", c.1898. Source: SLSA B 12595.



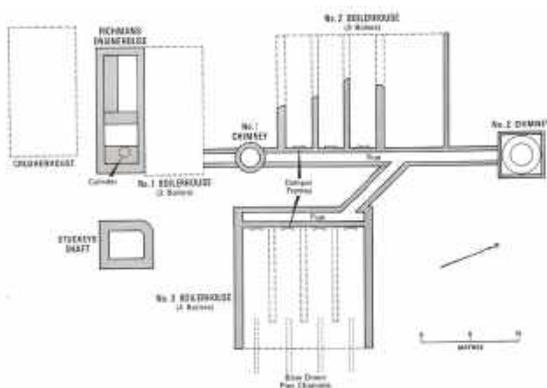
"Storage Bunkers". Source: "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, npn.



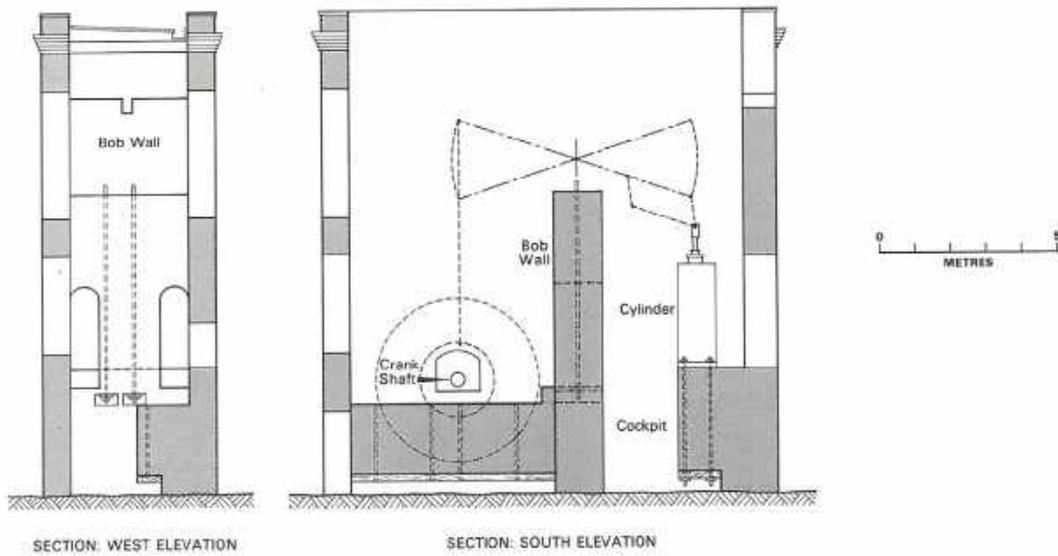
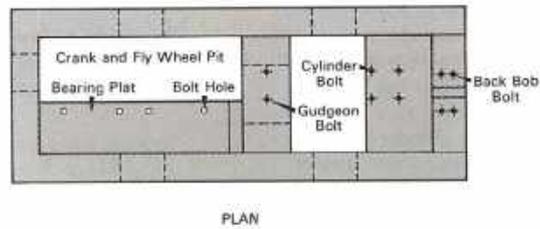
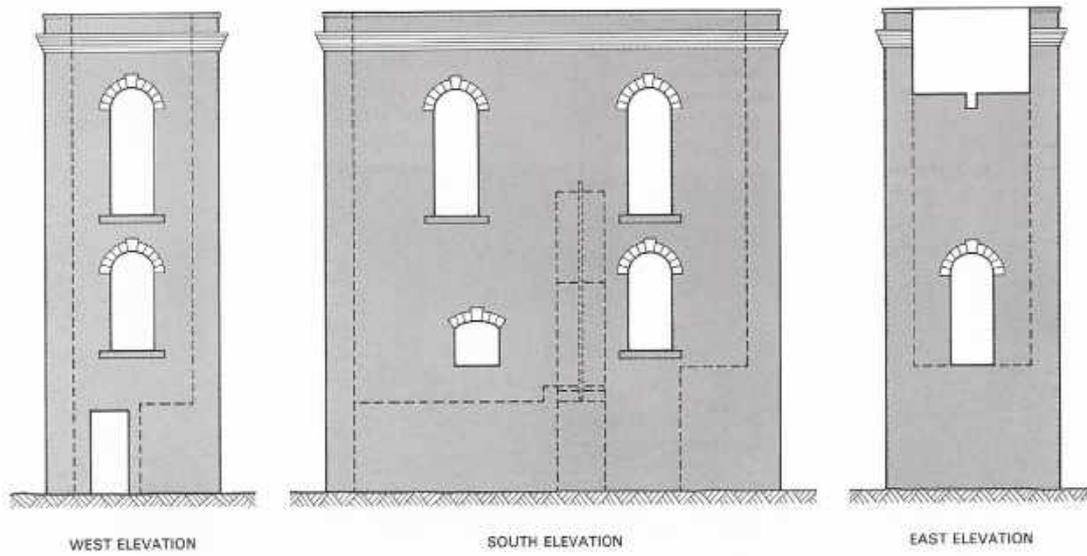
"Richmans Enginehouse and environs looking south towards Hughes Enginehouse, c.1915". Source: Moonta on site heritage signage.



Looking south along Elder's Main Lode from Richmans in approximately 1898. Warmington's shaft is in the middle ground with a timber head frame over it. In the foreground are two bunker bins. In the background is Prankerd's winding engine and boiler houses and former crusher house. SLSA B12596



"Richmans Enginehouse site plan, Moonta Mine". Source: G.J.Drew & J.E.Connell, Cornish Beam Engines in South Australian Mines, 1993 p149



“Richmans Enginehouse, Moonta Mine”. Source: G.J.Drew & J.E.Connell, Cornish Beam Engines in South Australian Mines, 1993 p151

Fabric Description

The ruins of mining structures and features distributed along Elder’s main lode have the greatest integrity of the former industrial complex.

Treuers shaft (1880)

At the southern end is the Truers complex, about 100m west of the Elders lode. It was worked principally after 1900 in conjunction with the Karkarilla lode of the Hamley Mine. The standing ruins at Truers complex only extend to a maximum of 2m high but most of the elements are legible and consist of the base of the Enginehouse and boiler chimney, including its flue, and two open mining shafts. The timbering in Treuers shaft is one of the best examples visible on the mine site.

Ruins of Elders enginehouse (1863)

The extant fabric includes a section of stone rubble walling with red brick quoins. This is to be the westernmost mounting block on which the winding drum sat. To the immediate east of this are remains of the small Enginehouse and mounting block. In 1985 it was reported that a sinkhole had opened next the Enginehouse causing subsidence. This accounts for the odd angle of the walls now visible. There is no remaining evidence of Elder’s Shaft which was located to the north of the enginehouse in the approximate location of the roadway to the Hughes Pumphouse carpark. The site is also part buried by the slimes produced by the 1930’s mine works of the adjacent smiths shaft.



General view of ruins at Truers Shaft



Ruins of chimney base and flue



Truers Shaft



Truers New Shaft

Hughes enginehouse and stack (1865) (SAHR 10113)

The remains of Hughes Enginehouse complex make up the most intact mining complex of the former Moonta Mine. They consist of most of the original structural stone walls of the Enginehouse up to the original roofline and, within it, the floor of the original cockpit, the original bed stones and cylinder bolts onto which the engine was fixed. The shaft collar has been reconstructed to prevent collapse but the adjacent stone lined cistern and mounting blocks for the balance bob are intact.

The boilerhouse remains are less intact and visible components include three parallel stone walls to a height of approximately 2 metres with the footprints of other walls evidenced by strips of rubble and formations at ground level.

The tall tapering round chimney is intact and is also constructed of local limestone rubble. The chimney has only been altered by the addition of iron straps.

The compressor house remains are limited to the stone plinth on which it sat and floor.



Hughes enginehouse and chimney ruins

Hughes engine pool (1865) (Part of SAHR 13975)

Hughes engine pool is nearby. It consists of three joined compartments, each 18m by 10m and 2m deep. The pool structure is intact except for several breaches in the walls and the structure is partly buried by the later tailings from the 1930's flotation plant at the Smiths shaft that raised the area around the pool by about 1m.

There are two miner's dries in the area, but little remains of them. At Miner's Dry No.1 are remnant portions of stone walling and a floor slab. The outline of a stone lined tank is nearby. At the site of the second miner's dry (No.2.) only remnants of walls and brickwork remain

At the stables site, the layout of the stables are evidenced by ruinous sections of stone walling and the outline of walls at ground level. Most walls are to an average height of 500mm but some are up to 1m in height. As in other areas, there may be further fabric below raised ground levels.

Other features in the area around Hughes Enginehouse include channels for the flat rods that connected Hughes Enginehouse and Taylor's shaft and several ore floors. Most of the channel has been covered or buried; however, the National Trust has recently uncovered a section between the Miners Dry and Waterhouse Shaft. The line of the flat rod channel can be detected as a slight depression in the ground between Hughes carpark and Verran Terrace.

The history of the demounted boiler nearby is vague and further research is required to understand its origin.



Ruins of Hughes boilerhouse



Hughes Shaft and pumping rod



Detail of demounted boiler at Hughes enginehouse



Hughes engine pools



Ruins of miners' dry at Hughes



Ruins of mine stables



Detail of standing walls to mine stables showing loss of bedding and pointing mortar and voids. The top of the wall has been stabilised with cement mortar which may be exacerbating erosion



Context of the company hay yard ruins. The remains of the 2m high wall that once surrounded the site is visible in the background



Haystack foundations



Remains of waterhole adjacent Company hay yards

Site of the mine workshops (c.1865)

Although the workshops were made up of a large number of individual buildings with these being associated with the locomotive shed, blacksmith shop and the foundry, fitting and machine shop there is little remaining fabric at the site of the Mine Workshops. The site can be determined only by a few stone wall bases, remaining machine blocks, a few solid floors and basements. No remains of structures evident above ground level north of line to former locomotive shed. The site is also confused by the vegetation overgrowth which is also damaging some of the ruins.

No interpretive signage is present to explain the context or layout of the site.



Ruins of servicing pits at the former locomotive workshops at the Mine Workshops site



Remnant machinery mounts at Mine Workshops site



Scattered ruins at the Mine Workshops site



General view of scattered ruins at the Mine Workshops site with Hughes chimney in the background

Taylor's shaft (1862)

There is an extensive complex of ruins and features around Taylor's Shaft. Taylor's was the deepest and longest worked shaft on Elder's main lode. Most of the ruins therefore relate to the later period when the ore was crushed and sorted next to the shaft before being loaded into ore carts which transported the crushed ore to Richmans concentrating works further to the north. The shaft itself has collapsed and is at serious risk of further collapse. Only a portion of the former stone lined balance bob pit survives, as does the timber pump rod. An iron hinge strap connecting the top of the pump rod to the balance bob is half buried. Next to the shaft is the ruins of the crusher house which consists of walls to 2m in height and a railway embankment.

At the site of Taylor's Enginehouse, the area is complicated by the addition of a power station and compressor in 1917. Concrete foundations relate to the latter stage. The former Cornish boiler arrangements are clearly visible north of the Enginehouse evidenced by three parallel walls and chimney base.

The site of Prankerds Enginehouse is only evidenced by a portion of stonework visible at ground level and hold down bolts emerging from the ground amongst the scrub.

Other features in the area include ore floors and the continuation of the duct for the flat rods connecting Taylor's back to Hughes Enginehouse. There are four demounted boilers in the area but they are understood to not be associated with Taylor's.



Taylor's Shaft and ore floor. The ruins of Taylor's sorting plant are to the left of image. The extent of collapse is significant.



Detail of collapse at Taylor's Shaft



Taylor's sorting plant ruins to the west of Elder's Main Line of Lode. Walls have been propped to prevent further collapse



Ruins of former rail ramp abutment to the west of Elder's Main Line of Lode, looking north from Taylor's to Richmans. Richmans Tailings Heap is in the distance



Ruins of Taylors enginehouse and c.1917 power station to the east of Elders Main Line of Lode.



Ruins of Taylors boilerhouse, enginehouse and c.1917 power station to the east of Elders Main Line of Lode



Ruins of chimney base at Taylors shaft associated with the boiler house and engine house to the east of Elders Main Line of Lode



Looking north along Elders Main Line of Lode towards Richmans. Possible remains of Prankerds Enginehouse in the foreground. Four demounted boilers are in the middle ground.



Four demounted boilers near to Stirlings Shaft. Richmans Enginehouse is in the background



Collapse of underground workings at Warmingtons Shaft, south of Richmans Enginehouse

Richmans Enginehouse and nearby tailings dumps (1869)

The Richmans complex and tailings heap stands at the northern head of Elders lode. The complex consists of the Richmans Enginehouse, shaft, concentrating works, a compressor house, slime processing areas, and tailings heap. The Enginehouse drove a series of crushing and concentrating equipment and was extended over the period. As a result, the ruins represent several layers of development. The tailings heap is a major visual feature of the area. Cementation aqueducts criss-crossing the top surface are still clearly visible, as our remnant blocks that once supported the seawater and acid conducting pipes.

The Enginehouse itself is substantially complete with its stone walls extending to their original parapet height and include the internal bob wall and heavy foundation for the engine. The original windows are lost, as is all the equipment. Hold down bolts and ironwork are extant.



Ruins of Richmans Enginehouse with Richmans Compressor House in the foreground

Little survives of the c.1869 crusher and remains are confused by later layers of development and change. The stone shaft collar is complete and the best example of its type on the mine site. A collapse has recently occurred between the shaft and the Enginehouse and further investigation is needed to ensure their stability.

The boilerhouses are evidenced by ruinous stone walls to an average of 300mm high in poor condition, and by a chimney base that supported a tall iron chimney.

There is the ruins of a compressor house, evidenced by concrete and brick walls to about 3m in height.

To the west of the Enginehouse is the ruins of the ore concentrating works. Enough remains to understand that the area was used for large machines as part of ore processing.



Internal view of Richmans Enginehouse showing the bob wall



Ruins of Richmans First Boilerhouse



Mounting block adjacent to Richmans Enginehouse



Ruins of Compressor House and Stuckey's Shaft. Richmans Enginehouse is to the right of the image. A recent collapse of underground workings has occurred between the shaft and enginehouse.



Site of Richmans Second Boilerhouse



Ruins of steel chimney base



Site of third boilerhouse at Richmans



Ruins of Richmans Concentrating Works



Major cracking to compressor house



Severe weathering to brickwork to Compressor House



Inappropriate grey cement repairs are visually intrusive and damaging to stonework at Richmans enginehouse



Overview of Richmans Enginehouse and Concentrating Works ruins from Richmans Tailings Heap No.1



View towards Richmans Tailings Heap No.2 from the top of Richmans Tailing Heap No.1. A slime pond is in the middle ground.



Mounting block associated with carrying the mixture of sea water and sulphuric acid to the top of Richmans Tailing Heap No.1



View towards Richmans Tailings Heap No.2 from the top of Richmans Tailing Heap No.1. A slime pond is in the middle ground.

Current condition and integrity of the fabric associated with the NHL values

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Treuers shaft (1880)				
Ruins of c.1880 – 1906 Treuers enginehouse and shaft – used to haul ore from Treuer’s shaft	Poor	Medium	<p>Poor –</p> <p>Few surviving masonry elements in poor condition.</p> <p>The shafts are in fair condition but in some risk of collapse and deterioration.</p> <p>Chimney base and flue constructed as part of the 1906 extensions.</p>	<p>Medium –</p> <p>The ruins provide a complete record of the operations at Treuers with most components legible – Enginehouse, machine plinths, shaft collars, chimney base and flue.</p> <p>The timbering in Treuers shaft is one of the best examples visible on the mine site.</p> <p>Some limited existing interpretation at this location.</p>
Ruins of Elders enginehouse (1863)				
Ruins of c.1863 Elders Enginehouse – housed Elder’s engine, the first on Moonta Mines. Hauled from six shafts: Elders, Waterhouse, Bennetts, Duncans	Poor	Low	<p>Poor –</p> <p>Few surviving masonry elements in poor condition, including damage by vegetation growth.</p> <p>The 1985 survey reported a recent sinking at that time that caused considerable movement. It appears that since 1985 make safe works have occurred to fill the sinkhole but a depression remains in this location.</p>	<p>Low –</p> <p>The ruins comprise partial stone and brick footings and low walls of the enginehouse.</p> <p>Good interpretation information currently available on site to explain what can be seen.</p> <p>Nearby are some later concrete mounting blocks associated with the 1930s unemployment relief scheme associated with the reworking of Smiths shaft.</p>
Hughes enginehouse and stack (1865) (SAHR 10113)				
Ruins of c.1865 Hughes enginehouse and stack, including ruins of boilerhouse and demounted boiler	Good	High	<p>Fair –</p> <p>Masonry is generally in good condition. Conservation work was undertaken in the 1990’s to stabilise the shaft. The work is well documented in Heritage SA files.</p> <p>Nearby demounted boiler is in fair condition with rust holes apparent.</p> <p>The 1985 survey noted that the ground level was raised as much as 2m in the 1930s around the stack as a result of the dumping of tailings from the floatation processing associated with Smiths shaft as part of an unemployment relief scheme and was creating a risk of rising damp. Patch repointing appears to have occurred. These levels have been locally reduced to more closely reflect the original to the west side of the enginehouse, which has resulted in most of the remains of the boilerhouse being exposed.</p>	<p>High –</p> <p>The masonry is substantially intact for all elements: Enginehouse, boilerhouse and chimney stack.</p>

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
c.1865 engine pools	Fair	High	Fair – Several breaches in walls. Cement render cover to internal face is partial. Stonework bedding and pointing mortar eroded. Externally walls built up about 1m with floatation tailings from the 1930s unemployment scheme. Evidence of salt attack to masonry. Evidence of vegetation control.	High – Easily understood as the engine pools associated with Hughes Enginehouse and have a strong visual relationship with the other components at the Hughes site. Other than some breaches they retain a high degree of fabric integrity.
c.1925 Smith's shaft – operated until 1945 as part of the 1930s unemployment relief scheme	Poor	Low	Poor – Shallow depression with concrete beam at edge.	Low – does not contribute to the values
Ruins of c.1865 mine stables – used to house horses and vehicles of mine transport and fire brigade	Poor	Medium	Poor – Masonry is generally in poor condition with loss of bedding and pointing mortar and voids. It appears conservation work has occurred to stabilise the tops of walls but this may have led to greater erosion at lower level.	Low – There is enough remains to understand the extent of the stables. The former use is not well conveyed by the fabric Some concrete bases associated with the 1930s unemployment relief scheme are extant nearby.
Hughes engine pool (1865) (Part of SAHR 13975)				
Ruins of c.1865 Hughes enginehouse and stack, including ruins of boilerhouse and demounted boiler	Good	High	Fair – Masonry is generally in good condition. Conservation work was undertaken in the 1980s to stabilise the shaft. The work is well documented in Heritage SA files. Nearby demounted boiler is in fair condition with rust holes apparent. The 1985 survey noted that the ground level was raised as much as 2m in the 1930s around the stack as a result of the dumping of slimes from an unemployment relief scheme and was at risk of rising damp. Patch repointing appears to have occurred.	High – The masonry is substantially intact for all elements: Enginehouse, boilerhouse and chimney stack.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Ruins of c.1865 Hughes stables – used to house horses and vehicles of mine transport and fire brigade	Poor	Medium	Poor – Masonry is generally in poor condition with loss of bedding and pointing mortar and voids. It appears conservation work has occurred to stabilise the tops of walls but this may have led to greater erosion at lower level.	Low – There is enough remains to understand the extent of the stables. The former use is not well conveyed by the fabric Some concrete bases from the 1930s unemployment relief scheme are extant nearby.
c.1925 Smith's shaft – operated until 1945 as part of the 1930s unemployment relief scheme	Poor	Low	Poor – Shallow depression with concrete beam at edge.	Low – does not contribute to the values
Ruins of c.1865 engine pools	Fair	High	Fair – Several breaches in walls. Cement render cover to internal face is partial. Stonework bedding and pointing mortar eroded. Externally walls built up about 1m with slimes from the 1930s unemployment scheme. Evidence of vegetation control.	High – Easily understood as the engine pools associated with Hughes Enginehouse and have a strong visual relationship with the other components at the Hughes site. Other than some breaches they retain a high degree of fabric integrity.
Ruins of c.1874 hay yard and reservoir, consisting of three haystack bases and a water reservoir	Poor	Medium	Poor – Boundary walls have deteriorated since last surveyed in 1985. They are not maintained. Haystack walls are also not maintained and are threatened by erosion and scrub revegetation. Water reservoir is visible in the topography by a depression and mounded earth walls – strewn with rubbish.	Medium – The whole area is understood to have been surrounded by a 2m high wall. Currently about 20m stands fully height and the remainder is reduced to an average of 0.5m. The haystack bases are almost complete. The layout is difficult to read due to the scrub overgrowth. Reservoir is difficult to discern from the surrounding terrain.
Waterhouse shaft – used for raising ore to the surface, includes ore floors,	Poor	Low	Poor – Shallow depression filled with rubbish. Fair – Ore floor is in fair condition, but regeneration of scrub is damaging stones.	Low – Shaft is closed by collapse. Medium – The ore floor is evident in the vicinity but is impacted by vegetation growth which effects the legibility of connection to the shaft.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
c.1870 Miners Dry No.1 (Change Room) – used for changing and drying clothes from underground.	Poor	Low	Poor – Standing walls to 0.5m in poor condition. Floor mostly buried	Low – Little remains of the former structure. Its former use is not evident from the extant fabric.
c.1870 Miners Dry No. 2 (Change Room) – used for changing and drying clothes from underground, includes adjoining underground tank	Poor	Low	Poor – Only wall bases and concrete floor of wet area are visible along with chimney base and walls of underground tank. Tank part filled with rubbish.	Low – Little remains of the former structure and its form is not evident from the extant fabric.
Site of the mine workshops (c.1865)				
Site of c.1865 mine workshops	Poor	Low	Poor – Few surviving masonry elements, floors and heavy foundations. At risk of further deterioration due to vegetation and erosion	Low – The site can be determined by the remains of some footings, floors and machinery mounting features, but layout is confused by rubble and overgrowth of low scrub. There does not appear to be any evidence of some components at all above ground level. The site has value as an archaeological record. The potential to be determined pending development of an archaeological zoning plan.
Taylor's shaft (1862)				
c.1865 Taylor's Shaft – this was the deepest shaft at Moonta and sloped to lie under the school building (now Museum). Ore was hauled from Prankerds Engine from 1865-1901 then by Taylor's engine to 1923.	Fair	Medium	Poor – Now a large open pit about 8m deep with ongoing erosion and collapse. The collapse of underground workings is impacting on other nearby structures such as the associated ore floor. Nearby ore sorting floor in good condition.	Low – The considerable amount of timber reported in 1985 around the shaft collar and a pit which served as an entry and exit for miners are no longer extant. A portion of the stone walling to the balance bob pit remains, as does the timber pump rod. An iron hinge strap connecting the top of the pump rod to the balance bob is half buried.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
c.1900 Taylor's Enginehouse ruins – used for ore raising, erected to house a new, larger engine to replace Prankerds. It was rebuilt twice, one to overcome subsidence which cracked the engine base and later to accommodate another large engine.	Poor	Medium	Poor – Stonework generally in poor condition due to weathering, loss of pointing and bedding mortar and collapse. Chimney base is in very poor condition, at high risk of further collapse.	Low – Area complicated by the addition of a power station and compressor in 1917. Concrete foundations relate to the latter stage. The Cornish boiler arrangements are clearly visible north of the Enginehouse, including chimney base.
c.1865 Prankerds Enginehouse – dismantled in 1901 when it was superseded by Taylor's Engine.	Poor	–	–	Low – Barely visible signs of foundations and hold down bolts projecting from the ground
c.1901 Storage bins, sorting plant and rail embankments	Poor	Medium	Poor – Stonework is leaning and has major cracking and has large timber props. Rail embankments in fair condition.	Medium – Base stonework of building, rail embankment and railway walls are standing. Timber superstructure completely lost. Rail embankments complete.
c.1865 Warmington's Shaft – used for ore raising (nearby Richmans)	Poor	Medium	Poor – Now a large pit about 8m deep with stone walls, remnant of an early major shaft and hauling equipment, hauled by Stirling's engine.	Low
Duct for flat rods	Poor	Medium	Poor – Little evidence remaining. In select areas of stone walling to each side of a stone lined trench	Low – Trench on ground evident
Richmans enginehouse and nearby tailings dumps (1869)				
c.1869 Richmans Enginehouse – used to house a steam engine for driving ore crushing and processing machinery	Fair	High	Fair – Introduced later roof is in poor condition and not maintained, allowing water to concentrate erosion of stonework to select areas. Deterioration is evident to high level stone and brickwork. Masonry to parapet partially reconstructed and all masonry repointed with cement in the 1980s	High – The Enginehouse walls are substantially complete. Some loss of stonework to the parapets. Conservation work was undertaken in the 1980s which repaired parapets and added concrete sills to openings. A date mark '1985' is set in a concrete sill to the west facade. The original windows are lost, as is all the machinery. Hold down bolts and ironwork are extant.

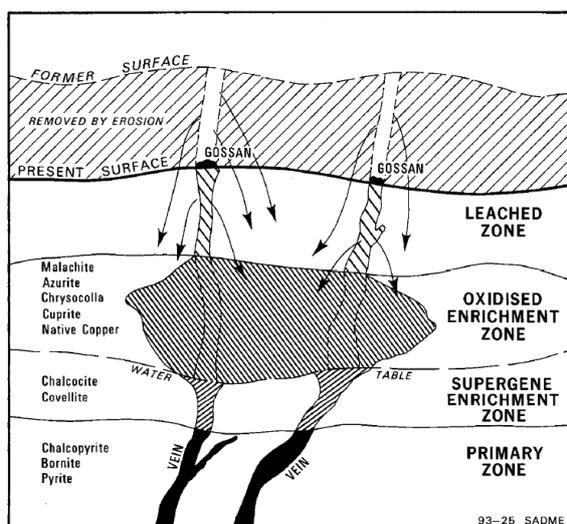
Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
c.1869 Crusher House – used to house ore crushing machinery driven by the adjacent engine	Fair	–	Poor – Extant stonework is in poor condition and deteriorating from weathering. Collapsed section of walls lying nearby.	Low – Little survives of the c.1869 crusher and remains are confused by later layers of development and change
Ruins of c.1869 Boilerhouse (No 1. Boilerhouse) – used to house steam boilers to feed the adjacent enginehouse	Fair	–	Fair – Extant stonework repointed with cement in the 1980s. Weathering and plant growth to top of walls.	Low – Two walls remain standing to about 1.5m high but do not convey their former use.
Ruins of c.1901 Boilerhouse (No 2. Boilerhouse), inc. Chimney Base – used to house steam boilers to feed the adjacent enginehouse	Fair	–	Poor – Remnant walls are in poor condition and at risk of total loss. Woody plants growing amongst the ruins Chimney base is in poor condition. There is erosion of pointing and rising damp and salt attack. Brickwork arches are in particularly poor condition. Plants growing to top of masonry.	Low – Outline of structure visible. Few remnant standing walls convey their former use. The chimney base is the most emblematic structure of the group.
Ruins of c.1907 Boilerhouse (No 3. Boilerhouse) – used to house steam boilers to feed the adjacent enginehouse	–	–	Poor – Outline discernible by stone lined channels and piles of ash	Low – Outline of structure visible. Fabric does not convey former use.
Ruins of c.1910 Compressor House – used to house compressing engine and pumps to deliver compressed air to boring machines	–	–	Fair – Falling damp and cracking to masonry. Cracking appears to be caused by corroding iron integrated into the masonry Severe weathering to brick dressings. Rising damp and salt attack to masonry at low level. Repointed and rendered in parts with cement. Later intrusive repairs with grey cement.	Medium – Walls are substantially complete.

Value	1985 Condition	1985 Integrity	Current condition of fabric	Current integrity
Ruins of Richmans Concentrating Plant, inc. foundations for machines	Good	Medium	Fair – Concrete and masonry foundations, floors and mounting blocks are in fair condition. They have degraded further since 1985. Corrosion to iron reinforcing and hold down bolts are causing cracking to concrete. Plant and tree growth destabilising walls and floors	Medium – Original uses of blocks is not known. Enough remains to understand that the area was used for large machines as part of ore processing. Good interpretation on site.
Storage Bunkers at Richmans – used for storing ore from Taylor’s Shaft, dumped from rail tracks	Fair	Low	Poor – There are a couple of depressions that mark the position of the bunkers but since 1985 they have been overgrown	Low – Not easily discernible from the surrounding terrain.
Stuckey’s Shaft – used for mining and the supply of water for Richmans operations	Good	High	Fair – In 1985 it was reported that this shaft was more complete and undamaged than any other on the mine, and that the stonework was in good condition. The stonework remains in fair condition. However, a recent sinkhole has opened between the shaft and Richmans that is a risk to the shaft surround and the enginehouse.	High – Stonework at the top of the shaft is complete.
Richmans Heaps – fine material from concentrating process and later precipitation process up to 20m high.	Fair	Medium	Fair – Materials has been mined from the heaps for road dressing and there is significant erosion Much of the stone walls which once surrounded the heaps have also been taken. Greatest threats are further loss from erosion, exacerbated by uncontrolled pedestrian traffic.	Good – A major visual feature of the area. Integrity has been degraded by a loss of material to repurposing and erosion. Cementation aqueducts criss-crossing the top surface are still clearly visible, as our remnant blocks that once supported the seawater and acid conducting pipes.

4.3.8 Underground Workings

Background

Copper bearing lodes in the Moonta district were evidenced below the surface by copper carbonates resulting from the erosion and weathering of the underlying primary ore. The weathering process formed and oxidised and enriched zone that extended to depths of 30–50m. In the upper portions of this zone, atacamite with minor malachite extended to a depth of about 20m. Below this, an enriched zone containing mainly cuprite and chalcocite overlay the primary sulphide ore.



Typical oxidation and enrichment of copper lodes. The oxidised zone at Moonta is covered by up to 5m of calcrete and clay with no surface expression of the lodes

Prospecting for copper lodes was straightforward as the occurrence of atacamite in the upper layers was easily discernible by its bright green colour. Auger holes were bored to 10m in the clay layer to detect atacamite and the existence of the underlying lodes from which they were derived.

The Cornish system was used to confirm and exploit the lodes. Shafts were sunk vertically to intersect the lode at a given depth or inclined following the lode. In the upper layers of clay and calcareous soils the shafts were timbered to prevent collapse. Once a shaft had reached a depth of about 10 fathoms (18m) a horizontal level was formed in both directions. This process was repeated at each 10-fathom depth and further shafts were dug once the mine had reached about 50 fathoms (91m), largely to create updraft ventilation. Thus, an underground grid of shafts and levels was created from which the ore body could be accessed. At Moonta the level depth was increased by Captain Hancock to 15 fathoms (27m) after 1870 and later to intervals of 20 fathoms (37m).

The formation of shafts and levels was called 'tutwork' and was distinguished from the extraction of ore. A miner could either be employed in the tutwork or in ore extraction, referred to as 'tribute' work. Tutworkers generally worked for a fixed wage while tributers were paid a proportion of the value of the ore they extracted.

In removing the ore, miners worked from the upper part, or back, of one level towards the bottom of another. The resulting excavation, or stope, was therefore arranged so that broken ore fell to the level below and was trammed to a hauling shaft. As the opening of a stope progressed, timbers were fastened to the sides forming a platform which gave a protective cover to the level below. Ore was passed onto the level through chutes. A stope was worked by taking one metre off the roof the stope at one end and continuing to work towards the other end. Where the lode was wide and the ground weak, timber pillars known as 'styes' were erected to support the roof. As the roof was removed, the styes were increased in height and filled crushed rock or attle.

Gunpowder was used to break the rock and was placed in shot holes drilled by hand, using a technique known as hammer and tap. One man held a steel borer while two others alternatively hit it with hammers. After 1880, gunpowder was replaced by dynamite and later pneumatic rock drills worked by compressed air were introduced.

Fabric Description

Very little of the estimated 70km of shafts and levels developed during the mine's operation is accessible today. The standing water level is about 8m below the surface and hence the all the mine levels are flooded. The underground workings will contain abandoned mining machinery including the remains of iron pipes used for pumping, timber drive shafts, timber shoring, ladders, false floors, and loading chutes. The fabric above the standing water level consists of timbered shafts and shaft collars. These are described in more detail in the preceding areas.

Current condition and integrity of the fabric associated with the NHL values

The current condition and integrity of the fabric below the standing water level was not able to be accessed but is likely to be poor. Fabric above the ground water line is in various states of repair. A fuller assessment is provided in the preceding areas.

5. Heritage Significance

5.1 General

On 9 May 2017, the “Australian Cornish Mining Sites: Burra and Moonta” were entered on the National Heritage List as comprising Places of national significance. The Australian Cornish Mining Sites: Moonta is a joint listing with Burra

This section is structured under the following headings: firstly, National Heritage; secondly, State, Territory and Local Heritage; and finally, Areas for Further Research. The National Heritage section includes a copy of the official values, and the statement of significance as published with the listing. This information references the Government Gazette and the Australian Heritage database. It also identifies any matters of national environmental significance (NES).

The State, Territory and Local heritage section covers the Places listed on the South Australian Heritage Register. It provides information related to Indigenous heritage register. In addition, it comments on the Protected species listings for flora and fauna. Finally, it covers planning instruments and heritage surveys associated with heritage provisions and controls.

It is noted that “Inclusion of a place on one or more of the above statutory lists will require that the administrative systems, processes and arrangements are incorporated into a management plan for a national Heritage place. It also involves working with all levels of government to ensure that all heritage values are respected in any decisions made about the place”.⁴⁵⁰

The finally section includes Areas for Further Research which identifies places located within and outside of the existing State Heritage Area which may have potential to be included in the National heritage values statement.

5.2 National

5.2.1 National Heritage Place: Official values as published with the listing. Note - this is a joint listing with Burra.

Criterion (a) the place has outstanding heritage value to the nation because of the place’s importance in the course, or pattern, of Australia’s natural or cultural history.

Values

“The Moonta copper mine in South Australia operated for sixty one years from c1862 to 1923. In the late nineteenth century it was one of the world’s largest producers and exporters of copper; evidence of Australia’s emerging international position in an increasingly industrialised global economy. This achievement was made possible by the successful transfer of Cornish mining technology and skills from Cornwall to Australia.

The copper mine at Moonta demonstrates the resilience of the Cornish mining system in Australia following its earlier transfer in other smaller mines in South Australia. At Moonta the Cornish mining system was able to be repeated and applied at a larger scale. Improvements to the system were also progressed in the areas of labour organisation, labour relations (advocacy for a minimum wage through the ‘down’ times) and in a number of improvements made to mining and ore processing technology. The Hancock Jig is noted in particular.

A generation of Cornish miners, engineers and tradespeople worked in the copper mines of South Australia, including at Moonta. The cumulative impact of their contribution to Australia’s wealth production, nation building and development of Australia’s mining industry was substantial. The Cornish way of mining started in South Australia and dispersed to many of Australia’s other key mining regions like Broken Hill, Bendigo, Kalgoorlie and Charters Towers. While Cornish miners were the main work force Welsh smelter technology and skills are also noted for their contribution to the mining system’s profitability and success.

The Moonta copper mine is of outstanding importance because the remnant mining structures and their layout on the surface and underground can demonstrate to a very high degree the Cornish mining system.

The Cornish way of working developed over generations in the mines of Cornwall. The mining system generally includes the knowledge applied to identify the ore body in the first instance. Then the labour force was organised in a specific way to develop a system of vertical shafts and horizontal levels organised in the efficient exploitation of the ore body. Teams of underground miners were organised into tut-work or tribute teams. Young boys were employed on the surface to sort the ore prior to further processing. The mine’s Captain (superintendent) acted to manage the mine for the mine’s owners. This was a critical and powerful position. Mine owners kept the Captain accountable for the profitability of the mine. The Cornish practice of applying levies to miner wages for the support of families and miners in times of illness or death is also noted as an early form of worker’s insurance.

Mining for copper required the development of deep hard rock mining techniques. In the process of extracting the ore large underground rooms or stopes were created. The use of explosives formed part of the underground mining process. Various technologies were then applied to process the ore once hauled to the surface. Critically Cornish steam engines were used in various roles but mainly in the work to keep the mines free of water. In Australia, until the 1890s all work underground at the Moonta mine was done by manual labour. To get from one level to another miners climbed up and down step ladders (a double decker man skip was introduced after 1880). Some shafts went as deep as 750m. The ore was hauled to the surface by horse whims and the engine houses were built to pump water from the mine. An estimated 80 miles of shaft and levels were constructed in the mining area.

The mine Captain, Henry Richard Hancock, made numerous improvements. An enthusiast for machinery he introduced a steam-engine to replace hand worked pumps, winches and ore crushers; by 1865 tramways had reduced barrow work and by 1866 a railway replaced wagon teams for carrying ore to the smelters at Wallaroo. The mine's engineering shops were the largest in the southern hemisphere. These workshops enabled Hancock to experiment in replacing the slow and arduous labour of drilling holes by sledge hammer in the hard Moonta rock. He designed and patented a percussion drill driven by compressed air and capable of boring forty feet of shot holes in an eight hour shift. For separating sulphides from the ores he made and patented a jigger which was also used later at Broken Hill. He also introduced wire rope and skips in place of chain and kibbles. Hancock, a devout Wesleyan, also worked to establish minimum wages for miners, established a brass band, library and reading room and compulsory night school for boys from the mine's sorting tables. He also encouraged cricket, football, chess and glee clubs and many mutual improvement societies (Australian Dictionary of Biography ' Hancock, H. R.). This 'tinkering' with machines and the introduction of benevolent activity is reflective of a 'Cornish' approach.

Religion played a strong part in holding the mining community together through the hardships of work, illness and difficult living conditions. In Moonta fresh water was scarce and epidemics of typhoid, cholera and diphtheria were decimating. At one time there were 6,000 people living on the Moonta mining leases surrounded by the industrial workings of the mine; a mining settlement pattern typical of the nineteenth century. In the leased mining areas at Moonta the Moonta Mines Methodist Church (1865) was the focus of the settlement.

Features which express these values include the physical evidence of nineteenth and early twentieth century Cornish mining in the area known as the Moonta Mine. The remnant surface and underground mining structures are significant where they demonstrate Cornish mining practice and technology. Specific features of significance include but are not limited to the following features and items.

The layout of the mine on the surface demonstrates the way the ore body was mined. The shafts, engine houses, processing areas, supporting functions and administrative facilities are all located in a pattern which is oriented to the underground lines of lode (Fergussons Lode, Greens Lode, Beddomes Lode, Trevers [sic] Lode, Elders Lode). This arrangement and pattern of mining infrastructure also demonstrates the focus of mining operations on efficiency and function. As a demonstration feature therefore the remnant arrangement and pattern of surface mining infrastructure is significant.

In more detail the features which demonstrate Moonta's mining significance include but are not limited to the Hughes enginehouse and stack, the Hughes engine pool, the ruins of Elders enginehouse, Richmans enginehouse and nearby tailings dumps, Hancocks tailings dump (including the tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks enginehouse and crusher house), Ryans tailings heap, Ryans shaft, Taylors shaft, Treuers shaft, ruins of precipitation works, site of the mine workshops, site of mine offices, site of General Manager's residence, site of the assayers residence, the ruins of the powder magazine, the remnant water reservoir (Ryan Road), site and remnant structures of the Hamley mine, the remnant route of the Hamley tramline and the Moonta Railway Station (including disused railway line within the Moonta Mines State Heritage Area).

Churches are also important because they demonstrate the importance of religion in these mining communities and the Cornish influence more generally. Items of significance include but are not limited to the site of the Bible Christian church, site of the Primitive Methodist church, the Moonta Mines Methodist Church (1865) and the Moonta Mines Model Sunday School.

The historic miner's cottage and garden (Verco Street) is significant as a place which demonstrates the way miners and their families lived on the mining lease⁴⁵¹.

5.2.2 Statement of significance as published with the listing

“The copper mine at Moonta demonstrates the resilience of the Cornish mining system in Australia following its earlier transfer in other smaller mines in South Australia. At Moonta the Cornish mining system was able to be repeated and applied at a larger scale. Improvements to the system were progressed in the areas of labour organisation, labour relations (advocacy for a minimum wage through the ‘down’ times) and in a number of improvements made to mining and ore processing technology. The Cornish mining system including in particular its critical steam engine technology which was transferred from Cornwall to Australia in the mid- late nineteenth century. The mine attracted a large population of Cornish miners. Over time the Moonta district was recognised for its strong Cornish character and large Cornish population. A rich Cornish heritage continues to be recognised by the name given to the Moonta district: Australia’s Little Cornwall.

Henry Richard Hancock, the Moonta mines legendary Captain (chief super-intendant) from 1864 – 1898, worked to improve mining practices and technology. At the Moonta mine examples of mining innovation include the design and use of the Hancock Jig and other ore processing techniques. The mine was rich from the outset (c1862) and is famous for being the first mining company in Australia to pay one million pounds in dividends. At its peak the mine employed nearly 1700 men and boys. The town of Moonta was established to service the mine and by 1875 the district had a population of about 12,000 people making it the largest centre outside Adelaide. Moonta’s copper production established Australia internationally as one of the world’s major sources and exporters of copper.

Following the closure of the mine in 1923 the population, especially in the mining area, declined rapidly. This rapid decline reflects the boom and bust nature of the mining industry which is not only subject to the quantity, quality and accessibility of the ore body but also to fluctuating copper prices set by overseas buyers. Cornish miners continued to work in many mines across Australia in the twentieth century as they moved to take up new opportunities. Their skills, combined with the use of Cornish technology and a system of mining developed in Cornwall, enabled the further development of Australia’s mining industry; an important industry in the shaping and development of Australia as a nation.

Moonta is of outstanding heritage significance to Australia because of its very high capacity to demonstrate the Cornish mining system. Moonta in particular demonstrates the resilience of the Cornish mining system in Australia which enabled the system to be dispersed further throughout Australia with Cornish miners. At Moonta this system was also further improved by continual innovation in machine technology.”⁴⁵²

5.2.3 National environmental significance (NES)

A search has been undertaken to identify if there are any matters of national environmental significance or other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 in the area namely the Local Government area of the Copper Coast Council.⁴⁵³ A copy is included in the Appendix

5.3 State, territory and local heritage

5.3.1 South Australian Heritage Register

The following Places are listed on the State Heritage Register and information on them is accessible on the South Australian Heritage Places database.

SAHR Number	Details	Address	Statement of Significance	Status Date
10187	Moonta Tourist Office (former Moonta Railway Station)	Kadina Road, MOONTA MINES VIA MOONTA	No statement	12 January 1984
10114	Moonta Mines Uniting (former Wesleyan Methodist) Church, including Fence and Sunday School Building	557 Milne Street, MOONTA MINES VIA MOONTA	No statement	26 November 1981
13110	Moonta Mines Model Sunday School Site	Moonta Mines, MOONTA MINES VIA MOONTA	“Originally constructed as a Primitive Methodist Chapel in 1865, the building was converted to use as the Methodist Sunday School in 1900. The Sunday School was associated with the rise of Primitive Methodism in the Moonta Mines community and the Sunday School movement, in particular the Rainbow System of Bible Study, which was introduced to Moonta by Henry Lipson Hancock. Very little of the structure remains. (HSA, 1/2000).” ⁴⁵⁴	5 June 1986
10135	Miner’s Cottage & Fence	Verco Street, MOONTA MINES VIA MOONTA	No statement	26 November 1981
10113	Former Hughes Pump House & Chimney	MOONTA MINES VIA MOONTA	No statement	26 November 1981
13975	Moonta Mines State Heritage Area	MOONTA MINES VIA MOONTA	“The Moonta Mines State Heritage Area encompasses the site of one of the largest commercial mining enterprises in colonial South Australia which generated vast wealth and wages from the sale of copper ore. The opening of the copper mines at Moonta led to a rapid influx of skilled miners and other artisans from Cornwall and the area became known as ‘Australia’s Little Cornwall’. For a time exports of copper surpassed those of wheat, and the town of Moonta and the mines area contained the largest urban population outside Adelaide. Considerable remnants of the mining venture remain, illustrating many aspects of copper mining and processing.” ⁴⁵⁵	10 May 1984

5.3.2 Indigenous heritage register

The central archive, which includes the Register of Aboriginal Sites and objects (the Register), administered by Aboriginal Affairs and reconciliation (AAR), has no entries for Aboriginal sites within the project area.⁴⁵⁶

5.3.3 Protected species listings for flora and fauna

The Government of South Australia, Department of Environment and Water has provided lists of protected species of flora and fauna. A copy is included in Appendix C. Please note that these records are from the general Copper Coast Area rather than specifically the Council border.

5.3.4 Planning instruments with heritage provisions and controls

District Council of the Copper Coast Heritage Survey

In 2010, Flightpath Architects prepared the District Council of the Copper Coast Heritage Survey.⁴⁵⁷ Several recommendations were made in the report. It concluded that there were no additional proposed State Heritage Places and there was no additional area to be included in the existing State Heritage Area.

However, the report identified many proposed Places of Local Heritage value in the District Council of the Copper Coast. Over 130 Places were recommended as of Local Heritage. In addition, many Historic Conservation Zones, Policy Areas and Special Character Zones were recommended within the District Council of the Copper Coast.

It appears that the recommendations were not progressed and that as per the Copper Coast Council Development Plan, no Planning Amendment related to heritage has been pursued or recorded since 2002.⁴⁵⁸

5.4 Areas for further research

5.4.1 Introduction

During the site survey as part of the preparation for this document, the following Places located in the existing State Heritage Area were identified as having potential to be mentioned in the National heritage values. It is recommended that further research be undertaken on the following Places:

- > Moonta Mines Model School (SAHR 11732), 487 Verran Terrace MOONTA MINES VIA MOONTA.
- > Company Residences
- > Residence adjacent Precipitation Works

During the site survey, the following Places located outside the existing State Heritage Area were identified as having potential to be mentioned in the National heritage values. It is recommended that further research be undertaken on the following:

- > Doctor's Residence
- > Accountant's residence
- > Show Pavilion

The following section includes preliminary research/brief history/historical mapping, and a Statement against the National Heritage criteria for each place.

5.4.2 Potential Places within the State Heritage Area

SAHR 11732 Moonta Mines Public School

Brief History

Until 1851, education in South Australia was largely haphazard in its organisation, however following the passing of the Education Act 1875, the education system was revolutionised and there was an intensive period of school building. The Education Act 1875 was commenced on 2 January 1875. It “allowed for the establishment of public schools and contained provisions about the compulsory schooling of children of a certain age”.⁴⁵⁹ Educationist John Anderson Hartley (1844-1896) and the Council of Education “found themselves in a predicament. They had a great many [school] buildings to construct and as yet no designs, plans or specifications”.⁴⁶⁰ On 6 March 1876, Edward John Woods (1839-1916) was appointed Architect to the Council of Education, a position he held until 1878 when he then served as Architect-in-Chief until 1884. “Woods had experience in school architecture, having won the 1872 competition for the Grote Street Model School, [accommodating 600 students] [which was] recognised as one of the best school [sic] in South Australia”.⁴⁶¹ The Grote Street Model School “at the time it establish [sic] the basis which “should be the pattern for every public school in the colony””.⁴⁶²

English architect E.R. Robson (1836-1917) in his 1874 text *School Architecture* set out numerous progressive designs for school buildings. “The plans of the new buildings emerging from the works department of the Council of Education in South Australia conformed to the majority of Robson’s initiatives, and it seems likely that a copy of the publication found its way into Woods possession. Although it has been implied that Woods did little more than approve the designs brought from Victoria in early 1876, contemporary Victorian schools demonstrated much less influence of Robson’s work. ... the Central Board of Education in South Australia were already aware and applying the recommendations of the London Schools Board in 1874”.⁴⁶³ In Woods’s designs there was “[u]ndoubtedly ... some [Victorian] influence, but its importance must be seen in the context of the independent evolution which had been occurring in South Australia”.⁴⁶⁴ Woods was “fundamental in developing the form for these new types of specialist buildings in the colony”.⁴⁶⁵

The first two public schools constructed in South Australia were those at Tynte Street and Moonta (as distinct from Moonta Mines). The Moonta School was finished in September 1877. Other schools built on the Yorke Peninsula included: the Wallaroo School completed in November 1877; and the Wallaroo Mines School in February 1878. The Moonta Mines (Public) School “was the seventh of the nine 800 pupil schools constructed in South Australia during the intensive period 1876-1880”.⁴⁶⁶ It “is among the earliest to have been constructed after the passing of the 1875 Education Act”.⁴⁶⁷



Moonta Mines School (Swanbury Penglase 2019)

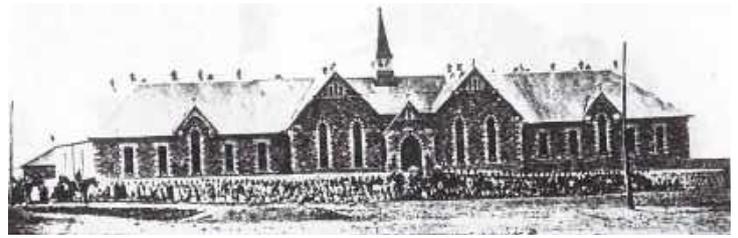
On 19 May 1877, the Council of Education reported that tenders had been received for the Moonta Mines School and Residence. Rossiter & Davies’s tender for £6,788 7s. was accepted.⁴⁶⁸ The Moonta Mines School was built by S. Rossiter and T. Davies, who also constructed the Moonta Methodist Church and the Moonta Bay Jetty. It was completed in mid-1878. The Moonta Mines School was opened on Monday 8 July 1878.⁴⁶⁹ As well as the main school building, there were three outbuildings included in the contract, namely: the Head Teachers residence, a large shelter or play shed, and long toilet block. The residence was ready for head teacher William G. Torr in late June 1877.

The main school building “walls were constructed of local calcrete with dressings of the local cream brick, a particular inferior delivery of which justified a reprimand of the builders. Red brick was also used, but its limited extent in mainly decorative purposes suggests to [sic] was expensive, probably an import from Adelaide”.⁴⁷⁰ In terms of the building’s design, “Moonta Mines, at the end of this line, seemed to be a promising compromise which had taken the best of the earlier designs. Based upon a sophisticated plan which was unique only to Moonta Mines, the building had a central entry opening into a common hall which accessed each of the separate girls’ and boys’ schools”.⁴⁷¹ “Its impressive size and substantial construction are perhaps the most evocative indication of what had been a large and significant community”.⁴⁷² Woods so-called “diluted ‘gothic’ style used for these early buildings was adapted and applied to all subsequent schools during the next thirty years”.⁴⁷³

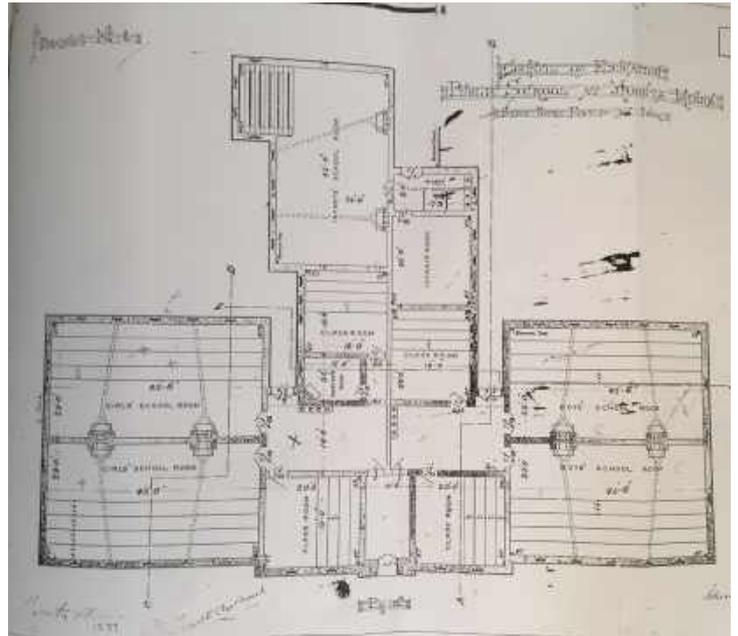
In the nineteenth century the School was well attended. Following the opening of the Moonta Mines School there were 667 students enrolled. By August 1877, the number exceeded 800 students and “gained the estimable position to be the first in the area to do so”.⁴⁷⁴ By 1879-80, there were over 1,000 students and at its peak in 1880 there were 1059 students, “making it the largest school outside of the Adelaide metropolitan area, and one of the few to operate three separate departments [boys, girls, and infants]. During the nineteenth century the school remained one of the largest in the colony. The school was a centre for the large Moonta Mines community, being the source of the children’s education for ninety years”.⁴⁷⁵

In the early 1900s, education was re-examined. “Corresponding with these developments came the construction of new schools and a drive to alter the old buildings. The original buildings, although recognised as having served their purpose well, were now seen as anything but ‘model’, with concerns about poor lighting, warming, ventilation, and hygienic conditions. Educational thinking has turned against the early techniques, and the new system of teaching was in conflict with buildings which had been designed for what were now outmoded methods.”⁴⁷⁶ The Education Department set about altering the school buildings across South Australia, including Moonta Mines, in line with the new education thinking.

“Work commenced at Moonta Mines in late 1912 carrying over into 1913 ... The re-modelling of the Moonta Mines School was recommended ... on 20 August 1912, with the work estimated at £1125 to be carried out Departmentally. The work began in October and was completed by March 1913.”⁴⁷⁷ Works included: large rooms divided into smaller rooms with timber framed walls, vertical sliding walls divided other rooms, removal of tiered galleries, new teacher’s platform and hyloplate blackboard, and other minor alterations including new internal doors, hooks for hats and cloaks and cupboards. “To meet the revised lighting requirements of 1/5th and 1/6th of floor area for south and east facing windows respectively, the windows to all the classrooms in use were increased in width, their sills lowered and heads raised. This included all those on the east side – with an additional window to classrooms on the north and south ends – and those of the former infants’ school room and gallery which faced south. The three to the elementary science room, which faced north, were increased to approximately 1/8th of floor area by lowering sills and raising heads. Just over half of the windows though remained unaltered, with three of them being closed off with asbestos-cement sheet. The design of the new windows were sympathetic with the overall composition of the original elevations, with the retention of the pointed arched windows and their decorative polychromatic voussoirs. Remarkably this extensive work made little impact to the proportioning of the front east elevation, if anything an improvement, as with most of the other school buildings remodelled at the time.”⁴⁷⁸

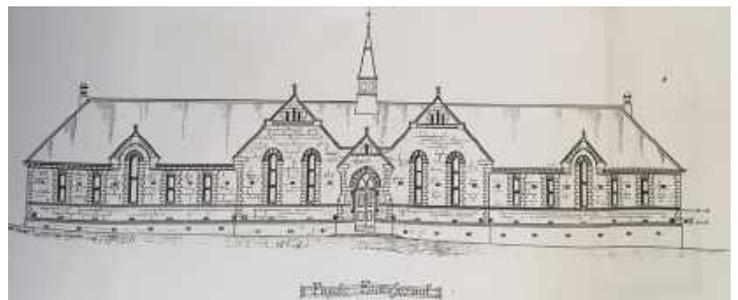


Moonta Mines School dated c.1878.
Source: Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p16.



“Plan”, “Council of Education: Public School at Moonta Mines”, signed Edward J. Woods Architect, dated 1877.

Source: Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, Appendix 5.



“Front Elevation”, dated 1877.

Source: Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, Appendix 5.

The Moonta Mines School, “[a]s the only Government building to be erected at the Moonta Mines settlement, ... helped to establish an official identity for what had until then been a squatter settlement.”⁴⁷⁹ “The impressive scale of the school which made it an important local landmark was exaggerated by its contrast with the denuded and forbidding landscape which surrounded it on three sides and the humble miners cottages to the south over which it towered.”⁴⁸⁰ “In some ways the school had become the centre of the community – its own official identity.”⁴⁸¹

Following the closure of the Moonta Mine in 1923, numbers rapidly declined. By 1925 there was less than 200 students, and by 1942 less than 100. The School closed at the end of 1968. Since late 1969 the National Trust began operating a Museum in the School and it officially opened on 24 October 1970.

Potential significance and applicable criteria

The existing Statement of Cultural Significance in the 2004 “Former Moonta Mines Public School, Conservation & Management Plan” reads: “The former Moonta Mines Public School complex [main school building, school residence, shelter shed, toilet block and boundary walls] is significant as a relatively complete example of the largest type of school erected during the formative years of public education in South Australia. The school building is one of the best and least altered examples of the contemporary schools designed by EJ Woods. The school building has a unique and one of the most successful plans. The school is of historic importance due to its intimate association with the lives of the largely vanished Moonta Mines community, the size and importance of which is reflected in the scale of the building. The school building forms an important and appropriate physical landmark of the Moonta Mines State Heritage Area.”⁴⁸²

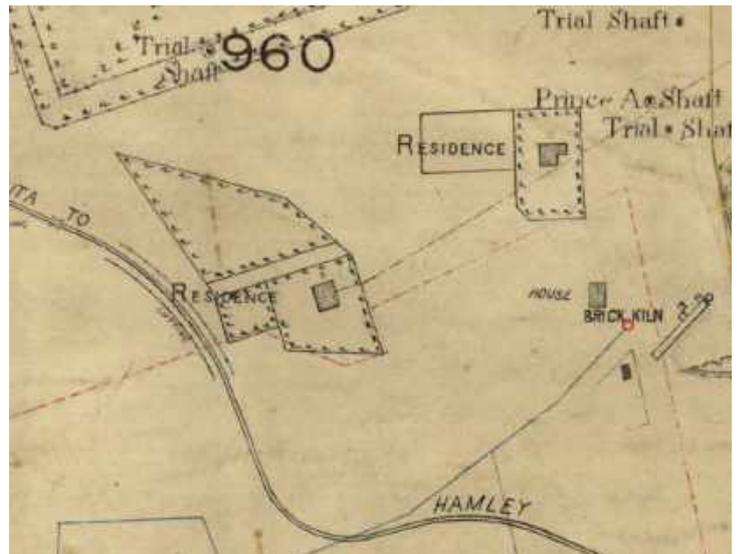
It is one of the few remaining intact buildings which illustrate the size and scale of the Moonta Mine settlement during the early mining period. Thus, Criterion (a) may be applicable.

Company Residence

Potential significance and applicable criteria

Criterion (a)

An early Company Residence constructed by the Moonta Mining Company and occupied by one of its employees. Further research should be undertaken to ascertain who occupied this residence. There are few other Company Residences mentioned in the National Values only, the site of the General Manager’s Residence and the site of the Assayer’s Residence.



Company Residence shown on the left.
Source: SLSA Map N1900.



Company Residence, 2019.

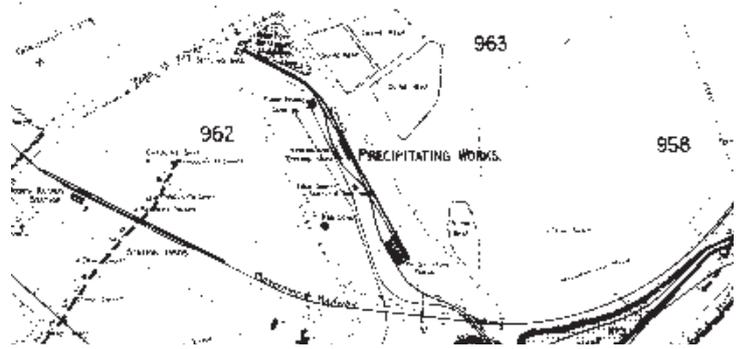
5.4.3 Potential Places outside the State Heritage Area

Residence adjacent Precipitation Works

Potential significance and applicable criteria

Criterion (a)

A Residence constructed adjacent to the Precipitation Works. Further research should be undertaken to ascertain who occupied this residence and if it was related to the Precipitation Works.



Residence adjacent "Precipitating Works".
Source: Surface Plan, 1913.

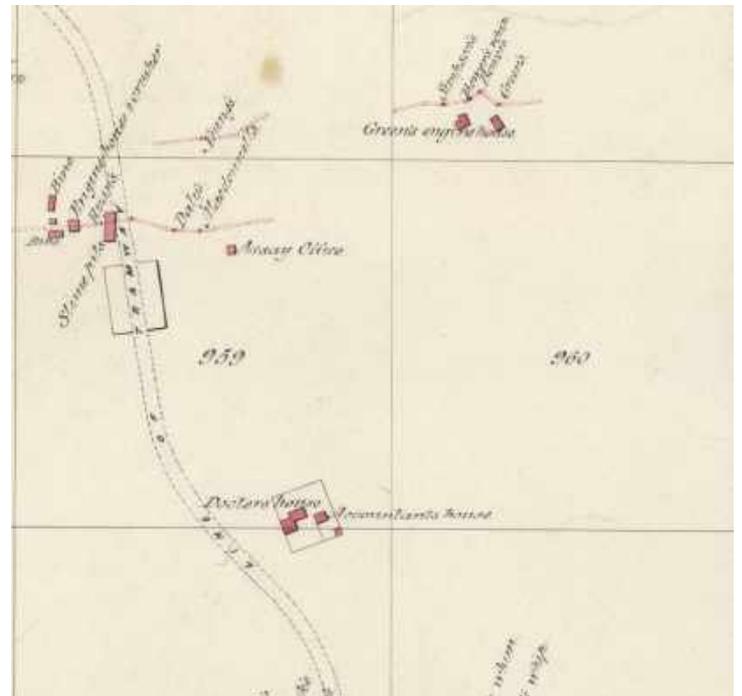
Doctor's Residence

The Doctor's Residence is located in an area which was known as Wyatts Flat. In 1862, the front four rooms of the residence were constructed by the Moonta Mining Company. It was built for and occupied by the Mine's first doctor J. Meridith.⁴⁸³

Potential significance and applicable criteria

Criterion (a)

An early Company Residence constructed by the Moonta Mining Company and occupied by one of its employees. It represents the important role of support staff, such as Doctors and Accountants, in the operation of the mine. H.R. Hancock was well regarded for his welfare initiatives one of which was the medical club whereby "all employees [were required] to join the medical club at a small weekly rate, ... [where] medicines and consultations were free and sick pay was provided".⁴⁸⁴ The "club & doctor" fund had been established at Moonta, with medical treatment made available to anyone injured in the mine and financial assistance provided to those off work on account illness or injury. Hancock also secured a deal in which, for an annual subscription of £10, the Moonta company was given access to the Adelaide Hospital for the treatment of its employees with more serious medical problems. When a miner named Tresise was badly injured in an underground accident in Bower's shaft, Hancock recommended the authorization of £25 to pay for an artificial leg for the unfortunate man.⁴⁸⁵ There are few other Company Residences mentioned in the National Values.



Doctor's House, c.1860s, Source: SLA Map C755.



Residence, undated.
Source: "Mine Officer's House", Moonta on site heritage signage.

Accountant's residence

Potential significance and applicable criteria

Criterion (a)

An early Company Residence constructed by the Moonta Mining Company and occupied by one of its employees. It represents the important role of support staff such as Doctors and Accountants in the operation of the mine. There are few other Company Residences mentioned in the National Values.

Show Pavilion

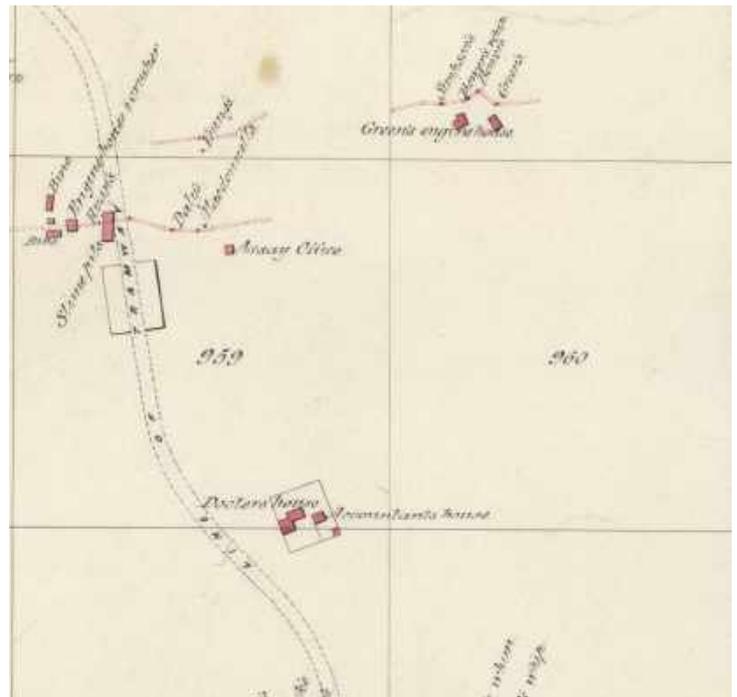
Brief History

There were several public buildings and recreational sites built on the Moonta Mine site which sat alongside the mining, residential and ecclesiastical buildings. One of which was the Exhibition Ground built in 1872. It was located part way between the Government township of Moonta and the main cluster of mine buildings. It was used as an Exhibition Ground, or Showground, with a pavilion erected in 1901. In 1929, the showground was transferred to the Moonta Oval, and the pavilion was relocated.

Potential significance and applicable criteria

Criterion (a)

The Show Pavilion was originally located within the Moonta Mines settlement but was relocated in 1929. It is an example of one of the settlement's recreation sites however in its current location it has only limited potential to demonstrate this criteria.



Accountant's House, c.1860s., Source: SLSA Map C755.



"A. H. F. Society Pavilion, Moonta Mines Oval", c.1901.
Source: SLSA B 25623.

6. Key Issues and Opportunities

6.1 Statutory Context

6.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Moonta Mines ACMS is protected under the Commonwealth EPBC Act 1999.

Approval is required under the EPBC Act for any 'action' occurring within, or outside, the Moonta Mines ACMS that has, will have, or is likely to have a significant impact on its National Heritage values.

An action is likely to have a significant impact on the National Heritage values of a National Heritage place if there is a real chance or possibility that it will cause:

- > one or more of the National Heritage values to be lost
- > one or more of the National Heritage values to be degraded or damaged, or
- > one or more of the National Heritage values to be notably altered, modified, obscured or diminished.

With respect to a National Heritage place with historic heritage values an action is likely to have a significant impact if there is a real chance or possibility that the action will:

- > permanently remove, destroy, damage or substantially alter the fabric of a National Heritage place in a manner which is inconsistent with relevant values;
- > extend, renovate, refurbish or substantially alter a National Heritage place in a manner which is inconsistent with relevant values;
- > permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place;
- > involve activities in a National Heritage place with substantial and/or long-term impacts on its values;
- > involve the construction of buildings or other structures within, adjacent to, or within important sight lines of, a National Heritage place which are inconsistent with relevant values; and
- > make notable changes to the layout, spaces, form or species composition of a garden, landscape or setting of a National Heritage place in a manner which is inconsistent with relevant values

The person appointed with the responsibility for a proposed action needs to undertake a 'self-assessment' to decide whether a proposed action is likely to have a 'significant' adverse impact on the National Heritage values of the place. If so, that action must be referred to the Minister of the Environment for a decision.⁴⁸⁶ Given the diverse ownership represented within the ACMS (Moonta), including a number of private residential occupants who are unlikely to have an understanding of the obligations under the EPBC Act (1999), this 'self-assessment' process does represent a risk of negative impacts upon the National Heritage values.

As the boundaries of the ACMS (Moonta) defined by the National Heritage values coincide with those of the existing State Heritage Area, the place currently has existing heritage oversight at the state level (see below). Any works or activities within the ACMS (Moonta) boundaries or adjoining those boundaries require referral and review by the delegate of the South Australian Minister for Heritage (Heritage South Australia) as part of the approval process required under the South Australian Planning, Development and Infrastructure Act (2016). This includes quite minor works such as painting and repair, a change of use or the introduction of new services, which are unlikely to raise the need for referral under the EPBC Act.

As this approval process already exists at the South Australian government level and has been in operation for some time, it would be expedient to use this existing management process as a check to determine if any proposal within the ACMS (Moonta) meets the threshold for referral under the EPBC Act. Ideally such a process should be formalised by agreement between the State and Commonwealth governments. Should this be pursued, this would necessitate the training of Heritage South Australia officers on the requirements and obligations under the EPBC Act 1999 and perhaps suggests the preparation of a guide for their internal use to help facilitate this additional role.

More guidance on approvals can be found at the Department of Agriculture, Water and the Environment website at the following link: <https://www.environment.gov.au/heritage/management/national>

6.1.2 Heritage Places Act 1993 & Planning, Development and Infrastructure Act 2016

The ACMS (Moonta) is protected under the South Australian Heritage Act (1993) while any change to a place recognised under this act is regulated by the South Australian *Planning, Development and Infrastructure Act (2016)*.

The boundaries of the ACMS (Moonta) coincide with those of the existing State Heritage Area which is defined under the *Heritage Places Act (1993)* and hence the area is included on the South Australian Heritage Register as a place, while in addition a number of the individual sites, such as Hughes Pump House, is in addition separately listed. Under the *Planning, Development and Infrastructure Act (2016)*, any development associated to any place included on the South Australian Heritage Register requires the lodging of a development application involving assessment by the local planning authority, in this case the Copper Coast Council, with referral to the Minister responsible for heritage (or delegate) for approval as an 'on merit' application. Heritage SA is the Departmental agency of the Minister for Environment & Water.

Development to a place listed on the South Australian Heritage Register includes a change of use, alteration and modifications, installation of signage or any other activity which has the potential to have a detrimental impact on the heritage values of the place, including development on surrounding sites. This also comprises essentially maintenance works such as painting, carrying out of repairs or the installation of new services.

6.2 Land Ownership

The ACMS (Moonta) covers an area of 320 hectares comprised of a combination of Crown lands, Crown licenses and freehold.

A majority of the lands within this area, including most of the former railways, recreational and operational mining areas, are either owned outright by the Copper Coast Council or are a combination of small areas owned outright by the National Trust of SA and large areas of Crown lands dedicated to the National Trust's care as a Crown license by the South Australian Minister for Sustainability. It is however currently unclear as to the extent of this license as to whether it covers all of the Crown lands areas within the ACMS (Moonta) or only part of them. This matter really needs to be clarified to provide certainty around responsibility. As these organisations have a good understanding of the heritage values of the ACMS (Moonta) and their responsibilities under the EPBC Act (1999) and the Heritage Places Act (1993), there are only low risks associated with their ownership and control of these areas, these are discussed under 6.3 Management.

The former mine company residences and miners' cottages which once surrounded the working mining areas originally occupied large areas of the ACMS (Moonta) site. With the closure of the mine, each of the mining cottage sites became the subject of a Crown license, while individual licenses were resumed if cottages were abandoned and these areas reverted back to Crown control (now understood to be part of the areas licensed to the National Trust of SA). It has been a long-standing policy of the South Australian Government that Crown lands occupied for residential purposes be converted to freehold title, subject to the occupier demonstrating that the building is habitable, structurally safe and meets local government requirements for disposing of wastewater. Most of the remaining cottages in the area have therefore been converted to freehold over the past forty years and are now privately owned. There is no current proposal from the State government to compel the few remaining Crown license holders to convert the license to freehold. Nevertheless, these cottages may be at risk because of their inability to pass the required conditions for freehold, whether this has not yet been tested, or they have already failed to meet the requirements. In this scenario these buildings might ultimately be abandoned and hence fall into a ruinous state due to neglect. There would be advantages in providing assistance to these license holders and encouragement them to conserve and maintain these cottages through the provision of expert heritage advice and possible financial assistance, such as through a local conservation grants programme.

The private owners of the freehold residences and cottages also currently have limited understanding of their obligations under the EPBC Act (1999) and the Heritage Places Act (1993), and hence there are potential risks from inappropriate decisions and negative impacts on these places. This is discussed further under Management.

As with the residences and cottages, the site of the for the Wesleyan Methodist Church has also been converted to freehold and is owned by the Uniting Church of Australia. As its congregation has dwindled to a handful of elderly members, the future ownership of this place, which is specifically identified in the National Heritage values, is in doubt. Given its historic pivotal role in the lives of the Cornish community of Moonta Mines, as well as it being one of the few remaining religious structures of the sixteen which once existed in the mining areas around Moonta which remain open to the public, it is important that this place remain publicly accessible to assist with the interpretation of its National Heritage values. It is unlikely that would be the result if the site were sold to a private individual. Therefore, should the Uniting Church contemplate the disposing of this site in the future, it should be an aim of the community to acquire the place with the objective of ensuring both its conservation and interpretation.

There are areas of land within the boundary of the ACMS (Moonta) to the south and east which are used for agricultural purposes. These areas were always at the periphery of the former working mining areas and have been converted to freehold and are privately owned. There are no perceived risks associated with the ownership or current use of these areas.

6.3 Management

Unlike many other places included on the National Heritage List, the management of the ACMS (Moonta) does not have a central and overarching management authority, with the management that currently exists being coordinated only through informal channels.

6.3.1 National Trust (SA)

The National Trust (SA) is a small land holder in the area but most of the former mining areas which makes up the majority of the land within the boundaries of the ACMS (Moonta) are dedicated to their care by the South Australian Minister for Sustainability. As a charitable organisation, the Trust's ability to resource maintenance and conservation of its numerous sites throughout the State is relatively limited and is largely reliant upon the voluntary efforts of some of its members. The on the ground day-to-day management of the sites under their control within the area of the ACMS (Moonta) relies on the local Moonta Branch.

Established in 1964, the Branch has had a long and notable association with Moonta Mines, and has been largely responsible for recognising, collecting and presenting the communities history through the intervening years. Amongst their many accomplishments, they hold an extensive collection of historic objects associated with the Cornish community associated with the mines, they have developed and operate the Moonta Mines Museum, which is the only interpretive facility for the ACMS (Moonta), in the former Moonta Mines Model School, owns and opens the miners cottage and a retail shop, manages the Moonta Tourist Information Centre and operates the successful and popular tourist railway. While they are responsible for the employment of the Moonta Tourism Office Manager, the remainder of this body is comprised of dedicated volunteers with support from a small professional staff based in Adelaide who are responsible for the entire State.

The active Branch membership is made up principally of retirees with varying interests and only a relatively small number of individuals are responsible for actual site management. While some of these individuals have a good understanding of the National Heritage values as well as conservation principles, there is a risk that this level of understanding is not shared by all volunteers, while local training opportunities in conservation practice are limited.

There are currently no formal requirements to report on their activities to the Minister.

6.3.2 Copper Coast Council

The Copper Coast Council manages the environmental health, maintains infrastructure such as local roads and stormwater, and administers planning and building regulations for the ACMS (Moonta) as part of its greater responsibility to the local government region. State planning legislation in South Australia gives powers to Council to approve development and defines activities that require approval when they affect state heritage places, which in the case of the ACMS (Moonta) includes all the areas and structures within the boundaries of the place.

Council is also a landowner within the area and is therefore responsible for the conservation of heritage structures on that land. Council however does not actively monitor or report on the condition of heritage structures for which it is responsible.

6.3.3 State Government

A number of South Australian Government bodies play an ongoing role in the management of the ACMS (Moonta).

Heritage South Australia (Heritage SA) is located within the Department of Environment and Water and has the responsibility for compliance with the South Australian Heritage Places Act (1993). Heritage experts are employed by the Department to provide advice on behalf of the Minister with respect to proposals that affect state heritage values. In past years the Department, in partnership with the Copper Coast Council, funded a heritage advisory service to the region but this has since been discontinued and hence the opportunities to monitor the condition of heritage places is ad hoc and infrequent. No regular condition assessment is presently undertaken.

Crown lands which occupy a large proportion of the ACMS (Moonta) are administered by the South Australian Department of Environment and Water. Management and monitoring of heritage structures is not within their brief and funds are not allocated to undertake regular maintenance or monitoring. However, as the Department also has the responsibility to ensure compliance with the State heritage laws mentioned above, Crown lands officers have access to heritage experts and heritage advice which is readily available through Heritage SA.

The complete company records dating back to 1860 of the Wallaroo and Moonta Mining and Smelting Company Ltd passed to the South Australian Department of Mines with the closure of the mines. This contains records of the underground mining, including tribute pitches, which help to explain the uniquely Cornish method of mining which is only in part explained by the remaining above ground structures. No comparable collection of records associated with a major mining company using Cornish hard rock mining techniques are believed to exist anywhere in the world. This incredible resource is held by the State Library of South Australia who manage the care and conservation of this collection.

6.3.4 Private Owners

The current individual owners of the freehold former mine managers residences and miners cottages as well as those managing the Wesleyan Methodism Church have little if any understanding of their obligations under the *EPBC Act (1999)* or indeed those under the *Heritage Places Act (1993)*. Through the community engagement process some owners have express frustration with the restrictions placed upon their properties due to the heritage requirements together with what is perceived to be a complicated development approval process. There are risks that inappropriate decisions could occur as a result of this lack of understanding. This situation has not been helped by the disbanding of the former regional heritage advisory service run in partnership with the Department of Environment and Water and the Copper Coast Council, which provided expert advice to private owners such as those within the ACMS (Moonta). As the ACMS (Moonta) is also a State Heritage Area, expert heritage advice is available through Heritage SA, but this is more ad hoc and less accessible than the prior arrangement.

6.3.5 Others

There is currently no management involvement with the site by representatives of the indigenous Nharangga people. They have a presence at Moonta through the Narungga Aboriginal Progress Association (NAPA), and there is an opportunity for their future involvement with the site.

6.3.6 Recommendations

This uncoordinated approach appears to have resulted in a degree of confusion and uncertainty about responsibility which has resulted in inaction on some matters and have resulted in an inconsistent approach to matters which should be consistent through the site, this can be seen for example in the form and nature of the interpretive signage used across the site.

There would be benefit in the coordination of the current typically independent efforts of these organisations and individuals. In the 1980s a community management committee was established to help with the management of the State Heritage Area, but this has long been disbanded. There would be benefit in forming an advisory committee that represents the community of the ACMS (Moonta), including representatives of the National Trust, Copper Coast Council, Heritage SA (possibly also representing Crown Lands), Narungga Aboriginal Progress Association (NAPA), private landowners and a representative of the Kernewek Lowender festival, perhaps as a delegated committee of the Copper Coast Council. Involvement of all these groups is likely to result in a revived sense of community ownership in the future of the ACMS (Moonta) and may help to resolve current issues such as vandalism and rubbish dumping. Such a group would act as the champion for the ACMS (Moonta) and could be given tasks such as monitor and maintain the implementation of the strategy outlined in this CMP, promote and distribute information about the National Heritage values, and manage the sourcing and distributing grant funding, as well as monitoring and reporting on state of the National Heritage values.

Private owners should have ready access to expert advice to assist with their own conservation efforts. While this process would likely benefit through the reintroduction of a heritage advisory service, but in its absence owners should be encouraged to undertake early consultation with the Heritage SA experts to help facilitate the approval process which could also help to identify if National Heritage referrals are required. This is likely to be helped by the representation of Heritage SA on any advisory committee. There would also be benefit in the development of an information/guide booklet for the private owners in the ACMS (Moonta) which should convey information about their obligations under the *EPBC Act (1999)* and *Heritage Places Act (1993)*, outline guidelines to what will and will not be acceptable in respect of changes to the cottages, including fencing etc, as well as explain the development approval process.

6.4 Cultural Landscape

The unique landscape of the ACMS (Moonta) is important and needs to be carefully managed in an integrated manner. This does not only include the remaining built structures, but their context including setting, the surrounding environment, as well as the social aspects of the place which together make up its heritage values. This includes all the elements that contribute to the sense of place, such as sights, sounds, smells and vistas.

The ACMS (Moonta) is currently comprised of a collection of mining remains, residences and community buildings within a scrub setting which has been generated by regrowth of the once denuded environment. Much of this existing character has been generated as a result of its history. The former mining areas are organised along the north-south aligned mineral lodes and form bands through the site, with the tailings or skimping heaps located at the lode ends marking the locations of the former treatment plants. Elders Main Line of Lode is particularly prominent, being the site of the earliest and last mining operations and marked by the prominent landmarks of Hughes and Richmans Enginehouses. Between these former mining areas are the former residences of the miners. While only relatively few of these cottages remain compared to the hundreds which once existed, these quite simple but characteristic buildings were placed in an apparently unplanned manner by the miners. This is still evident in the seemingly haphazard pattern of remaining roadways, which is in distinct contrast with the surveyed and planned grid of streets of the adjacent government township of Moonta. The remaining major prominent landmarks are the former Wesleyan Methodist Church and the former Moonta Mines Public School around which community was focused, and both retain important roles as locations and symbols of Cornish culture and transmission of the National Heritage values.

The ruined mining sites are an important part of the sites' character and this state does help to emphasise the place's history after the closure of the mine, but they are also of aesthetic value. Many of these buildings were dismantled to recycle their building materials, and this did not only occur for the mining structures but also the religious buildings, with the materials from the former Primitive Methodist Church used to add rooms to the hall at the site of the current Uniting Church. Care needs to be taken when considering proposal that impact on this aesthetic, and these sites should continued to be managed as ruins with no attempt should be made to reconstruct these structures. The exception are Hughes and Richmans Enginehouses which are essentially intact with the exception of their timber elements and where enough is known about their original form where these elements could be added without impacting the remaining fabric.

While the original environment at the commencement of mining operations was within thick native scrub, it was rapidly cleared of all trees for use in building and fuel with the sole exception of Captain Hancock's fenced garden. This resulted in a denuded landscape which was maintained by roaming goats and other domesticated animals. Later trees were planted on reserves. Since the mining operations ceased vegetation has reestablished itself throughout the former mining areas. While this adds to the qualities of abandonment which is appropriate given the history of this place, the vegetation is not considered to be particularly important and does not directly contribute to the National Heritage values with the exception of remaining stands of Sugar Gums which were planted during the later phases of the mine. In some locations the vegetation has reached the point where it impacts on important historic vistas and this makes the historic relationships difficult to understand. This is particularly noted along Elders Main Line of Lode, where trees and scrub prevents the important vista between Hughes and Richmans Enginehouses. In some instances, this regrowth vegetation is causing conservation issues for the remaining physical fabric and can make finding particular elements difficult, while it also presents a fire hazard for some of the remaining sites in close proximity to the former mining workings. In several instances therefore clearing of some vegetation should be considered although this should be carefully managed so as to ensure there is a minimal change of the broader landscape.

The current sense of abandonment of the place is part of the story of a community in decline which has occurred since the closure of the mine. This has resulted in a level of disrespect and lack of understanding of the cultural values of the place and needs to be addressed through education of the community of the importance of the ACMS (Moonta) and changing the perception to garner positive change. This was noted in the community engagement sessions and are exemplified by the issue of the dumping of rubbish and vandalism in the area.

Of equal importance is the ongoing association with local traditions and Cornish culture. This can be seen in the ongoing teaching of the Cornish language, the presence and passion of the local Cornish Association, and events such as the Kernewek Lowender. Further encouragement should be fostered to ensure the Cornish culture remains a living part of the wider community of the Copper Coast.

There is at present no representation of the Nharangga association with this landscape but the relationship between the indigenous people and the mine and the miners is worthy of reintegration into the cultural landscape of this site.

6.5 Environmental Issues

The size and the nature of the ACMS (Moonta) results in a number of potential environmental issues.

The skimps which form the tailings heaps and the slimes flats have resulted from intensive processing including chemical treatment as part of the mineral extraction. Both are important and prominent landscape and landmark elements which occupy large areas of the ACMS (Moonta). Despite a long history of community reuse and interaction with this materials, there is currently little information available about the chemical make-up of these materials and if there are any environmental or potential contamination issues. This requires further assessment to identify any potential risks and hence how these components might be managed in the future.

While the site before the advent of mining was noted for its dense mallee scrub, this was progressively and rapidly cleared, used primarily for fuel, to the point where the entire landscape was soon totally denuded of all trees except apparently for a small patch which was retained as part of the garden of Captain Hancock Residence. Much of the site of the abandoned mine working however is now distinguished by often thick vegetation which as colonised the heavily disturbed sites. In some instance this is contributing to the further deterioration of the remaining mining infrastructure as well as restricting the original visual relationship between previously connected components of the site. Although this vegetation reinforces its current character as an abandoned mining site, it is not part of the landscape representative of the mining period. While it would be desirable to better manage this vegetation, including selective clearance where necessary, it would be appropriate to better understand whether this reflects endemic species which originally occupied the site. Ideally this will be investigated as part of the Coordinated Landscape Management Strategy.



The dumping of rubbish within the ACMS (Moonta) represents a long-standing practice which occurs both in the mine shafts and on the surface in the more remote parts of the site. This reinforces an impression of neglect which has been the standing theme since the closure of the mine in 1923 but is inappropriate given the National Heritage values of the place. Changing this ingrained practice is likely to take some time but it is likely that this will change with a growing community appreciation of the national importance of this site through promotion, education and site activity, helped by the obvious signs of growing investment in the place which should come about as a result of this CMP. In the interim this could also be assisted by improving measure to limit vehicle access to the more remote areas of the site through the addition to barriers or gates on access tracks etc.

While there are many roads which bisect the ACMS (Moonta), only Verran Terrace, Milne Street, Richmans Concentrator Way, and part of Marshall Road are sealed. The other roads, particularly those forming part of roads which continue beyond the site and used as short cuts where traffic speeds tend to be higher, generate considerable dust. This is a nuisance to both residents and visitors and was noted to be a significant problem as part of the consultation process. The problem is likely to get worse with growing tourist numbers. While it would be ideal to consider closing some roads, such as Dominics Shaft Way which divides the site and has only more recently been opened, it is not desirable to close roads that represent historic traffic patterns, and in this instance it would be more appropriate to consider sealing the roads which are more heavily used by locals and visitors, perhaps combined with traffic calming measures to help show speeds. This particularly applies to Ryan Road, Karkarilla Road, Verco Street and Truer Street.



6.6 Safety

The size and the nature of the ACMS (Moonta) along with its separation from the town of Moonta presents a number of safety and security issues.

The nature of the previous mining activity has resulted in a number of hazards located throughout the ACMS (Moonta). The most obvious of these are the former mine shafts, which are scattered throughout the large site, but some sites also contain other excavations such as former cellars and underground tanks. While some of the shafts associated with the more high profile sites such as Hughes and Richmans Enginehouses have mesh barriers over the top of the shafts and are fenced, others in the less visited areas have limited or no barriers. The risks for the public associated with these is often exaggerated by thick vegetation which has reestablished over much of the former mine site reducing the visibility of these hazards. Fencing has also been used in some of the more high-profile sites to help protect the remaining structures and in attempts to restrict entry to large areas such as the slimes flats. The mesh barriers over the top of the shafts have been cut by vandals and have openings which present significant safety risks. The fencing that does exist is often in a poor condition, and there are ongoing problems of fencing being stolen or vandalised.

While there are many roads through the ACMS (Moonta), the most noted is Verran Terrace. This runs from the Moonta township through to East Moonta, bisects the ACMS (Moonta) and importantly dividing the important Elder lode through the middle of its north-south orientation. This is a key arterial road to Arthurton and beyond to other centres on the Yorke Peninsula and is used by many heavy vehicles. It was also an important historic transport pathway connecting the communities living on the mining leases with Moonta and was also the route of the passenger tramway line to East Moonta. The speed limit of this road was not consistent through the ACMS (Moonta), and a slower speed environment would be more desirable for safety reasons to encourage people to get out of their cars and walk or ride to experience the place. There would be advantages in the development a traffic management plan for the ACMS (Moonta) to help to manage this situation and help to better link parts of the site currently divided by this road, such as Elders Main Line of Lode and the former mine administration area.

There are inconsistent approaches in respect of signage throughout the ACMS (Moonta), including both interpretive and directional signage. The consistency of signage is important to help keep people safe and guide the public along walks between key destinations. This is particularly important given that there are a number of hazards throughout the area. An overall strategy is required to improve signage and wayfinding.

6.7 Physical Conservation

The surviving historic fabric of the ACMS (Moonta) consist of remnant and widely spread mining structures, both above and below ground, and the private and community structures associated with the Moonta Mines community that surrounded this mining activity. The area also includes other evidence of mining and ore processing activities in the form of tailings heaps and the later precipitation works.

Given the heritage value of the ACMS (Moonta), conservation should be carried out using best practice methods and processes. All remaining original fabric should be conserved in preference to later additions, particularly that which has occurred after the closure of the mine. Due to the length of operation of the mine, many of the remaining mining structures show the evolution in mining technology, combining early Cornish influenced elements with post-1900 structures more influenced by contemporary American mining methods. A number of types of issues were identified as outlined below.

6.7.1 Building Structures

With the closure of the mine in 1923, much of the mining machinery was removed and buildings were dismantled by liquidators to allow for the sale of the materials, including timber, corrugated iron, bricks and shaped building stones leaving very little evidence above ground of what were once substantial structures. A similar process occurred to many of the former miners' cottages and the major community buildings such as the churches.

Although a range of materials and construction techniques were used for the mining structures, community buildings and residences, the remaining structures are essentially masonry. These are a combination of stone, concrete and brick, with timber confined to roof structures, internal floors and more detailed elements such as windows and doors where these remain. The majority of the former structures associated with the operation of the mine are currently in varying degrees of ruination, ranging from sites where very little is evident above the ground to relatively complete structures such as Hughes and Richmans Enginehouses, where only the timber elements are missing. The most complete structures are the remaining community buildings, being the former Wesleyan Methodist Church and the former Moonta Mines Public School, which are essentially intact and in their original form. Many of the remaining miners cottages also remain in use, although often modified, the exception being the National Trust's Miners Cottage which remains in its early form.



Buildings of this construction type and of the time period present at the ACMS (Moonta), display similar issues to those present elsewhere although their level of impact varies from place to place. Typical issues include:

- > Rising damp and salt attack, which is more noted in the earlier structures as these did not include damp courses as part of their construction. This is often exaggerated by poor stormwater disposal, later modifications such as the addition of concrete floors or previous inappropriate repair practices. This problem causes deterioration of mortar joints, stone and brick surfaces immediately above ground level which ultimately can lead to the collapse of the wall. This problem was evident in most locations.
- > Falling damp, which results in the deterioration of softer mortar joints and soiling generally at higher levels and at the top of walls. The degree of the problems observed are quite typical and are not considered to be peculiar to Moonta, although it is widespread amongst the mine ruins as few of these structures are adequately roofed. This is an issue with most of the ruined mine structures together with more noted remaining structures such as Richmans Enginehouse where a roof has been retrofitted but has not been adequately maintained leading to concentrated falling damp. It is noted that previous well-meaning attempts to address falling damp, such as the mortar capping of the ruined walls of the Stables, has caused accelerated deterioration of the original wall surfaces below.
- > Structural movement, typically displayed by cracking often through weaker mortar joints but occasionally through masonry units. The stability of some structures were also of concern, such as the substantial stone walls in the vicinity of Taylors Shaft where leaning walls have previously been propped and the subsidence of the remains of Elders Enginehouse, both of which might be caused by the collapse of underground workings.
- > Oxide jacking, caused by the corrosion of imbedded iron or steel straps and bolts in masonry or concrete. At the ACMS (Moonta) this is particularly evident with remaining machine or mounting blocks where holding down bolts remain and where steel joists have been integrated into the lower portions of concrete.
- > Roof and gutter deterioration, including missing sections of roof sheeting, flashings and gutters which allows water to enter the interior of buildings leading to deterioration, such as that apparent at Richmans Enginehouse.
- > Timber weathering, which results in the breakdown of its organic structure which can lead to its disintegration over time and exposing it to biological attack, such as rot. This is often caused by the deterioration of protective paint surfaces or where unpainted timber has been left exposed due to the loss of roof structures. This is seen in the remaining unprotected timber elements associated with Hughes Enginehouse.
- > Vegetation growth within the remains of the former mining structures, most notably trees or woody shrubs. These have re-established themselves after the closure of the mine and appears to include a combination of naturalised introduced plants and native species. It is particularly problematic when vegetation grows within or adjacent to masonry element, such as the ore floors, as their roots gradually cause the disintegration of remaining structures, and in these instances this vegetation needs to be removed. The National Trust has made significant efforts to control the revegetation of some portions of the site, but the task is considerable, and this process must by necessity be ongoing.
- > Pigeons, which were originally kept by the miners, have colonised the site. They find numerous roosting opportunities in the former mine shafts and abandoned structures such as Richmans Enginehouse, leading to accumulations of excrement which has a detrimental impact building fabric. They also nest in sheltered parts of the complex roof of buildings such as the former Moonta Mines Public School, causing blockages of box gutters leading to ongoing problems with roof leaks and falling damp. Measures ideally should be taken to help control pigeon numbers, better sealing of roosting locations or the addition of preventative measure to prevent roosting, along with more regular maintenance of roofs with a known vulnerability to stormwater issues.

All of these issues need to be addressed where they appear at the individual places.

Ongoing maintenance is also fundamental to the conservation of these places. Currently maintenance is relatively ad hoc with most of the activity focused on the prominent sites such as the Miners Cottage, Railway Station and the tourist railway, but there is little evidence of regular maintenance to many of the other sites. There is no question that this is due to the need to concentrate activity due to the limited funds available. It will be important to develop a regular maintenance programme which needs to be expanded to significant ruins, the Moonta Mines Museum, walking trails, fencing and signage, and this expansion will need to be suitably resourced.

6.7.2 Archaeology

Much of the former mining areas along the lines of lode have been impacted by filling by later site activity which conceals the early structures, while a number of the major early mining buildings were demolished, either to accommodate later mining developments or as part of the salvaging process after the mine closure. Despite this situation, in many situations there are indications above ground of remnants of structure below, such as ore floors and footings or holding down bolts of engine houses and machinery blocks. This is particularly apparent to the areas adjacent to Hughes Enginehouse and north of Taylors Shaft, but it also occurs around the remains of Hancocks Enginehouse, while there are glimpses of ore floors in many areas.

Large numbers of the miner's cottages were also demolished after the closure of the mine, along with two of the large former church buildings. While the sites of the former churches are readily apparent, there are few signs of many of the cottages, although remains of these could exist below the surface.

Infrastructure also needs to be carefully planned to minimise the impact on sites of archaeological potential. This is particularly important along the lines of lode. For example the current vehicular road to Richmans Enginehouse traverses over Elders Line of Lode and may impact on the structures below ground. Ideally this access road should be relocated to minimise any impact on the heritage values of this particularly important part of the site.

It is suggested that to avoid similar problems occurring in the future, that a map should be developed to identify areas with both high and low archaeological potential to help to inform planning of subsequent infrastructure and development, as well as providing a guide where further investigations might be warranted to help to further inform our understanding of the site.

6.7.3 Below ground workings

None of the extensive network of underground workings associated with the mines are currently accessible, with most of these areas flooded after the ceasing of the mine pumping. The condition of these areas can therefore not be determined, but these working are represented at ground level in the form of the numerous shafts placed along the lines of the various lodes.



Problems of subsidence is evident around some of the shafts. This has impacted large areas around Warmingtons Shaft where there is little remaining evidence of surfaces structures, but a very large area of the ground is also continuing to collapse around the upper part of Taylors Shaft. This latter situation is leading to the destruction of the important surrounding ore floors and if it continues it will begin placing the remains of the counterweight pit and other stone structures in the immediate area at risk of collapse. Subsidence has also taken place to the remains of Elders Winding Engine leading to the deterioration of the remaining mounting blocks, while a deep area of subsidence has recently opened immediately against the east side of Richmans Enginehouse. Deterioration of the timber lining to the precast concrete collar added to the top of Hughes Shaft in 1992 to help stabilise that shaft has created numerous voids into the shaft that present a hazard. These problems require further investigation to determine the level of risk they present to the associated structures and the implementation of measures to mitigate the risks they create. In the case of Richmans, this might involve the addition of new safety fencing, but Taylors is likely to require extensive stabilisation works around the shaft to prevent further collapse.

The dumping of household rubbish and building debris into the former mine shafts is an ongoing problem, not just in less controlled areas but also in high profile sites such as Richmans. The dumped rubbish detracts from the appreciation of the heritage values of the ACMS (Moonta). While such practices will hopefully be reduced by increased education and interpretation of the importance of the heritage values, there would also be advantages in minimising vehicle access to the wider site by adding gates or other barriers on access tracks.

6.7.4 Tailings/Skimming heaps

The three tailing or skimming heaps are important structures which are essential element listed in the National Heritage values as well as landmarks which define the character of the ACMS (Moonta).

Since the closure of mining operations, a significant amount of material has been quarried and removed from both Ryans and Hancocks tailing heaps. This appears to have largely occurred since 1950 when the material was used by the Highways Department and the local Council as road base, but it was also sold to individuals and used for a variety of uses, including local garden paths, and was used beyond the immediate areas, including as far afield as Clare. All further quarrying of these heaps must be prevented.

Erosion from water run-off is also apparent to various parts of the heaps, while there are also concern that visitor foot traffic up and across the top of the heaps have the potential of cause further erosion issues in obscuring the remaining evidence of the pattern of the original distribution of the skimps that created the heaps. The community also reports that motorbike riders are known to use the heaps for recreational purposes leading to further erosion.



While continuing access to the top of the heaps is considered to be important in helping to interpret the mining process as well as orientating visitors to the ACMS (Moonta), additional thought will be necessary to manage access to these areas, probably requiring more infrastructure, such as elevated walkways, to minimise the impacts of access. More destructive activities should be minimised through the ongoing education of the community of the heritage values and the damaging nature of the current activities and be supported by additional barriers which will make access using vehicles more difficult. Erosion caused by water run-off require further analysis to determine if these can be better managed to minimise the impact.

It is also suggested that testing take place to the determine the nature of the skimps and if they represent any environmental risks – refer 6.5 Environmental Issues for more details.

6.7.5 Slimes flats

The slimes settling and evaporation ponds occupy large areas of the ACMS (Moonta) around the northern part of the mine site in proximity to the tailings heaps. The slimes are specifically mentioned in the National Heritage values statement (precipitation works) and attempts should be made to preserve these as ruins for interpretation in the future.

These large areas are regularly used for illegal vehicle activities which mar the surface of the former ponds. This not only distracts from their visual appreciation but also disturbs the natural drainage of these areas and risks erosion and damage to the remaining fabric which defines and divides these areas. While previous attempts to prevent these activities have been unsuccessful, further measures are required to prevent vehicle access to the slimes through the provision of fencing and the erection of barriers on maintenance access tracks. This should be supported by ongoing education of the community to help lift the awareness of the heritage value of these areas and damage caused by this ongoing activity.



Exaggerated erosion is occurring to some portions of the flats at the edges which is leading to the slimes materials covering and concealing other components. The source of these problems needs to be further analysed and the causes rectified to prevent further damage.

It is also suggested that testing take place to the determine the nature of the slimes and if they represent any environmental risks – refer to 6.5 Environmental Issues for more details.

6.8 Tourism

Tourism associated with the ACMS (Moonta) is currently an important part of the economic activity of the wider township of Moonta and the Copper Coast Council community. The regions mining history is currently showcased through the Kernewek Lowender biennial festival. This is an important tourism event to the region and is one of the few worldwide celebrations of Cornish culture, while it also showcases the social heritage values of Cornish descended community. It is understood that the 2019 festival attracted in excess of 45,000 people from South Australia, Interstate and overseas.⁴⁸⁷

Many of the historic mining sites, and related places are owned or managed by either the National Trust South Australia or the Copper Coast Council, and rely on income derived from visitation to support ongoing maintenance and re-investment not only the tourism infrastructure but also the maintenance of the physical fabric of the ACMS (Moonta). It is the desire of these organisations to sustain and increase visitation to the ACMS (Moonta) and this is expressed through their investment in studies on the value of tourism to the local economy and strategic plans such as Precious Time, the Copper Coast Economic Development and Marketing Plan 2018 by Parallax Design with Evans + Ayers, together with the Moonta Mines Heritage Area Site Development Plan and Business Case 2018. Its conclusions of structuring ideas around three interpretive themes (learning how things work, Cornish mining heritage, and social threads) is sound and justified in the context of the National Heritage values of the place.

In addition, a Strategic Plan 2015 – 2025, “Moving Toward 2025” has been developed by the Copper Coast Council. This strategic management plan represents the overarching framework for Council’s suite of plans. Council’s key directions are contained in five objectives with complementary goals. Key strategies and responsibility for strategy delivery are also outlined. Heritage places contribute to three of the five objectives, Environmental, Economic and Cultural.

There are however a number of inconsistencies in the current tourism arrangements. The current Tourist Information Centre, which is located in the former Railway Station, and the Museum at the former Moonta Mines Public School are separated by a considerable distance. While it is agreed that the location of the Tourist Information Centre is correctly placed, the links to the Museum need to be strengthened. Consideration should also be given to creating a direct walking/cycling route between these two elements which would allow vehicles to be left at the Information Centre. The current popular tourist train does currently pass close to both of these sites, but at present it is not used to provide a direct link between them – tickets are only available at the depot near the Museum and are for a round trip. There may be options to consider using this as an alternative way of connecting these important places.

Most of the movement between the various parts of the site relies upon vehicles and the existing interpretation has been structured in this way. Some of the sites however are not on road routes, such as the mining remains around Hancocks Enginehouse, and this leads to the telling of a disjointed story and risks resulting in a confused view about the Heritage values of the ACMS (Moonta). For example, there are at present no structured walking trails with consistent interpretation that traverse the length of Elders Main Line of Lode. Upgrading of existing trails and the development of new trails, particularly where these follow historic movement patterns, such as the Hamley tramway, should be explored and developed. Ideally these should cater for both walking and cycling and they should be provided with appropriate signage and interpretation to help convey the National Heritage values.

Consideration should also be given to improving visitor facilities within the ACMS (Moonta). Toilet facilities are provided at the Tourist Information Centre, but this is remote from the centre of the site. Visitor toilets are also provided at the National Trust Museum, but these are within the original school toilet block and are serviceable but not of the highest quality. Opportunities should be explored for improved toilet facilities within the central part of the site as part of future upgrade of the existing buildings and facilities, with this becoming more important if walking and cycling routes are further developed as suggested. There is also a need for more locations for resting and shelter, and this needs to be considered when planning and developing any trails.

Tourism development can be accompanied by risks to conservation, particularly to fragile sites. Such threats range from damage as a result of erosion caused by visitor numbers, unsympathetic behavior, and visual intrusion in important landscapes created by car parking, signage and encroachment of visitor facilities. These risks should be acknowledged and assessed, with mitigation strategies developed and implemented depending on the unique characteristics of each individual site. An example of this problem is erosion of the tailings heaps exaggerated by foot traffic and the construction of Richmans Concentrator Way across the Elders Main Line of Lode.

Authenticity is an important factor to consider when assessing development to support tourist activity. Interpretation of the heritage values needs to remain the focus of any increase in visitation with any commercial and retail consequences carefully managed. For example pressures created by increasing tourist numbers could lead to the lessening of the residential character of the remaining miners cottages. Care must be taken when investigating and implementing tourism opportunities to ensure that these do not have a negative impact on the National Heritage values, whether these be physical or social. Collecting visitation data is currently undertaken at a basic level. Greater detail and rigor in the collection of data would provide research material for future planning.

6.9 Interpretation

There is a range of interpretation currently in place to help convey the heritage values of the ACMS (Moonta). These range from signage at some of the individual mining sites, displays and exhibitions at the National Trust of SA museum at the former Moonta Mines School, and the house museum of the former Miners Cottage. As the mining occurred below ground, and these areas are no longer accessible, and as most of the remaining mining and community infrastructure is represented by ruins, interpretation is particularly important in conveying the heritage values to the public.

A significant part of the current interpretation is due to the National Trust Museum at the centrally located former Moonta Mines Public School. This presents information on the mine, both above and below ground, as well as the history and the lifestyle of the Cornish community. This is based on an impressive collection of artifacts specifically related to the ACMS (Moonta), although this also naturally extends to include the story of the adjoining Moonta township. While an excellent facility, it suffers from disability access issues, the building fabric is in need of conservation and maintenance, and there are limited further display opportunities. It will remain as a central hub for the interpretation of the ACMS (Moonta), but opportunities should also be explored to provide satellite interpretive venues, such as the Wesleyan Methodist Church. In such a scenario, the Church, or particularly its adjoining hall, could be used as a base to interpret the social aspects of the Cornish community, allowing the current museum to develop further interpretation of the mine itself.



Beyond the current Museum, interpretation of the wider site is self-guided and often carried out by vehicle. This relies upon an information booklet combined with signage directing vehicles and present at the major sites. Accessibility into and through the site is reasonable, but the current experiential quality is poor. There are inconsistent approaches with the current wayfinding and interpretive signage, while much of what exists is in a poor state of repair, and this does not assist with the conveying of the heritage values. While there are also walking trails, these are relatively few in number and infrastructure associated with these is limited. Good functional access, directional signage and wayfinding along with appropriate interpretive signage enhances the visitor experience and understanding of heritage places. An overall strategy is required to improve and upgrade the current signage and wayfinding to provide a consistent approach.

There is likely to be added interpretive and experiential value for the public if consideration were given to the introduction of guided walking tours. This would help tell the often complex stories of the place. These should focus key parts of the site, such as along Elder line of lode, or from the Museum to the Miners Cottage. Consideration could also be given to the development of a digital 'app' based service to help convey more detailed information about particular sites, although such an approach will also need to be supported by adequate mobile phone coverage from a range of providers across the site.

The current tourist train is a popular tourist element that does have an interpretive function and is currently well supported by volunteers. The train route however is focused on the precipitation works and therefore does not visit the most significant parts of the ACMS (Moonta), so its current interpretive contribution is relatively limited. Given that historically the site had a well developed network of rail lines for the movement of goods and ore, there may be opportunities to consider extending the current railway to visit some of the important part of the site, such as traversing along Elders Main Line of Lode. This would provide an alternative to the current line and could help to interpret one of the more important parts of the mining operations.

6.10 Nharangga Heritage

The Nharangga peoples lands once encompassed the whole of Yorke Peninsula from Yorketown in the south to Kadina in the north. The Narungga Aboriginal Progress Association (NAPA) were consulted as part of the development of this CMP. This organisation is based in Moonta and is proactive in the revival of the Nharangga language, and ongoing development of cultural and language resources for the community. Their promotion and development of culturally appropriate teaching and learning methods for training people in Aboriginal heritage will benefit interpretation opportunities at the ACMS (Moonta) which is currently largely absent. This should be addressed in the development of new interpretation in consultation with the Nharangga people. It is important that this history be evidence based and not tokenistic.

While the history of the Nharangga has been well documented, the interaction between the Nharangga and the mine along with the Cornish miners before the formation of the Point Pearce Mission is not well understood. There is however historic evidence of these relationships which have resulted from the preparation of this document which should form the basis for further research and analysis in association with the Nharangga.

6.11 Planning Controls

The review of the previous 1985 Moonta Mines State Heritage Area Draft Management Plan indicates that there has not been substantial change to the ACMS (Moonta) over the last 35 years, demonstrating the low demand for new development. This is in comparison with the major residential development which has taken place on the western side of the town of Moonta closer to the beach. This is also evidenced by the development approvals data showing that Moonta has by far the largest number of total developments approved in the first quarter of 2019/20 when compared to other towns in the Council area, including Wallaroo, Kadina and Paskerville. This trend is likely to lead to increased development pressure over time in Moonta, and while there is currently no evidence of associated impacts at the ACMS (Moonta), this could occur in time. It is therefore important to ensure that there are appropriate development controls in place to manage potential new development.

At present impacts associated with new development and changes to building fabric within the ACMS (Moonta) are managed through the Development Plan of the Copper Coast Council (Consolidated 12 December 2017). This document is sensitive to potential negative impacts of development on heritage places. The area which makes up the ACMS (Moonta) is divided into a series of Planning Precincts which are based on the eleven conservation zones based on those recommended in the 1985 Moonta Mines State Heritage Area Draft Management Plan, all surrounded by a series of precincts to act as a buffer for inappropriate development. The Development Plan also contains a series of Heritage Places and Historic Conservation Areas Objectives and Principles of Development Control, which seek to guide the design process and control future development in a prescriptive and performance-based manner. Further direction is provided in the form of robust Historic Conservation Guidelines for development affecting Historic Conservation areas.

With a number of noted exceptions, the current Development Plan (and previous iterations) has appropriate controls and guidelines to inform sensitive new development to complement the heritage places. An example of this is evident in the recently constructed residence on Milne Street whose form has been inspired by the traditional miner's cottages which is appropriate within this context. There is opportunity for further sensitive infill development within the ACMS (Moonta) site of a similar nature with strict compliance to the existing Historic Conservation Guidelines within the Development Plan, and along with consideration of the streetscape to conserve the authenticity and enhance the setting of this unique place. These developments should be assessed on a case by case basis due to the context of each place relative to surrounding heritage places and subject to archeological investigation.



The current Development Plan however does not take into account the further layer of responsibility and controls which have resulted from the inclusion of the ACMS (Moonta) on the National Heritage List. For example, there are current requirements to demolish unsafe structures which could create a conflict with National Heritage values, especially given the ruined nature of much of this site and the potential threats which might arise with the ownership issues surrounding some of the remaining mining cottages.

It is also noted that there is opportunity to reconsider these precincts based on the research and analysis contained in this CMP around heritage places (such as lines of lode) and conservation activities required (such as specific actions for the slimes flats). This is further explored in Chapter 8 Planning Precinct Policies.

Furthermore, the unplanned and unstructured streetscape patterns surrounding the miners' cottages in the centre of ACMS (Moonta) and west of Hancocks Tailing Heap are not currently mentioned in the existing Historic Conservation Guidelines, which are more residential in focus. It is important that specific streetscape design guidelines are developed in the future to conserve the authenticity and enhance the setting of these places.

It is important therefore that the existing planning policies from the Development Plan be reviewed and re-drafted as necessary in response to the assessment of the significance of the heritage places investigated, and to meet the intent of the National Heritage values statement and the requirements of the EPBC Act 1999. It is also important the recommendations and guidelines prepared as part of this document should be adopted and included, or at least referenced in the Development Plan. All effort should be made to ensure the policy and guidelines created in any future revision of the Development Plan are complementary to, and do not contradict this Conservation Management Plan.

6.12 Further Research

A preparation of this document has revealed areas where additional research would be beneficial to understanding the heritage values of the ACMS (Moonta). This includes the below;

- > Preparation of a survey of the remaining miners' cottages and research on the process of how these were originally sited and organised.
- > Study into the details of the operation of the tribute mining system, with specific reference to the management of ore lifted and processed on 'grass' (ground level). The records of the company held by the State Library of SA should be particularly important in this respect.
- > Study of the historic relationships between the Nharangga people and the Cornish miners and the mines themselves to better understand their role, particularly in the early development of the mine and authenticate the inclusion of future indigenous collaboration and interpretation at the ACMS (Moonta).
- > Further analysis of the importance of the former Moonta Mines Public School to the Cornish mining community living on the mineral leases.
- > Study of the remaining company residences, both within and currently outside of the ACMS (Moonta), including the residence at the former Precipitation Works.
- > Study of the show pavilion

While the focus of this document has been the totality of the ACMS (Moonta), it should be noted that more detailed analysis is required for all the individual sites referenced in the National Heritage Values, and ideally CMPs should be developed for each of these individual places.

7. Conservation Management Policy

7.1 Approach to Heritage Management

The formulation of conservation policy helps to guide the management of the heritage places with the primary objective of protecting the place's cultural significance. In ACMS (Moonta) this applies to the individual places of national heritage value and the overall form and cultural landscape to ensure their future care. It is intended that this occur so as to take account of the conservation issues associated with the place's setting and context and balance these against the practical requirements for its sustainable and ongoing use.

The community of the ACMS (Moonta) has at times expressed their dissatisfaction with the quality of life in the former mining settlement as the heritage protections is seen as an unwanted restriction on improving the cottages, the community is distant from general services and there is a lack of adequate investment to improving roads and drainage. At times there has been an apprehensive relationship between the ACMS (Moonta) community and other sections of the community, and authorities, seeking to conserve its historic heritage values. Opportunities however exist for addressing many of these issues as part of improvements in the infrastructure necessary to furthering the understanding and appreciation of the ACMS (Moonta) national heritage values to the wider community. The management of this transition is fundamental to the successful management, conservation and transmission of the national values.

Places on the Australian Heritage List are required to have management plans that set out how the heritage values will be managed and protected over time. The policies contained in this section generally follow the National Heritage management principles, as below:

1. The objective in managing national Heritage places is to identify, protect, conserve, present and transmit, to all generations, their national Heritage values.
2. The management of national Heritage places should use the best available knowledge, skills and standards for those places, and include ongoing technical and community input to decisions and actions that may have a significant impact on their national Heritage values.
3. The management of national Heritage places should respect all heritage values of the place and seek to integrate, where appropriate, commonwealth, state, territory and local government responsibilities for those places.
4. The management of national Heritage places should ensure that their use and presentation is consistent with the conservation of their national Heritage values.
5. The management of national Heritage places should make timely and appropriate provisions for community involvement, especially by people who:
 - a) Have a particular interest in, or associations with, the place; and
 - b) May be affected by the management of the place.
6. Indigenous people are the primary source of information on the value of their heritage. The active participation of indigenous people in identification, assessment and management is integral to the effective protection of indigenous heritage values.
7. The management of national Heritage places should provide for regular monitoring, review and reporting on the conservation of national Heritage values.

Following from the preceding descriptions of the key issues and opportunities, this chapter intends to set out the policies to guide change and to manage and conserve the ACMS (Moonta) for current and future generations.

7.1.1 Chapter Structure

The policies contained in this chapter are numbered and labelled and the policy statement is shown in italics. Each policy is preceded by a discussion that explains the policy and highlights examples drawn from the place. The policies should be read in conjunction with the preceding explanation.

Policies have been drafted in response to the key issues identified and discussed earlier. They provide detailed direction for the conservation and management of heritage places and their setting.

The following policies consider:

- > Form and context
- > Fabric and setting
- > Use
- > Interpretation
- > Management and Governance
- > Future Management of Planning and Redevelopment
- > Community Involvement
- > Review
- > Funding Opportunities

7.1.2 Definitions

The following is a list of definitions which are used throughout the subsequent text. These are taken from the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance 2013 (Burra Charter):

- > **Place** means the site, area, land, landscape, building or other work, group of buildings or other works, and may include components, contents, spaces and views.
- > **Fabric** means all the physical material of the place including components, fixtures, contents and objects.
- > **Conservation** means all the processes of looking after a place so as to retain its cultural significance. It may include a number or combination of the maintenance, preservation, restoration, reconstruction and adaptation.
- > **Maintenance** means the continuous protective care of the fabric and setting of a place and is distinguished from repair which involves restoration or reconstruction.
- > **Preservation** means maintaining the fabric of the place in its existing state and retarding its deterioration.
- > **Restoration** means returning the existing fabric of a place to a known earlier state by removing accretions or by reassembling existing components without the introduction of new material.
- > **Reconstruction** means returning a place to a known earlier state and is distinguished from restoration by the introduction of new materials into the fabric. This should not be confused with either re-creation or conjectural reconstructions which are outside the scope of the Charter.
- > **Adaptation** means modifying a place to suit proposed compatible uses
- > **Compatible use** means a use which involves no change to the culturally significant fabric, changes which are substantially reversible or changes which require a minimal impact.

7.1.3 Significance

The cultural significance of a place is defined as the aesthetic, historic, scientific, social or spiritual value for past, present or future generations. It is embodied in the place itself, in its fabric, its setting, its contents, in the associated documents, in its use, and in people's memories and association with the place.

All work encompassing the conservation or future development of ACMS (Moonta) should be undertaken based on the following principles, seeking to:

- > retain the cultural significance and integrity of the fabric which reflects that significance;
- > prevent damage to or deterioration of the significant fabric;
- > allow for the future maintenance of the place to ensure its significance is preserved; and
- > provide guidance for future appropriate development to support a compatible outcome.

Significant fabric should be conserved where possible, and the current integrity of the place should be maintained and not further decreased in value. The values provided in Chapter 5: Heritage Significance has described the places and precincts in ACMS (Moonta) that directly relate to the Cornish mining practices, lifestyle and economy that need to be conserved and enhanced to interpret the linkages between individual sites into the future.

Policy 1

The National Heritage List values are the basis for future conservation and management

The National Heritage values establish the place's cultural significance and are to be the basis for future management and conservation of the Australian Cornish Mining Site (Moonta).

7.2 Form and context

7.2.1 Authentic sense of place

The ACMS (Moonta) site is a geographic area that organically developed over time in response to human interaction. The context of the site includes the overall character of the area as well as the visual relationships of the individual elements within the broader landscape.

Mining infrastructure evolved over time along the north / south oriented lines of lode with clusters of miners' cottages and associated community buildings set in between them. This seemingly disparate development of ACMS (Moonta) has resulted in a relatively unstructured form with individual elements scattered across the site and movement between these places somewhat difficult to navigate.

The site is punctuated by a series of tall tailings heaps (Ryans, Richmans and Hancocks) which are visually prominent from the entry points and generally throughout the site.

The character of the ACMS (Moonta) is derived from its setting separated from the neighbouring town of Moonta amongst scrub land, which although was previously completely cleared has regenerated over time with the end of mining. The Cornish miner's cottages and mine infrastructure provide an interesting juxtaposition to this regenerated Australian bush landscape.

The physical townscape and topographical form of the ACMS (Moonta) have not changed substantially since the completion of the Moonta State Heritage Areas Draft Management Plan in 1985. This is primarily due to the State Heritage listing which restricted development, combined with slow demand for new development in ACMS (Moonta) along with an abundance of land in the Moonta township and closer to the beach. Whilst a small amount of new development is apparent in or adjacent to the ACMS (Moonta), generally the current Development Plan (and previous iterations) contains appropriate controls and guidance to inform sensitive development to complement the heritage places within the site.

The linear development of the mining infrastructure along the lines of lode – most prominently Elders Main Lode, the cluster of remnant miners' cottages in the centre of the site, and the visually prominent tailings heaps are central to the physical landscape and to the National Heritage values.

When considering new routes or pathways, priority should be given to reinstating historic routes where possible. The introduction of new roads and fencing should be avoided, except where required for safety and conservation, or designed to interpret historic boundaries. Visitation to the majority of individual sites is currently largely made by private car or bus and this should be managed so that it does not interfere with the appreciation of the national values.

There is scope for sensitive new development in the ACMS (Moonta) area, but this should only be undertaken where the existing building stock is not able to accommodate the proposed use. New development should be of an appropriate scale to the historic setting and respect the character of the area. It should be sited so that it does not interfere with important views and vistas and be designed to meet the requirement of the guidelines and policies contained in the Copper Coast Council Development Plan.

Policy 2	The 'sense of place' and the visual setting of ACMS (Moonta) mining sites <i>The heritage values present through the visual landscape and the historic and spatial relationships at ACMS (Moonta) should be sustained, conserved and interpreted.</i>
Policy 3	Historic routes <i>The pre-1923 historic system of roads, pathways and boundaries should be conserved, managed, and interpreted, paying particular attention to the former horse tramways routes and historic alignment of railways.</i>
Policy 4	Views and Vistas <i>Views to and from mining infrastructure, particularly along Elders Main Lode, to and from the Tailings Heaps, and the streetscape pattern and the form and cluster of miners' cottages around the Moonta Mines Uniting Church in the centre of the site are of significance to the National Heritage values and should be managed to maintain and enhance those views.</i>
Policy 5	New Works <i>New development, including structures, pathways, routes and visitor facilities within ACMS(Moonta) should be sited and designed so that they do not impact on the ability to appreciate and understand the visual connections within and to the ACMS(Moonta) and the setting of individual places, nor disturb archaeological remains or underground features. New works should also consider vehicle traffic and visual impact of associated fencing and car parking so as not to intrude upon significant views and vistas. New fencing should be avoided unless it is necessary for safety or it is designed to interpret an historical boundary. Wherever proposals are likely to impact on heritage values, a Heritage Impact Statement should be prepared, and where required referred under the EPBC Act.</i>



Interesting miners' cottage streetscape character

The following site wide objectives relate to ACMS (Moonta) and its setting. They are intended to provide a framework to support the conservation and enhancement of heritage places relating to the Cornish mining influence and should be incorporated into the objectives in statutory development controls for the site.

Objectives:

- > Protect the form of the ACMS (Moonta) as a disparate collection of individual elements in a landscape setting
- > Protect and enhance the miners' cottages, the village setting and the unstructured streetscape typology as a central defining element of Cornish life in the ACMS (Moonta)
- > Conserve and enhance Elders Main Lode mining sites, infrastructure and contributory elements as the centrepiece of the historical significance of ACMS (Moonta).
- > Conserve the built heritage places within ACMS (Moonta)
- > Protect views to and from heritage places within ACMS (Moonta)
- > Better define the entrances to the ACMS (Moonta)
- > Enhance historic links between the individual elements within the ACMS (Moonta) site using existing or historic pathways where possible in favour of building new links
- > Enhance links between the ACMS (Moonta) and the neighbouring town of Moonta using existing pathways (such as the Hamley tramline route) where possible in contrast to building new links
- > Reinforce the character and amenity within the ACMS (Moonta) through improvements to heritage places and their settings
- > Conservation of places most at risk should be given priority over those that are not.

7.2.2 Land ownership

Land in the ACMS (Moonta) is both publicly and privately owned and this has been identified as a potential risk, particularly in relation to dwellings on Crown Land occupied under licence or lease arrangements. The longstanding policy of the SA State Government has been to encourage the conversion of these lands to freehold. Hence, over time most occupiers have converted their land to freehold so that today there are only a handful of cottages remaining under licence. As previously discussed, these cottages may be at risk of abandonment and ruin because of the investment required to upgrade the building to the required standard for occupation. Occupation is key to maintaining the ongoing care and upkeep to these fragile structures. Incentives should be made available to license and lease holders to encourage title conversion through the provision of expert heritage advice and possible financial assistance, such as through a local conservation grants programme. Should this fail, the Crown should take an active role in ensuring that historic cottages are protected.

The majority of the historic mining sites are located on public land shared between the Crown and the Copper Coast Council with some in the care of the National Trust. Although this may change in the future, there is currently no compelling reason to otherwise change the current land ownership or these lease arrangements. The leases to the National Trust ensure that public access is available and the historic values are able to be experienced and conveyed. Issues have however arisen regarding the responsibility for maintenance and repairs to structures. As an example, in an area owned by the Crown but in the care of the National Trust, breaches have occurred to the slime pond walls which has concentrated stormwater runoff and led to the silting up of ruins at the former Precipitation Works. Neither agency is equipped or sufficiently funded to resolve the matter.

Policy 6	Land ownership <i>Land containing sites of National heritage value currently owned by State and Local government should be retained in public ownership to ensure that public access is maintained.</i>
Policy 7	Lease agreements <i>The responsibilities for maintenance and the funding of repairs should be considered and included in any lease or tenancy agreement for government owned land, sites, and buildings.</i>
Policy 8	Cottages on licenced or leased Crown Land <i>Owners of historic cottages occupied under licence or lease on Crown Land should be encouraged and incentivised to convert the land to freehold. Where this fails, the State government agency with the responsibility of managing Crown Lands should take an active role in ensuring that historic miners' cottages on Crown Land are protected.</i>

7.2.3 Subdivision

The land division pattern at ACMS (Moonta), although it does not contribute directly to the visual appreciation of the National Values, is a record of the settlement and mining pattern, and indirectly it defines the morphology of structures. In general, the land boundaries within the area should be maintained to retain this record and pattern unless further subdivision or amalgamation of titles is of advantage to the conservation of an historic site. Titles to facilitate new development for housing should only be considered if there is historic evidence of a dwelling site at that location and it should carefully follow the established pattern of division. There is also the risk that the development presupposed in the creation of a new title may conflict with the requirement to conserve archaeological remains and this should be considered in the suitability of a proposed land title. Currently the development pressure at the ACMS (Moonta) is low.

Policy 9 Subdivision

Subdivision and amalgamation of land should not occur within the ACMS (Moonta) area unless it supports the conservation of historic sites and structures, or in the case of the creation of a new title for the purposes of new dwellings, it can be established that the boundary previously existed and that the proposed dwelling and associated services do not interfere with archaeological remains.

7.2.4 Site security, safety, and vandalism

Vandalism and rubbish dumping were identified through community consultation as threats to the enjoyment of the historic sites at ACMS (Moonta). Signs warning of penalties and damage are present but appear to have little effect as rubbish dumping, vehicle tracks over sensitive sites, cut fences and erosion to sensitive sites from uncontrolled foot traffic are present and ongoing. The tailings heaps and ruins are particularly vulnerable to erosion from climbing and uncontrolled vehicle access. Some mining shafts are hidden and unfenced.

Over such a broad and sparsely populated area that can be accessed from multiple points, security of outlying sites is a difficult to police directly. Upgraded signage at known dumping locations recognising the National heritage values and penalties may assist with deterrence.

Other safety concerns in the area include general pedestrian safety. There are no defined road crossing points at popular tourists sites and vehicle speeds on roads crossing the area present a safety risk to the unwary visitor.

To prevent erosion and provide a safe environment for public access, access should be controlled using signage and barriers where appropriate to sensitive and high-risk sites. Overall visitation and safety would be improved by a reduction in the reliance on private vehicle access.

Policy 10 Security and vandalism

Implement security and safety measures such as reducing road access, signage, fencing and security surveillance to protect vulnerable historic sites from vandalism and dumping.

Policy 11 Safety and erosion control

The sites available for public visitation comprising the ACMS (Moonta) should be assessed for safety and erosion control. Access to erosion sensitive sites and areas of high safety risk should be identified and controlled by means of reducing vehicle access roads, signage, defined pathways and barriers.

Objectives:

- > A security and safety strategy is formed and implemented to protect the ACMS (Moonta) from vandalism, rubbish dumping and damage.
- > Vehicle access and movement throughout the site is reviewed and safety measures implemented to increase visitor and community amenity

7.2.5 Intrusive Items

Items that have an intrusive effect on the setting of the National Heritage values have been identified in Chapter 4: Place Description. These generally relate to inappropriate development that is incongruent with the natural and historic visual landscape. An example of this is Richmans Concentrator Way which cuts across Elders Main Lode and disturbs ore floors and other mining artefacts.

They also include maintenance processes (or lack of) that have led to areas of potentially exceptional value being concealed and or compromised. For example, the lack of vegetation clearance in areas has hidden some places of significance, and vandalism through rubbish dumping (particularly in mine shafts) has compromised the quality of these places.

At an individual place scale, intrusive items have not been identified in this study. This assessment should be based upon a closer inspection and significance assessment of the place contained in a CMP prepared by a suitably qualified heritage consultant.

Policy 12 Intrusive fabric and vegetation

Remove infrastructure, structures and vegetation that are intrusive or adversely impact on significant views, elements, and fabric.



Vegetation obscuring Hamley Mine ruins

7.3 Fabric and setting

7.3.1 Conservation of built fabric

The surviving fabric of the ACMS (Moonta) is subject to a variety of impacts on its physical fabric from active and natural threats. The fabric is to be conserved in the manner described in the subsequent policies.

Policy 13	Conservation of significant fabric <i>The fabric of ACMS (Moonta) reflected in the National Values should be managed and conserved. All works to significant buildings, structures and ruins should be carried out in accordance with the principles and practices of the Australia ICOMOS Charter for Places of Cultural Significance (the Burra Charter).</i>
Policy 14	Best practice conservation <i>Best practice standards will be implemented for the conservation of significant fabric within the ACMS (Moonta). Conservation projects will involve appropriately skilled and trained professionals and tradespeople.</i>
Policy 15	Historic layering <i>Fabric conservation will respect the historic layering of individual buildings, structures, and ruins.</i>

7.3.2 Preventing Deterioration

The physical fabric of historic structures degrades over time with exposure to the impacts of weathering and use. Regular maintenance will mitigate these effects and reduce the rate of deterioration. Lack of regular maintenance often leads to loss of fabric and hence heritage value. In many cases lost fabric cannot be replaced because equal materials are no longer available, traditional manufacturing processes have ceased, or traditional trades lost.

Maintenance can be defined as 'routine work necessary to keep the place and its setting in good order'. Maintenance does not include repair or replacement of fabric. Maintenance would involve regular cleaning of gutters; or refixing a loose roofing sheet without introducing new materials. Replacing the gutter constitutes repair.

A maintenance plan should be developed for each place of National Heritage Value that describes the regular maintenance tasks, programme, and responsibility. The maintenance plan will be tailored to suit the special circumstances of the place and its setting. For instance, the presence of overhanging trees would influence the regularity of gutter cleaning. As a guide, typical maintenance activities to would include:

Cleaning of gutters and check to ensure that the stormwater system is functioning correctly.

- > Check of roofing for leaks, damage or corrosion.
- > Re-applying oil and wax finishes to timber (not painting).
- > Replacing broken glazing, including loose glazing putty.
- > Maintenance to existing equipment and services.
- > Weed control.

Regular monitoring and inspections should form part of the cyclical programme, particularly focused on ensuring that areas prone to failure such as roofs, gutters and downpipes are functioning correctly.

Note that some maintenance work, such as painting, to a State heritage place is considered Development under the Development Act 1993 and requires development approval.

Policy 16	Cyclical maintenance <i>The significant fabric of the ACMS (Moonta) should be conserved through approved programs of regular maintenance and corrective works.</i>
Policy 17	Modern materials <i>Modern materials will be avoided where they may be likely to impact upon or cause damage to significant original fabric.</i>
Policy 18	Damage to significant fabric <i>If damage to significant fabric occurs during works, work in the area will cease and appropriate advice will be sought from a suitably trained and qualified person with expertise in the principles of the Burra Charter.</i>

Objectives:

- > Prepare a maintenance plan for all places of National Heritage Value. The maintenance plan will describe maintenance activities, the regularity of activity and responsibility.

7.3.3 Repairs

When an element of significant fabric is in such poor repair that it can no longer fulfil its use, repair or replacement may be necessary to support the ongoing use of the place and protect associated fabric. Elements exposed to weather such as roofing will eventually degrade to the point that repair or replacement is needed. Preference should be given to repair, part replacement, and supplementary support over entire replacement of original material. The scarfing in of new timber to a rotted verandah post for example should precede complete replacement.

Expert heritage advice should be sought to fully understand the relative significance of the element and options for repair and supplementary support prior to considering replacement. Repairs should be carried out by appropriately skilled contractors.

When repair involving replacement of significant fabric is required, the conservation principle is to replace the element 'like for like' with fabric to match the original element for form, dimension, material, quality and finish.

Policy 19 **Repairs to significant fabric**
Repair and stabilisation of significant fabric of the ACMS (Moonta) should precede replacement. Repairs should be guided by a heritage architect, or a suitably qualified person with expertise in the principles of the Burra Charter, and be undertaken by contractors sufficiently skilled and experienced in traditional construction.

Policy 20 **Replacement of significant fabric**
Repair of significant fabric of the ACMS (Moonta) involving replacement should closely match the form, dimension, material, quality, and finish of the original. Replacement should be guided by a heritage architect, or a suitably qualified individual with expertise in the principles of the Burra Charter, and be undertaken by contractors sufficiently skilled and experienced in traditional construction.

7.3.4 Ruins

Ruins are recognised as a fundamental part of the history and significance of the ACMS (Moonta). They are important relics of the past and demonstrate the history of the site; including the processes that led to the mining structures becoming ruined. Although they may no longer have a functional use, ruins may be the only remaining evidence of an activity at a particular site and have important cultural landscape values.

Careful consideration of the significance of the individual place and analysis of the ruin's social, economic and environmental setting should occur prior to adopting a management strategy. It is generally accepted that a ruin cannot be restored as there is usually insufficient evidence to return the structure to its original state. Even if there is good evidence, the risk is that as more new material is added, the authenticity of the place is reduced.

The aim should be to slow down weathering processes and this may involve techniques such as shelter roofs, structural stabilisation, patch repair, and capping of walls. Caution should be used when considering capping walls as hard dome shaped capping can contribute to scouring of the wall below. Expert advice should be sought prior to undertaking capping work.



Sunday School Ruins

Vegetation regrowth at ruins sites is a threat to the stability of standing structures. Recent efforts have been made by National Trust volunteers to remove and clear woody vegetation growing in walls and close to their bases. This work should be encouraged and supported but there is no overall strategy in place for vegetation management and volunteers are not formally trained.

Interpretation is also an important part of ruin conservation and should be implemented at ruin sites so that the values are understood and able to be conveyed. Interpretation may include construction of new structures to gain access to otherwise inaccessible viewpoints such as has occurred at Mophetts Enginehouse at Burra Mines. Hughes Enginehouse and Ryans Enginehouse could be candidates for a similar scheme that both protects the historic structure and provides an informative vantage point. However, any new structure needs to be carefully balanced and considered to conserve the ruin's fabric and retain its authenticity. As an example, the roof installed at Ryans Enginehouse has not been maintained as it is inaccessible, and subsequent failure of the stormwater drainage has led to a concentration of water to the base of walls causing damage

Interpretation signage is crucial to understanding a ruined structure, but care should be taken so that it does not interfere with the experience of the place.

Policy 21 **Ruin retention and conservation**
All existing ruins of the ACMS (Moonta) should be retained and conserved in accordance with the principles and approach in Ruins: A guide to conservation and management (2013).

Policy 22 **Ruin reconstruction**
Reconstruction and restoration of ruins should be avoided unless essential for physical conservation or is part of an approved interpretative scheme.

Policy 23 **Ruin stabilisation**
Ruins identified as at risk should be stabilised as a matter of urgency, followed by the development of a ruin management strategy for all existing ruins of national value.

Policy 24 **Vegetation management**
Vegetation removal should be guided by the ruin management strategy for each site and vegetation regrowth threatening the stability of ruins should be removed. Volunteers undertaking the vegetation removal should be trained in appropriate methods to protect the fabric.

Objectives:

Undertake urgent works to stabilise the ruins identified as at risk, such as at Taylors Shaft, ruins of the powder magazine and Richmans Enginehouse. Urgent works constitutes temporary non-intrusive activities such as propping or fencing areas to make the safe / non accessible. Seek advice from a structural engineer with heritage expertise.

- > Monitor structural stability of those places identified as ruins. Seek advice from a structural engineer with heritage expertise.
- > Ensure adequate site drainage.
- > Develop a management strategy for the places identified as ruins and places at risk following the best practice guide contained in 'Ruins: A guide to conservation and management' 2013

7.3.5 Archaeology

ACMS (Moonta) is known to contain sub-surface evidence of historic industrial structures. In many areas where the structures were demolished, there are known archaeological deposits that have exceptional scientific research and education potential.

Some investigations have tended to come about as a reactive measure to capture archaeological deposits at risk of development activity, but they are an important and useful start to understanding the significance and extent of deposits at the ACMS (Moonta). Work to identify the extent, condition and significance of archaeological deposits should be encouraged.

In South Australia archaeological remains are protected by the Heritage Places Act 1993. Under the Heritage Act a person must not, without a permit from the SA Heritage Council:

- excavate or disturb a State Heritage Place designated as a place of geological, palaeontological or speleological significance; or remove geological, palaeontological or speleological specimens from such a place (section 25)
- excavate or disturb a State Heritage Place designated as a place of archaeological significance; or remove archaeological artefacts from such a place (section 26)
- excavate or disturb any land (not designated as a place of archaeological significance) for the purpose of searching for or recovering archaeological artefacts of heritage significance; or excavate or disturb any land (not designated as a place of archaeological significance) knowing or having reasonable cause to suspect that the excavation or disturbance will or is likely to result in an archaeological artefact of heritage significance being discovered, exposed, moved, damaged or destroyed (section 27).

There are no known sites of Aboriginal heritage significance within the ACMS (Moonta) State Heritage Area. The area has generally undergone substantial previous disturbance through the mining and mining related works. It should be recognised however that there may exist pockets of comparatively undisturbed land. The following policies account for the possibility of an unforeseen discovery.

Policy 25 Archaeological management

The archaeological heritage of the ACMS (Moonta) should be identified, conserved, and managed. These include relics, ruins and standing structures, as well as subsurface deposits and artefacts.

Policy 26 Mapping of archaeological potential

An integrated Archaeological Zoning Plan should be prepared for the ACMS (Moonta) to document known and predicted areas of archaeological sensitivity and known disturbed areas. The Zoning Plan should be distributed to affected landowners together with materials and resources that ensure they are aware of their statutory obligations and know where to seek further guidance. Discovery of archaeological deposits should be progressively mapped in the Zoning Plan and this document plan should be made publicly available.

Policy 27 Excavation

Excavation within areas identified as having archaeological potential within the ACMS (Moonta), which coincides the State heritage area, should be preceded by an assessment of the potential to disturb archaeological deposits of state and national significance and should be planned and executed in accordance with the advice of the South Australian Heritage Council and with archaeological supervision.

Policy 28 Archaeology in Development Assessment

Assessment of new development in the ACMS (Moonta) area should consider the archaeological potential of the subject site with reference to the Archaeological Zoning Plan and provision made for revising the development if findings of major significance are discovered during the works.

Policy 29 Unforeseen discovery of historical archaeological remains
In the event of an unforeseen discovery of historical archaeological remains, work should immediately cease in the area and the discovery reported to Heritage SA, for advice, prior to continuing work. Heritage SA will determine if a permit may be required under Section 27 of the Heritage Places Act and what actions are required by the applicant to attain a permit. Works must not re-start in the area until confirmation is received from DEW.

Policy 30 Unforeseen discovery of an Aboriginal object, site or remains
In the event of an unforeseen discovery of an Aboriginal object, site or remains, work should immediately cease in the area and the discovery reported to the Aboriginal Heritage Branch of the Aboriginal Affairs Reconciliation Division (AARD) of the Department of Premier and Cabinet, as required by Section 20 (1) of the Aboriginal Heritage Act 1988 (SA). The Aboriginal Heritage Branch will advise on the appropriate process, which may include recording the site and further action under Sections 12 and/or 23 of the Act. Works must not re-start in the area until confirmation is received from AARD.

Policy 31 Unforeseen discovery of human remains
In the event of an unforeseen discovery of human remains, work should immediately cease in the area and the discovery reported to the notify the Police by telephone on 131 444, as required under Section 28(1) of the Coroners Act 2003 (SA). The Police may visit the site to determine whether the remains are that of an Aboriginal person, and if so, the Police will contact the Aboriginal Heritage Branch. The Aboriginal Heritage Branch will advise on the appropriate process if human remains are found to be that of an Aboriginal person.

Moveable heritage includes mining equipment such as boilers, pipes, rail cars, pump and engine parts scattered across the ACMS (Moonta) site and these form part of the setting of the place. The National Trust Museum (former Moonta Mines Model school) holds a collection of mining equipment, ore collections and smaller mining related artefacts together with items related to the social life of the Cornish mining community. The collection was not reviewed in the scope of this study.

Most items at the ACMS (Moonta) site are large, heavy, and constructed of durable materials. They should be managed and conserved on site in the same way as other ruins to retain their association with the place and its setting. Where items of significance have been moved from a site, the long-term objective should be to locate, record and recover them as they add to the interpretation of the social and technical aspects of the Cornish life and mining. Items held in museum collections should be progressively catalogued and assessed to understand their significance to the National Heritage values.

Policy 32 Moveable heritage
Moveable items that reflect the National Values associated with the Australian Cornish Mining Sites at ACMS (Moonta) should be identified and documented.

Policy 33 Moveable heritage: mining equipment
Moveable items on public land that have been assessed as contributing to the values of ACMS (Moonta) such as boilers, ruined mining equipment, and other artefacts should be retained, conserved and interpreted on site.

Objectives:

- > Moveable heritage associated with Cornish mining technology are assessed, recorded and retained on site. Items found not associated with the site should be removed.
- > The collection of mining related artefacts at the Moonta Mines Museum is assessed and recorded.



Geological collection at the Former Moonta Mines School

7.3.6 Moveable Heritage and Collections

Moveable heritage items associated with mining in the ACMS (Moonta) form an essential part of the heritage values and understanding of the Cornish mining influence and technology.

7.3.7 Underground workings

A legacy of the underground mining process at the ACMS (Moonta) is a grid of interconnected vertical shafts, horizontal levels and stopes (larger open areas produced by the extraction of ore), much of which is flooded. The workings will contain abandoned mining machinery including the remains of iron pipes used for pumping, timber drive shafts, timber shoring, ladders, false floors, and loading platforms. While evidence of this part of the place is represented by the open top of many mine shafts, these are only a fleeting reminder of this vast network and associated infrastructure demonstrating the Cornish mining processes, practices and technology which forms a vital component of the National Heritage Values.

The extent of remaining underground form and fabric was not inspected as part of these investigations and the full extent and its condition is unknown. As a result, conservation action is not feasible. The underground workings cannot be readily understood due to this lack of access but should be acknowledged and interpreted as important part of the fabric of the place and its heritage values.

Collapse of underground workings has been ongoing and at times has resulted in sink holes at the surface. The most prominent of these has occurred at Warmingtons shaft and Taylors shaft. Stabilisation works have occurred at Hughes Enginehouse and more recently, a small collapse has opened adjacent to Richmans Enginehouse. At Taylors shaft there is a risk to important above ground structures and this should be assessed by a geo-technical engineer to understand the risk level of further collapse. Unsightly ground stabilisation methods such as shotcrete should not be used.

Collapses present a public risk and carefully designed fencing should be used to keep visitors safe, however they also offer an opportunity to better interpret the extent of underground workings.

Policy 34 *Underground workings*

Underground workings associated with the Australian Cornish Mining Sites at ACMS (Moonta) should be retained and interpreted.

Policy 35 *Structures at risk from collapse*

Collapses at Taylors shaft, Richmans Enginehouse and elsewhere should be assessed to understand the risk to surrounding structures.

Policy 36 *Stabilisation*

Stabilisation works to collapsed underground workings should only occur where the risk to other structures of National heritage value has been determined to outweigh the possible destruction of underground structures or mitigate further loss. The works should be planned and supervised by persons suitably trained and qualified with expertise in the principles of the Burra Charter. Unsightly ground stabilisation methods such as shotcrete should not be used.

7.4 Use

7.4.1 Promoting Future Sustainable Development

The Cornish mining sites and associated places which make up the ACMS (Moonta) make a valuable contribution to the character and enjoyment of the greater Moonta township, to the local community and visitors.

The ACMS (Moonta) is also a place where people live and the viability of the local community in the Moonta Mines settlement is crucial to the ongoing conservation of the place. Anecdotally and through consultation with community groups, owners and occupiers of the settlement have difficulty accessing the resources to maintain the historic cottages. Likewise, the community groups that sustain buildings such as the Moonta Mines Uniting Church are in decline and have as little as 15 active members, most of whom are over 70 years of age. While today there still exists the core of an active and vital community, it is likely that a future challenge will be to ensure that private and community buildings continue to be used, maintained, and conserved. Increased visitation to the ACMS (Moonta) through tourism presents both potential benefits and risks to the livability of the Moonta Mines settlement and this should be carefully considered in consultation with the local community. It is essential to engage the local community and community groups such as the National Trust when considering changes to policies that will affect land use and development potential. As land is both privately and publicly owned, opportunities should be sought for partnerships to overcome shared issues. Opportunities should also be considered to support and incentivise private landowners to recognise their contribution to the conservation of structures that contribute to the conservation of the national values. Where a building falls into disuse, adaptive re-use should be promoted, rather than it being left vacant.

Policy 37 Sustainable development

Conservation of heritage places and new development should coexist in a hierarchical, sympathetic and sensitive manner to showcase the Cornish mining history of the ACMS (Moonta) and benefit the local community and visitors alike.

Objectives

- > Development should occur sensitively within the ACMS (Moonta) site to preserve the form, the existing allotment plan and pattern of the miners' cottages, and not spread development within the Historic Mining Zones.
- > Adaptive reuse of heritage places is encouraged and preferred over the development of new buildings and sites.
- > All State Heritage places should have an individual CMP to assist with their individual conservation issues.
- > More prescriptive guidance for development adjacent places of heritage value should be created and be made available to owners and the community.
- > All individual heritage places should continue to be protected from insensitive development encroachment and visual intrusion.

7.4.2 Compatible Use & Future Requirements

The continuation of the ACMS (Moonta) as a functioning part of the greater Moonta township to attract and retain its population, as well as providing sustainable employment opportunities is an important part of its conservation. Without this economic function the heritage places and overall fabric of the ACMS (Moonta) will likely deteriorate with the potential for the loss of its National Heritage Values.



Existing Tourist Railway Experience

Compatible uses are those that best permit the significance of the ACMS (Moonta) to be retained and revealed, and ideally that use should be sufficiently sustainable to support the maintenance works necessary to ensure the longevity of the place. The lack of a viable use is often the prime cause for making a place more susceptible to neglect and therefore threaten its significance. This scenario is possible for some of the places listed within the ACMS (Moonta) site, and if such a situation arises in the future, all efforts should be made to provide an alternative use compatible with the significance of the place. Depending upon an assessment of specific proposals, a range of alternatives may be acceptable in maintaining the significance of the place. For example, the Moonta Mines Uniting Church is central to the transmission of the National Heritage values and it is at risk of closing because of the decline in the congregation. If this occurs, public ownership should be considered and a new use compatible with its heritage values found. The church hall and Sunday school could be candidates for an extension of the Moonta Mines museum, focusing on the social history of the settlement.

It is noted that places entered in the South Australian Heritage Register require development approval for any change of use.

Policy 38 Ongoing use

Ongoing use of places that comprise the ACMS (Moonta) should be encouraged and supported and take preference over new development.

Policy 39 Change of use

Futures uses of the places that comprise the ACMS (Moonta) should seek to minimise the effect of a change of use on the place's values and significant fabric. Whenever proposals are likely to impact on heritage values, a Heritage Impact Statement will be prepared by a suitably qualified and experienced heritage expert and where required referred under the EPBC Act to the Australian Department of Agriculture, Water and the Environment.

Policy 40 Vacant community buildings

Community buildings such as the Moonta Mines Uniting Church are central to the understanding and transmission of the National Heritage values but are at risk of closing and possible subsequent loss of public access. Should the church activities cease, the building should be transferred to public ownership so that public access can be maintained.

7.4.3 Tourism

Tourism associated with the ACMS (Moonta) has the potential to convey the National Heritage Values to the wider community and be an important factor in the future economic sustainability of the place, the wider township of Moonta and for the Copper Coast Council; however conservation objectives should take precedence over tourism objectives given its National Heritage value and potential inclusion on the World Heritage list.

Development in support of tourism can be accompanied by risks to heritage values, particularly to fragile sites. Such threats range from damage because of unsympathetic behaviour by visitors to visual clutter caused by car parking, signage and encroachment of visitor facilities. These risks should be acknowledged and assessed, and mitigation strategies enacted when changes are considered to a site.

Authenticity is an important factor to consider when assessing tourist development. Care must be taken when investigating tourism opportunities that they don't damage the physical or social fabric – which will then adversely affect the values of the place.

The local community has expressed concern about the level of dust created by increased vehicle movements on unsealed roads throughout the Moonta Mines settlement and surrounds. Any tourism development should consider the impacts on the local amenity.

Policy 41 **Tourism**

To maintain investment in the conservation of heritage places of National Value, Heritage tourism centred on ACMS (Moonta) should be promoted and supported. However, this should be done with the objective of conveying the National Heritage Values in accordance with the conservation policies of this CMP to retain the authenticity of the place and its setting and amenity to residents.

Policy 42 **Marketing**

Tourism promotional materials for the town of Moonta and the Moonta Mines (ACMS (Moonta)) should enhance the public appreciation of the cultural value of the ACMS (Moonta).

Policy 43 **Facilities**

Provide adequate facilities, safety, and security and interpretation for visitors at publicly accessible sites.

7.4.4 Objectives

- > The historic links with the ACMS (Burra) should be developed to enhance travel between and interpretation of the two jointly National Heritage Listed Sites.
- > Leverage mining heritage as a common theme across Kadina, Wallaroo and Moonta (the Copper Triangle) to enhance travel between the three regional centres.
- > Enhance and upgrade tourism facilities and infrastructure within the ACMS (Moonta) as a centrepiece for Cornish mining culture nationally and internationally.
- > Increase tourist experiences along Elders Main Lode by improving and developing a united interpretive strategy and considering the implementation of guided tours.
- > Provide more interpretive information on all heritage places within the ACMS (Moonta) site to increase community awareness and educate the public, including tourists, of the importance of the place.
- > Provide better infrastructure for walking and cycling to heritage places, and to the town of Moonta for residents and tourists.
- > Provide a more coordinated suite of signage to aid wayfinding and interpretation throughout ACMS (Moonta).
- > Generally, improve the quality and experience of heritage places in the ACMS (Moonta) that contribute to the Cornish mining history of the place
- > Consider extension of the current popular tourist railway as an avenue for interpretation of the wider mine site and emphasising the route of the original mine rail system as the framework.
- > Development of further interpretation of the importance of the underground mining infrastructure associated with the ACMS (Moonta). As this important part of the site is inaccessible this could be carried out by the development of an accessible above ground interpretive facility.

7.4.5 Adaptation and removal of fabric

Future works may require the removal of portions of fabric to support a compatible use or to conserve more significant portions of the fabric. Where possible this should be confined to areas and components of individual places identified as having lower heritage value although there may be scenarios where more significant fabric may require adaptation or removal.

Before such change or removal of the fabric occurs, the existing configuration and condition should be recorded. Suitable practices would involve:

- > Establishing a central records system to hold the information collected in a manner which will be durable and accessible. It is suggested that this information be stored by the Council. Refer also to **Records**.
- > Checking of any existing drawings to ensure they accurately reflect the existing configuration, materials and detail of the fabric which will be altered, and if inaccurately recorded provide new measured drawings to reflect the actual situation.
- > Carry out a detailed photographic record of the existing fabric, whether external, internal or both depending upon the nature of the proposed change. Digital files should be stored in a central location with prints made on durable stock and copies forwarded to Heritage SA for filing.
- > Provision of a brief account of how the fabric or structure was used, possibly supplemented by an oral history where this is available.
- > If no other equivalent examples of the fabric being altered or removed remain within the site, that a sample of the material or item be held for future interpretive purposes.

The extent of recording of the fabric will depend upon its relative significance and interest. The development of a streamlined version of the above is suggested to be developed for the former Miners Cottages at the ACMS (Moonta) to encourage positive change to support their ongoing residential use.

Any works requiring part removal of any of the existing fabric will require statutory approvals. Refer also to **Fabric and setting** for policies on the treatment of historic fabric and **Management and Governance** later in this chapter for a description of the approvals process.

<p>Policy 44 Adaptation of heritage places <i>Alterations and additions should generally be within existing building envelopes. Where possible confine major adaptations, alterations and additions to fabric of lesser heritage significance. External additions may be considered where they support the ongoing use of the building and result in minimal or no heritage impact, are not visually prominent, and are visually distinct from the original features, and are reversible.</i></p> <p>Policy 45 Removal of heritage fabric <i>Where significant fabric is removed it should be recorded in situ prior to removal and the information collected held in a manner which will be durable and accessible. Items which are not capable of economic replication should be stored safely for future restoration, reuse, or interpretation.</i></p>
--

7.4.6 Services

Modern services such as electrical wiring, lighting, air conditioning and plumbing are often necessary to maintain a use compatible with the place's significance and should be installed in a sympathetic manner. There is also an increasing desire by owners to install solar panels and solar hot water heaters.

Externally, surface mounted service runs should be avoided by concealing internally or through existing voids such as ceilings. Chasing of the external masonry walls is not to occur, and as a last resort services may be run in simple circular surface mounted conduit painted in a colour to match the background material to make it as discrete as possible. Minimise the number and size of exposed ducting by the logical placement of outlets and fittings.

Generally new air conditioning systems should be designed to be as inconspicuous as possible, generally be reversible to allow for future evolution in air conditioning technology, while minimising its impact on significant fabric. Pipe runs, condensate lines and associated wiring should be concealed from view but where this is not possible the use of discrete and carefully located risers and bulkheads can be considered. Generally chasing of walls for pipework associated with mechanical systems will not be acceptable. Reverse cycle packaged units installed through walls or windows are not to be used.

To minimise the visual impact to the streetscape, it is desirable to mount services plant, such as hot water services, airconditioners and solar panels where they are not visible. In the case of solar panels this is often easily achieved on roof planes facing away from the street or on additions and outbuildings located behind the building. Such options should be investigated and pursued to eliminate or reduce the potential visual impact.

<p>Policy 46 Services <i>Provide carefully installed wired and piped services, where necessary, to ensure that a compatible use for places of value to the ACMS (Moonta) is maintained.</i></p> <p>Policy 47 Services concealment <i>Service installations, including solar panels, wiring, piping and ducting should be concealed from the main street fronts wherever possible.</i></p>

Objectives

- > No chasing will be acceptable to the external masonry walls.
- > No chasing of internal walls of spaces of high heritage value.
- > Minimise surface mounted ducting where possible, by running services through floor and ceiling voids.
- > Avoid mounting external fittings on buildings where fittings were not previously installed.
- > Avoid window mounted air conditioning units.
- > Any external air conditioning plant and solar panels should be carefully located so as not to obstruct significant views of the buildings.

7.4.7 Fire Protection

Structures of national value should be protected from fire to retain their significance. This is particularly a risk at the ACMS (Moonta) due to the extensive vegetation regrowth associated with the abandoned mining sites which is often in close proximity to some of the buildings, particularly to many of the miners cottages. This requires additional vigilance on the part of individual owners to ensure maintenance of their properties to remove hazards and suggests better management of regrowth vegetation to minimise the risk. Fire detection systems to individual buildings should meet the requirements of the National Construction Code. In the event of a major fire, severe damage can occur by the application of water onto hot masonry walls, and the National Trust of SA and Council should implement discussions/training with the CFS to ensure that in such an event walls of buildings will be suitably treated.

Interpretive infrastructure added to the site should use materials and methods that will not negatively impact the fabric in the case of fire at the site.

Policy 48 Fire services installation
The structures of national value should be protected from fire to retain the significance of the place.

Objectives:

- > Undertake regular maintenance to ensure that places are not at higher risk of fire.
- > Ongoing maintenance of regrowth vegetation in the vicinity of buildings to minimise fire risks.
- > Ensure that there is a fire detection system for heritage places where there is a risk of damage through fire.
- > Implement discussions and training with the CFS to ensure that in the event of a fire the techniques used will be suitable to protect the significance of the building.

7.5 Interpretation

The ACMS (Moonta) is a disparate and confused site. Many of the structures are ruined and vegetation regrowth masks their historic association to the extent that it is extremely difficult for a visitor with little experience and knowledge to understand their historic association and the totality of the former mining operations and settlement. Interpretation throughout the site is crucial to present and transmit the National heritage values.

Interpretive signage is present at some heritage places such as Richmans Enginehouse and tailing heap and Hughes Enginehouse to name a few, however it is inconsistent, somewhat dated and in some cases is in a state of disrepair. There is opportunity to upgrade and provide consistent interpretive signage to increase understanding and awareness of the importance of Cornish mining and its cultural impact. This could take the form of traditional signage at particular sites, but it could also include a digital “app” based service, although this does depend upon the level of mobile phone coverage.

There is also the opportunity to review and consolidate existing trails to assist with accessing the interpretation of various areas, such as along the lines of lode supported by new and upgraded infrastructure for cycling and walking and directional signage that are consistent in materials and design.

All the major mine areas were originally linked by the private mine railway system. The popularity of the current tourist train could assist with accessibility by extension to follow these original routes to increase the number of sites visited and the variety of visitor experiences.

Greater detail and rigour in the collection of data about visitation would provide research material for future interpretation planning and academic study.

Policy 49 Interpretation Strategy
Develop an interpretation strategy for ACMS (Moonta). Consider digital experiences as part of the strategy to increase uptake from younger generations.

Objectives

- > Development of interpretation and signage strategies for the ACMS (Moonta).
- > Review the coverage of existing mobile networks within the ACMS (Moonta) as part of an assessment to determine the potential of a mobile app to help interpret the National Values of the site and associated individual places.
- > Develop an access strategy for the ACMS (Moonta) to identify and direct alternative opportunities to access and navigate the ACMS (Moonta)
- > Collect visitation data for future research and planning of interpretation and tourism experiences.

7.5.1 Aboriginal heritage

The Nharangga people's lands once encompassed the whole of the Yorke Peninsula from Yorketown in the south to Kadina in the north. The Nharangga Aboriginal Progress Association (NAPA) were consulted as part of the development of this CMP. This organisation is based in Moonta and is proactive in the revival of the Nharangga language, and ongoing development of cultural and language resources for the community. Their promotion and development of culturally appropriate teaching and learning methods for training people in Aboriginal heritage will benefit interpretation opportunities at the ACMS (Moonta) which is currently largely absent. This should be addressed in the development of new interpretation, in consultation with the Nharangga people.

The Nharangga history has been documented by Skye Krichauff in her book *Nharangga Wargunni Bugi-Buggillu (A Journey Through Nharangga History)* but little is known about the interaction between the Nharangga and the Cornish miners before the formation of the Point Pearce Mission. Greater research in this area could present future opportunities for interpretation at the ACMS (Moonta).

Policy 50 **Aboriginal heritage interpretation**
The interpretation of Aboriginal cultural heritage particularly in relation to the interaction with the Cornish miners should be celebrated and supported in consultation with the Nharangga people. This should co-exist and be integrated with interpretation opportunities for Cornish mining heritage and other cultural heritage values.

7.5.2 Accessibility and Wayfinding

Functional access, directional signage and wayfinding along with appropriate interpretive signage helps the public to understand the heritage values of a place, and as such enhances the visitor experience.

In review of the Moonta Mines State Heritage Area Draft Management Plan (1985), the site wide accessibility patterns have not changed significantly. Since 1985, the major change to the road system has been Dominics Shaft Way cut through from Ryans Way to Verran Terrace adding to the number of roads that dissect the site.

Accessibility into and through the ACMS (Moonta) site is reasonable, however the experiential quality is poor. There are two main road entries from the east and west via Verran Terrace. Both could be improved to better provide visual gateways. Pedestrian and cycling infrastructure is limited, however several walking trails exist and a separate Moonta Heritage Trail links back to the Moonta township.



Existing interpretive sign along the old Hamley Tramline pathway

- Policy 51** **Access Strategy**
Develop an access strategy for the ACMS (Moonta) to encourage walking and cycling and explore other access options in addition to private vehicle access throughout the site and to link various components.
- Policy 52** **Signage Strategy**
Develop a signage strategy for the ACMS (Moonta) to increase wayfinding to heritage places.

7.5.3 Kernewek Lowender Festival

The biennial Kernewek Lowender Copper Coast Cornish festival, first celebrated in 1972, is held in the towns of Moonta, Wallaroo and Kadina, attracting up to 37,000 visitors from across Australia. It is an important opportunity to communicate and promote the ACMS (Moonta) heritage values to the wider community.

It would be beneficial to the conservation and transmission of the National Heritage values for the festival to include interpretation of historic mining sites, share new research, opportunities for training in heritage conservation, and incorporate aboriginal histories and stories.

- Policy 53** **Kernewek Lowender Festival**
The Kernewek Lowender Festival should be supported and encouraged to benefit the transmission of the Cornish mining heritage to the wider community.

7.5.4 Moonta Mines Museum

The Moonta Mines Museum located in the former Moonta Mines Public School is the central point of visitation at the ACMS (Moonta) and plays a vital role in the interpretation and transmission of Cornish mining traditions, migration, culture, and settlement history. The museum is run by National Trust volunteers and has 14 rooms housing thematic displays on the Cornish miners' lifestyles – mining, lodges and friendly societies, sports and pastimes, death and hardship, extensive displays of costumes, china, silverware, photographs and memorabilia and a classroom furnished in the c.1900 style. Important artefacts with provenance to Moonta Mines include original mine maps, mining tools and mineral collections from the mine. The museum is currently the only interpretation of the underground workings available at the site.

The museum would benefit from a review of its artefact collection and interpretation displays. This could be an extension of an Interpretation Plan for ACMS (Moonta) sites and include recommendations with respect to the curation of the collection, events to attract repeat visitation, research opportunities, and appropriate conditions for conserving historic documents, textiles and fabrics.

Policy 54 Moonta Mines Museum
The Moonta Mines Museum, housed at the former Moonta Mines School, should be supported to benefit the transmission of the Cornish mining heritage to the wider community.

7.5.5 Publications

There is an array of current publications which help interpret the Cornish mining heritage significance of the ACMS (Moonta), the town of Moonta and the wider copper triangle. A list exists in the bibliography of this CMP.

Various brochures exist about the mining history of the ACMS (Moonta) which generally have only passing reference to Cornish mining influences. It is recommended that when existing publications are reprinted or when new publications are developed that the importance of the Cornish mining influence and significance is highlighted and that the most recent information collected as part of this CMP should be incorporated.

Policy 55 New or Updated Publications
New or updated publications about the ACMS (Moonta), the town of Moonta, and the wider Copper Triangle should include the most recent information about the significance of the Cornish mining influence to enhance public appreciation of the cultural value of the Cornish mining sites.

7.5.6 Online / Digital

Numerous online resources are available to assist with the interpretation of Cornish mining sites, and more broadly the heritage significance of the ACMS (Moonta), including the Cornish Association of SA website, the SA Government Department for Environment and Water – Heritage website, and the National Trust website, as well as sources such as Wikipedia.

It is suggested that these websites are updated to reflect the National Heritage values of Cornish mining sites if they have not already done so. Furthermore, when possible this CMP should be linked to relevant websites to provide more information about the Cornish mining history of the ACMS (Moonta), and to help explain its significance to the Regional, South Australian, Australian and international community.

Policy 56 New Online / Digital Resources
New or updated online / digital resources should reflect the National Heritage values of the Cornish mining sites associated with the ACMS (Moonta) and should link or reference this CMP.

In addition, the utilisation of new technologies with low or minimal impact on the fabric of the place to showcase the importance of mining history in a non-traditional and innovative way that will broaden the appeal to younger generations should be encouraged.

Policy 57 Interpretation and new technologies
Opportunities should be explored utilising new technologies to help interpret and develop a better community understanding of Cornish mining systems and lost fabric. The development of a digital resource exhibiting the underground workings would benefit the understanding of the scale and significance of the mining activity at ACMS (Moonta) and be a useful research tool.

Objectives

- > Benchmark the ACMS (Moonta) internationally against other heritage places to investigate new innovative opportunities for interpretation of the National Heritage values.
- > Investigate new technologies for digital immersive and interactive opportunities to re-create heritage places that are inaccessible, have been demolished or have deteriorated over time.
- > Consider building a digital geocached 3D model of Mootna Mines to showcase its development over time.
- > Investigate existing mobile phone applications that can be utilised / adapted now to help expand the interpretive opportunities and build the demand for more heritage based digital data at the ACMS (Moonta).
- > Improve mobile phone coverage of the site as part of the infrastructure to assist with the development of digital systems on site.

7.6 Management and Governance

7.6.1 Burra Charter and best practice conservation

All decision making, whether planning or physical work, is to be in accordance with the principles established within the ICOMOS Burra Charter (2013). The policies outlined have been based on these principles, and they should form the basis of all future decision-making regarding the ACMS (Moonta) to ensure its established cultural significance is not diminished. As a place of national, and potentially world significance, the range of sites that make up ACMS (Moonta) are deserving of the highest standard of conservation practice and management.

Where specific issues are not covered within the conservation policies of this CMP, decisions should be based on an understanding of the significance of the place and the principles established by the ICOMOS Burra Charter. Where this situation occurs, it is important for those managing the place seek expert advice from those who understand and work with principles established by the ICOMOS Burra Charter, such as heritage architects, consultants, engineers and archaeologists etc.

Policy 58 **CMP as basis for decision making**
The conservation policy of this CMP should form the basis of all decisions to ensure the cultural values of the ACMS (Moonta) are not diminished.

Policy 59 **Adoption of the Burra Charter**
Decisions beyond the scope of the conservation policy in this report should be based on an understanding of the cultural significance of the place and the principles established within the ICOMOS Burra Charter.

Policy 60 **Expert advice**
Expert advice should be sought from those with an understanding of the ICOMOS Burra Charter when considering actions that may affect the National Heritage values of the ACMS (Moonta).

7.6.2 World Heritage Assessment

It is understood that a nomination for World Heritage listing of sites in ACMS (Moonta) is being considered by the Copper Coast Council in conjunction with the Regional Council of Goyder and the South Australian state government. It is recommended that further consideration of such a nomination as an extension to the international Cornish mining heritage sites is undertaken upon the completion, approval and endorsement of this CMP to place the ACMS (Moonta) within the world context along with other Cornish mining places.

Policy 61 **World heritage listing**
Australian Cornish Mining Sites – ACMS (Moonta) in conjunction with the ACMS (Burra) should be assessed for World heritage listing as an extension of the Cornwall and West Devon Mining Landscape.

7.6.3 Adoption

To maintain the National Heritage values and consistency with the principles of the Burra Charter, the adoption of this CMP should be preceded by consultation with all relevant stakeholders, seeking their comments and endorsements of policies identified.

This CMP is intended as a guide for the future management and protection of cultural assets and places of National Heritage value. Ownership of the CMP, with support from those involved with its future use and management of the place is the first step to ensuring that this document is fully utilised. A CMP is only effective if its actions are implemented.

As the place is of state, national, and potentially international significance the CMP should be endorsed by the Department of the Environment and Energy, Heritage SA & the Copper Coast Council as the local planning authority.

Policy 62 **Adoption of the CMP by Council**
This CMP should be reviewed by the Copper Coast Council and officially adopted.

Policy 63 **Adoption of the CMP by State and Commonwealth agencies**
This CMP should be reviewed by Heritage SA and the Department of the Environment and Energy and Heritage SA and officially endorsed.

7.6.4 SA Heritage Places Act

State heritage protections are essential to retain the ACMS (Moonta)'s national heritage value. The state's planning and heritage legislation provides the framework for decisions about development affecting the physical fabric and its setting to consider the impact on heritage values. Development within the ACMS (Moonta) State Heritage Area is referred to Heritage SA for advice, enabling a third-party review of all development within this area and another layer of protection. The state previously contributed to a co-funded heritage advisory service with regular visits being undertaken to Moonta Mines by a contractor based in Adelaide. As development activity in the area is low, and calls upon the service were correspondingly low, and the program was eventually suspended and replaced with an inhouse service by Heritage SA. Every opportunity should be explored to ensure that expert heritage advice is available to landowners in the ACMS (Moonta) area and that Heritage SA play an active role in monitoring and reporting on issues that arise.

Policy 64 ACMS (Moonta) - State Heritage Area
The ACMS (Moonta) State Heritage Area should be retained in the South Australian Heritage Register and an integrated approach taken to heritage management through the provision of expert heritage advice.

7.6.5 Planning, Development and Infrastructure Act 2016 & Copper Coast Council Development Plan - Consolidated 12 December 2017

As custodian of the CMP and the body responsible for compliance with the state's planning and building legislation within the ACMS (Moonta), it is a responsibility of the Copper Coast Council to ensure that the National Heritage values are protected.

The structure of the CMP is intended to assist and enable the future adoption and implementation of the policies so they can be integrated into the Development Plan in due course.

The Development Plan for the Copper Coast Council (Consolidated 12 December 2017) is sensitive to potential development impacts on heritage places. It contains a series of Heritage Places Objectives and Principles of Development Control, and Historic Conservation Area Objectives and Principles of Development Control, which seek to guide the design process and control future development in a prescriptive and performance-based manner. Further direction is provided in the form of robust Historic Conservation Guidelines for development affecting Historic Conservation areas.

The Historic Mining zone associated with the ACMS (Moonta) strongly depicts the scale of operations of mining, and the ad hoc spatial arrangement of the miner's cottages and other built fabric in the centre of the site surrounded by mining infrastructure that relates to the various lines of lode. This sits separately to the layout of the town of Moonta in the west, with a formal grid layout surrounded by purposely zoned parklands.

The Development Plan also provides geographical policy area guidance for the ACMS (Moonta). Moonta Mines Policy Area 1 lists twelve precincts with different policy guidance, and precinct specific provisions to steer development relative to the desired character and established form of these precincts.

The planning precincts have been reviewed as part of this CMP, and additional planning policy recommended and is included in Chapter 8. The planning policies have been drafted in response to the assessment of the significance of the heritage places investigated, and to meet the intent of the National Heritage values statement and the requirements of the EPBC Act 1999. It is envisaged that the planning policy and guidelines written as part of this CMP are adopted and included, or at least referenced in the Development Plan in the future. All effort has been made to ensure the policy and guidelines created are complementary to, and do not contradict the existing policy in the current Development Plan or this CMP.

It is noted that these planning policies specifically relate to the Cornish mining influence on the ACMS (Moonta) and it is acknowledged that other cultural influences exist and have contributed to the development and heritage characteristics of the ACMS (Moonta) site and the adjacent town of Moonta.

Policy 65 Transfer of CMP policies to statutory controls
The policies contained in this CMP should be integrated into future planning documents including future statutory planning controls to enable an integrated approach to the management of heritage values and for them to be actioned.

7.6.6 Statutory obligations and approvals - National Heritage Listing

The Moonta Mines State Heritage Area which is included in the South Australian Heritage Register pursuant to the Heritage Places Act 1993 coincides with the boundaries of the National Heritage Listing of the ACMS (Moonta) under the EPBC Act.

Statutory obligations and penalties for noncompliance arise from protection under these Acts. Owners, asset managers, Council employees and tenants of significant places should be made aware of the protections that apply and processes for seeking approval when proposing activities that may affect the values of the place, including its setting.

Approval under the EPBC Act is required for any action occurring within, or outside, a National Heritage place that has, will have, or is likely to have a significant impact on the National Heritage values of the National Heritage place.

According to the Significant Impact Guidelines 1.1 developed by the Australian Government, an action is likely to have a significant impact on historic heritage values of a National Heritage place if there is a real chance or possibility that the action will:

- > permanently remove, destroy, damage or substantially alter the fabric of a National Heritage place in a manner which is inconsistent with relevant values;
- > extend, renovate, refurbish or substantially alter a National Heritage place in a manner which is inconsistent with relevant values;
- > permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place;
- > involve activities in a National Heritage place with substantial and/or long-term impacts on its values;
- > involve the construction of buildings or other structures within, adjacent to, or within important sight lines of, a National Heritage place which are inconsistent with relevant values; and
- > make notable changes to the layout, spaces, form or species composition of a garden, landscape or setting of a National Heritage place in a manner which is inconsistent with relevant values

The person appointed with the responsibility for a proposed action needs to undertake a 'self-assessment' to decide whether a proposed action is likely to have a 'significant' adverse impact on the National Heritage values of the place. If so, that action must be referred to the Minister of the Environment for a decision.

The National Heritage Management Principles however recognises existing state level requirements for heritage management. Minor activities within the ACMS (Moonta) such as painting, and repair are unlikely to have a significant impact on the National Heritage values but require approval under the South Australian legislation. On the other hand, major development that will have a significant physical and or visual impact on the place should be referred. An approval under the state requirements could be used as a guide to the threshold of self-assessment for minor works and this should be formalised by agreement between the State and Commonwealth levels of government. Development that proposes changes to ACMS (Moonta)'s visual landscape or effects the physical fabric or setting of places are examples of activities that are likely to require referral to the Minister of Environment.

More guidance on approvals can be found at the Department of Environment and Energy website at the following link:

<https://www.environment.gov.au/heritage/management/national>

Advice can also be obtained from Heritage SA and the Copper Coast Council when planning changes to a National Heritage place.

Policy 66 Compliance with legislation

The owners, asset managers and tenants of the national heritage Cornish mining sites at ACMS (Moonta) should be made aware of and comply with the obligations that arise from the protections under the EPBC Act, the Planning Development and Infrastructure Act and Heritage Places Act, including the provisions related to archaeology.

Policy 67 EPBC Act approvals

Approval under the EPBC Act is sought for any action occurring within, or outside, a National Heritage place that has, will have, or is likely to have a significant impact on the National Heritage values of ACMS (Moonta).

Objectives:

- > Owners, asset managers and tenants of the National Heritage Cornish mining sites at ACMS (Moonta) are made aware of their obligations under the EPBC Act and seek advice when planning works to the physical fabric of heritage places, or new development in the visual setting in which the heritage place is situated.
- > Copper Coast Council officers responsible for the governance of heritage places, and those responsible for providing advice to private owners are made aware of actions that are likely to have a significant impact on the National Heritage values and the processes for achieving approval.
- > Formalise the process between the Federal and State Government agencies so that an approval under the South Australian planning and heritage legislation is sufficient to satisfy the self-assessment requirements of the EPBC Act.
- > Development of support documents to help private owners to understand their obligations and outline the process for obtaining approval for proposed works to places.

7.6.7 Records and further research

This CMP forms a depository of information about the history, condition and significance of the ACMS (Moonta). The last time a study of this magnitude was conducted was the 1985 Moonta Mines State Heritage Area Draft Management Plan by the State Heritage Branch Department of Environment and Planning, within the South Australian Government.

Currently records are held by Heritage SA, Copper Coast Council and the National Trust and the State Library of SA. The National Trust Museum at the former Moonta Mines Model School holds valuable primary resource materials, but these have limited accessibility.

To assist with subsequent future reviews of this document, it is recommended that all decision making, changes and maintenance works to places of significance should be documented and maintained in a logical and easy to find manner. This should include an accurate log or register of works undertaken, supplemented by dated photographs, drawings and sketches, etc. This will provide an invaluable record for future reference and will assist in identifying areas where conservation work has been undertaken. While the National Trust of SA Moonta Branch has a long established tradition of maintaining records about the place, it is suggested that the Copper Coast Council should be responsible for holding records about the history and management of the place but operated jointly by the National Trust of SA.

Future research on the history and social context of the Cornish mining influence at ACMS (Moonta) should be encouraged and supported as it will not only add to the understanding of the place but assists in transmitting its value.

The following are examples of where additional research would be of benefit:

- > There is little current understanding about how the Cornish tribute mining system was managed and operated in practice, such as how the individual tribute holders over were moved and treated around the site, both above and below ground. Given the extensive nature of the company records, it is possible that future research will provide a better understanding of how this uniquely Cornish mining system which is central to the National Heritage values of the ACMS (Moonta) operated in practice.
- > The interaction between the Nharungga and the Cornish miners.
- > The original Doctors House and original Accountants House, which with further research would allow for better understanding in the historical, social and political context of similar facilities in Cornwall and other mining colonies of the Cornish diaspora.
- > The social history and origin of the spatial arrangement of Miners' Cottages is also not well understood. Future archaeological studies will reveal further information about these places and the operation and history of the mines, the miners and their families.

Ongoing publication of research and study related to the ACMS (Moonta) would sustain and promote this place's historical importance to Australian and international communities.

Policy 68 Records

The Copper Coast Council and the National Trust should maintain accurate and consolidated records associated with any works and maintenance associated with the ACMS (Moonta).

Policy 69 Further Research

The Copper Coast Council, the National Trust, History SA, the State Library of South Australia, and Heritage SA should encourage and support further research into the history and significance of the ACMS (Moonta) to enhance the understanding of the place's value and foster the transmission of the National Heritage values to new audiences and future generations.

Objectives:

- > Identify or establish a consolidated and publicly accessible institution as a central deposit of records pertaining to the history and research about the Cornish mining influence at ACMS (Moonta).
- > Support greater access to primary resources by publishing them online and providing increased physical access to them.
- > Moonta to become a national centre of research for Cornish mining history and related fields of study.

7.7 Future Management of Planning and Development

Moonta Mines (State Heritage Register place number 13975), and the heritage places within this site are currently owned and managed in a variety of ways. They include private ownership (on freehold and lease arrangement); sites owned and managed by the Copper Coast Council; those owned and managed by the Minister for Sustainability (Crown land); and sites owned and managed by the National Trust of South Australia. As such, there is no central authority to provide consistent management and care across all places of National Heritage value within the site.

Conservation of the heritage values of privately-owned places depends upon owners being informed and complying with statutory obligations. Nonetheless, the care of these places is entirely reliant on the owners' investment in maintenance and repair. Some private owners lease their properties on long term rental or for short-term holiday accommodation ensuring their ongoing viability. Public access to the interiors of these places is often limited to holiday stays. Private ownership and occupation is less suitable for places of exceptional value such as the ACMS (Moonta) Uniting Church to which greater oversight and public access would benefit the national values.

Public access and security to Council owned sites, Crown land, and those owned by National Trust of SA, is through either volunteer attendance at the site, taking the tourist railway, or via self-guided tours with maps obtainable from the Moonta Tourist Office (former Railway Station). At least three walking trails have been created through various parts of the ACMS (Moonta) site, along with the Moonta Heritage Trail which links the town of Moonta to the ACMS (Moonta). This system has been in operation for some time and is currently well managed and staffed by the Trust and Council. The availability and training of staff and volunteers should be managed and monitored to ensure that repairs to places are appropriate, and future staffing levels are adequate to maintain security and information sharing.

Those involved in the management of planning and development at ACMS (Moonta) should understand the significance of the place. This is because without such an appreciation there is the potential for inappropriate decisions which could diminish the heritage value and authenticity of the place. It is therefore recommended that the Copper Coast Council instigate a method of minimising this risk through the development and application of suitable protocols or strategies. The appointment of a staff member to be responsible for heritage management and reporting would benefit coordination of conservation efforts. All Council and Heritage SA staff should undertake training to ensure the protocols around heritage and the structure of this Conservation Management Plan are suitably understood and proactively implemented.

<p>Policy 70</p>	<p>Active management <i>The Copper Coast Council should develop and implement a management system for decisions which might impact on the heritage value of the ACMS (Moonta).</i></p>
<p>Policy 71</p>	<p>Training of staff and volunteers <i>Council staff, contractors and volunteers engaged in the management of places of national value at the ACMS (Moonta) should be trained to understand the place's national heritage value, the obligations arising from national heritage listing, and when to seek expert advice.</i></p>
<p>Policy 72</p>	<p>Monitoring of CMP implementation <i>Council staff should report annually to Heritage SA and to Copper Coast Council on the implementation of the priority recommendations of this CMP. The report should include a summary of conservation activities undertaken in the year, changes in the state of repair of places identified as at-risk, the effectiveness of planning policies in the ACMS (Moonta) State Heritage Area affecting the National Heritage values and planned future conservation activities.</i></p>

Objectives:

- > The security of sites and arrangements for public access should be regularly reviewed for its effectiveness so that unwanted damage does not occur.
- > Management and heritage advice is easily accessible through the Copper Coast Council. This may be in the form of an officer appointed by Council to provide advice to owners, and coordinate and report on the CMP implementation.
- > Regular training of Copper Coast Council and Heritage SA officers is undertaken to ensure an integrated approach to the management of the National heritage, state, and local community values.

7.8 Community Involvement

To harness and empower the community it is recommended that the Copper Coast Council establishes a committee through their powers under the Local Government Act 1999. This should have an advisory role to Council on the conservation, heritage management issues and opportunities for the places associated with the ACMS (Moonta). The constituency of this committee should include designated positions for the Council, the National Trust, private owners, Indigenous representatives, the State Government and other community group members such as the Cornish Association.

This committee should help to improve the involvement and support of the local community in the management and conservation objectives of Cornish mining sites at ACMS (Moonta). A terms of reference should be established that details the purposes and functions the committee should fulfil including:

- > Champions of the ACMS (Moonta)
- > Manage and maintain the strategy recommended in this CMP
- > Management of any grant scheme developed for the ACMS (Moonta)
- > The committee is to promote the exchange of information about, and raise awareness of, issues involving the local community, indigenous culture and heritage that involve the management and conservation of the ACMS (Moonta) site.
- > To facilitate communication between the committee and the local community, and to provide a forum to exchange information relevant to site issues and local community views and concerns.
- > To give the local community an avenue to discuss local issues and to work towards identifying and resolving local concerns.

- > To provide a mechanism, including helping to source funding, for the active participation of the local community in conservation and tourism actions and activities associated with the ACMS (Moonta) site.
- > To provide an equitable forum in which to allow all committee members to express the views and opinions of their representative groups.
- > To monitor the effectiveness of conservation actions.

Policy 73 **Establishment of an Advisory Committee**
The Copper Coast Council should establish an advisory committee, including owner and indigenous representation, to improve the involvement and support of the local community in the management and conservation of Cornish mining sites at the ACMS (Moonta).

7.8.1 Aboriginal heritage

Although Aboriginal heritage is not a central theme of the National Heritage values, it is acknowledged that Moonta is within traditional lands of the Nharangga people and that all Aboriginal sites and objects are protected under the Aboriginal Heritage Act 1988 whether they are listed in the central archive or not. In December 2019 a formal request was made to the Department of Premier and Cabinet – Aboriginal Affairs and Reconciliation (DPC-AAR) for information on registered sites within the ACMS (Moonta) state heritage area. On 24th December 2019 DPC-AAR responded to advise that the Register of Aboriginal Heritage Sites and Objects had no entries for the subject area.

Consultation with the Nharungga community has also revealed that there is a lack of knowledge about the early interaction and relationship of aboriginal people within the mines and the Cornish miners.

The Copper Coast Council currently does not have policies directly relating to Indigenous culture, but notwithstanding this, it is pertinent to support collaboration with the Aboriginal community in the application and use of this CMP. The Nharangga Aboriginal Progress Association (NAPA) were consulted with in the creation of this CMP. They are based in Moonta and are strong advocates for supporting Aboriginal heritage. As such NAPA are best placed to collaborate with Council assist Council in the pursuit of formulating appropriate policies.

It is recommended that Council undertakes a Reconciliation Action Plan (RAP) to assist with the engagement of Aboriginal people in Moonta and across the Copper Coast Council, and to celebrate their culture. The RAP is a strategic document that supports an organisation’s business plan. It includes actions that will drive an organisation’s contribution to reconciliation internally and in the community. RAP’s can inform various Council policies such as Arts and Culture, Tourism, Heritage and Community Consultation and Engagement which are all relevant to this CMP. As a valuable part of the community, Aboriginal people should be a part of the future ongoing management, maintenance of cultural heritage places in Moonta and should participate in cultural heritage discussions relating to this CMP.

Policy 74 **Aboriginal reconciliation**
The Copper Coast Council should prepare a Reconciliation Action Plan to guide future relationships with, and meaningful opportunities for Aboriginal people in Moonta and across the Council area, including the ACMS (Moonta), and to celebrate their culture. The Reconciliation Action Plan should inform amendments to existing Council policies, inform a future ACMS (Moonta) Interpretation Strategy, and facilitate participation in future cultural heritage matters for Aboriginal people. The Plan is to include protocols for the management of sensitive information.

Objectives:

- > A cultural heritage agreement is reached with the Nharangga people to enable (assist?) Aboriginal people to be involved in decisions that affect their cultural heritage in the context of European, and specifically Cornish mining heritage associated with the ACMS (Moonta).

7.9 Review

This CMP should be reviewed every 5 years in accordance with Section 324W of the EPBC Act 1999. This is to ensure that the document remains relevant to the community's evolving perception of value and cultural significance, and in case the National Heritage values are altered or if major changes are proposed to the place.

The review should include an update to the physical condition survey to monitor the effectiveness of conservation actions and provide essential information for future decision making.

Policy 75 **Review of CMP**
The statement of significance and associated conservation policy of this document should be reviewed every five years, or sooner should major change occur in the interim. The review should also include a survey to monitor the effectiveness of conservation actions and an update to conservation management policies where warranted in consultation with owners, the Indigenous community, stakeholders and community interest groups.

Objectives:

- > To ensure that the ACMS (Moonta) CMP reflects the current state of repair of places of National Heritage value and contains relevant management policies and actions.
- > Owners, Department of the Environment and Energy, the Copper Coast Council, Heritage SA, other State government agencies, and relevant community groups are consulted on proposed changes to the CMP policies. Community groups may include the Nharangga people, the Cornish Association of South Australia and the National Trust of SA.

7.10 Funding Opportunities

Individual owners and tenants of places are generally responsible for the maintenance and upkeep of historic places that comprise the ACMS (Moonta). In addition to the places that it owns, the Copper Coast Council is responsible for general management and maintenance of the public realm: roads, footpaths, and associated street infrastructure. Countless volunteer hours have gone into the maintenance of National Trust leased or owned assets. Maintenance and capital works funding for works associated with ACMS (Moonta) is not managed or coordinated in an integrated way. Generally, there are not sufficient resources available to adequately address the key issues and threats identified in this report.

A future advisory body, as discussed above, should pursue funding opportunities to implement the capital and corrective works recommended by this CMP. The establishment of a Heritage Fund would incentivise and support private owners to undertake essential conservation work and seek out expert heritage advice.

The funding for future work should consider the prioritised maintenance, conservation and longer-term management of the place.

Allowance should be made for:

- > Cyclic works to existing heritage places – repainting, cleaning gutters etc.
- > Conservation works - repair of broken or missing sections etc.
- > Interpretive works to inform and educate people on heritage places.
- > Provide better access to heritage places – signage, footpaths, cycle ways and other associated infrastructure.
- > Conservation Management Plans for individual places. Master plans for larger precincts – Elders Main Lode etc.
- > Possible future acquisitions of other places of significance identified in this CMP.

Policy 76 **Prioritisation of funding**
The prioritised capital and maintenance works recommended by this CMP should form the basis of a works programme.

Policy 77 **Heritage Fund**
Council should establish a heritage fund to assist private owners to conserve heritage listed properties.

7.10.1 Financial Assistance

At the time of the preparation of this document there are limited opportunities for financial assistance to help with the ongoing conservation of the heritage listed places. However, more recently there has been an increasing focus in support of cultural heritage tourism at both a State and Federal levels.

Possible sources of funding and assistance include:

7.10.2 Department for Environment and Water / History Trust of SA (State Government)

Grants for Heritage Places are eligible to owners of State heritage places in South Australia. Grants can be for conservation projects including conservation of significant building fabric or reinstatement or protection of significant features, such as verandahs, new roofs, guttering, window frames, damp treatment, underpinning and repointing. SA Heritage Grants also has a focus on community projects, such as works that support adaptive re-use of heritage places, or that promote the development of heritage tourism or skills in heritage trades, so the fund is a good fit for historical organisations.

7.10.3 Department of the Environment and Energy (Australian Government)

In 2018 the Australian Heritage Grants were announced as a budget measure with funding of up to \$21.4 million available between 2018-19 to 2021-22 to strengthen recognition, management, conservation and public engagement on/of Australia's National Heritage List places. From 2022-23 ongoing funding of up to \$5.7million per annum will be provided.

7.10.4 National Trust

The National Trusts Partnership Program provides ongoing funding to the Australian Council of National Trusts to support activities that increase public awareness, understanding and appreciation of Australia's cultural heritage, and enhance and promote its conservation and assist the Trusts to advocate and work for the preservation and enhancement of Australia's cultural heritage.

7.10.5 Community Heritage Grants (National Library of Australia)

The Community Heritage Grants (CHG) program provides grants of up to \$15,000 to community organisations such as libraries, archives, museums, genealogical and historical societies, multicultural and Indigenous groups. The grants are provided to assist with the preservation of locally owned, but nationally significant collections of materials that are publicly accessible including artefacts, letters, diaries, maps, photographs, and audio-visual material.

The types of projects supported include significance assessments of collections, preservation needs assessments of collections, conservation activities and collection management, and training workshops.

7.10.6 Department of Communications and the Arts (Australian Government)

The National Cultural Heritage Account helps Australian public cultural organisations buy significant objects that they could not otherwise afford. The National Cultural Heritage Account keeps Australian protected objects in Australia so they can be preserved and made available to the public. Cultural organisations that can care for and provide permanent public access to Australian protected objects have a priority for funding.

7.10.7 South Australian Tourism Commission (State Government)

The Regional Events and Festivals Program provides financial support towards marketing and public relations for events that promote South Australia and its regions as tourism destinations.

7.10.8 Tourism Australia (Australian Government)

Building Better Regions Fund - The government is supporting the tourism sector with \$45 million in grants through the Building Better Regions Fund (BBRF) to help move tourists beyond the major cities. These funds will support projects in regional areas and encourage more visitors and expenditure in regional locations, creating more tourism jobs for Australians.

7.10.9 PIRSA (State Government)

The Regional Growth Fund has been established to unlock new economic activity in our regions, to deliver critical economic infrastructure to create direct benefit across regional industries, and to strengthen regional communities. Through the Regional Growth Fund, the State Government is committing \$150 million over 10 years to support regional South Australia as part of the Recharging Our Regions policy. The Regional Growth Fund is a \$15 million per annum fund and projects will be selected based on the following principles: support for new economic activity that would not otherwise occur, the activity can be sustained without further intervention by government after the funding has been provided, the activity creates benefit for multiple entities, including entities not directly associated with the application, the activity contributes to the scale of an industry or sector, and finally the application has a connection to and has vested interest in a specific regional community.

Policy 78 Financial assistance

Avenues for financial assistance should be pursued as part of the resourcing requirements for the ongoing conservation and management of heritage places in the ACMS (Moonta).

8. Planning Precinct Policies

The Historic Mining zone within the Copper Coast Council Development Plan associated with the ACMS (Moonta) strongly depicts the scale of operations of mining, and the ad hoc spatial arrangement of the miner's cottages and other built fabric in the centre of the site surrounded by mining infrastructure that relates to the various lines of lode. This sits separately to the layout of the town of Moonta in the west, with a formal street grid surrounded by purposely zoned parklands.

The zoning for ACMS (Moonta) and the town of Moonta is shown on the following page.

At the time of listing the Moonta Mines as a State Heritage area, the site was divided into eleven conservation zones for management and planning purposes. These are depicted and described in the 1985 Moonta Mines State Heritage Area Draft Management Plan.

These conservation zones have generally been kept and appear as Planning Precincts in the current Copper Coast Council Development Plan. Changes include the North Yelta residential precinct, and the inclusion of formal Moonta Mines buffer precincts which are depicted in the original Management Plan but not itemized like other zones. Both these planning precincts sit outside of the State Heritage area.

The twelve existing precincts have been mapped and are shown on the following page.

These planning precincts have been re assessed and reconfigured into eleven precincts based on the research and analysis undertaken in this CMP. These precincts recognise the historic development and core function of each area within the ACMS (Moonta) site. The most significant changes to the precincts are the inclusion of gateway precincts into the ACMS (Moonta) site, and the amalgamation of several precincts to form greater consolidated precincts centred on the key lines of lode, Elders, Prince Alfred and Beddome's.

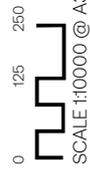
Where possible an attempt has been made to keep precincts similar as this provides the opportunity to directly trace policy and outcomes into the future for strategic planning, and retrospectively for historical reference purposes for when the next review of the CMP occurs.

The planning policy has been written to supplement, and where relevant replace the existing planning policy text in the Historic Mining Zone and Policy Area 1 section of the Copper Coast Development Plan. It is intended that these below policies are adopted and written into the Development Plan (or planning code equivalent given the planning reform process currently underway in SA) in the future.

The physical townscape and topographical townform have not changed substantially in Moonta over the last 35 years since the previous 1985 Management Plan was undertaken. This is primarily due to the ongoing closure of mining activity, the slow demand for new development, and the desire for development on the western side of Moonta closer to the beach.

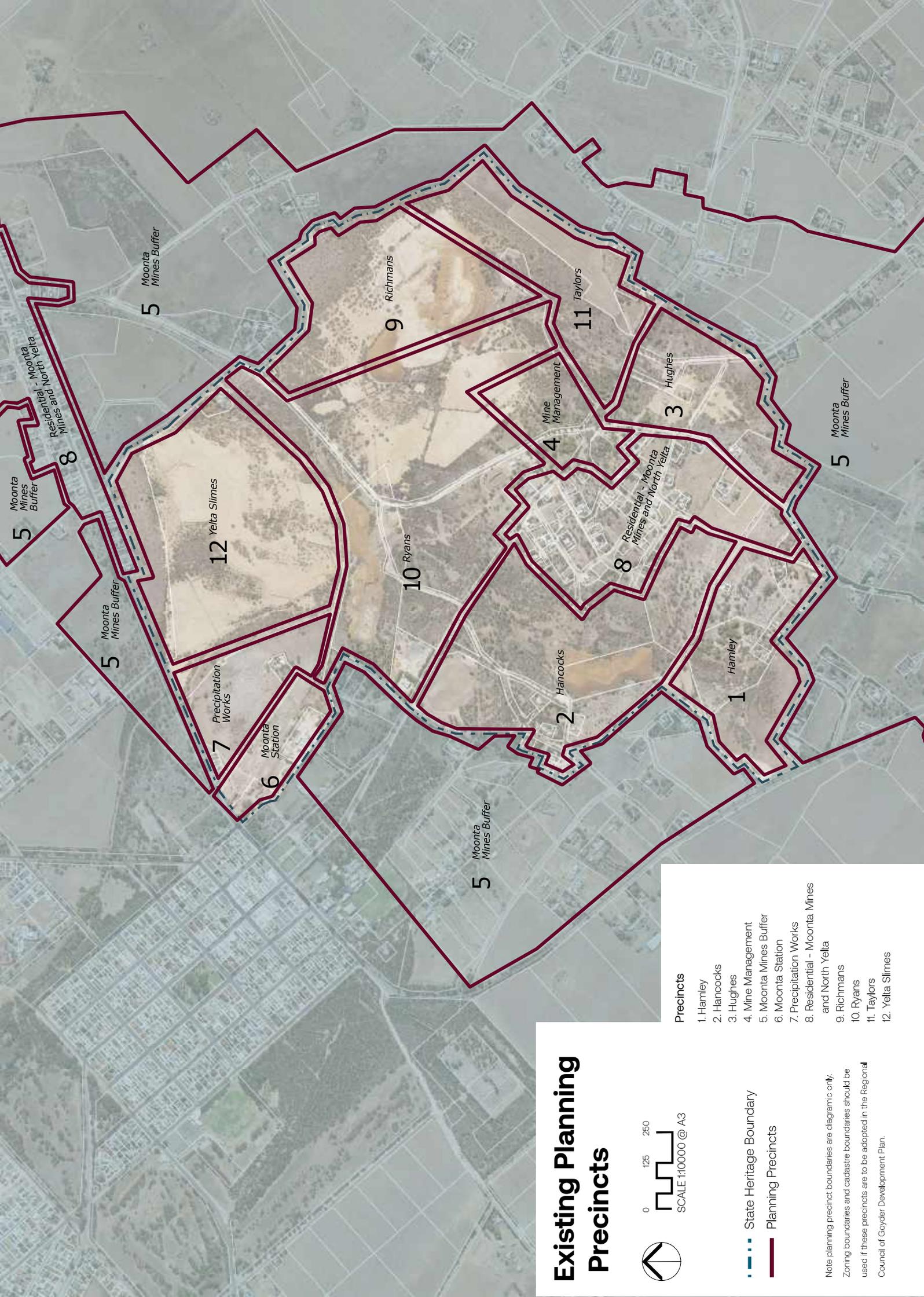


Zoning Plan



--- State Heritage Boundary

- PrPro Primary Production
- RuL Rural Living
- HM Historic Mining
- TCe Town Centre
- In Industry
- C Commercial
- Cu Community
- R Residential



Existing Planning Precincts



0 125 250

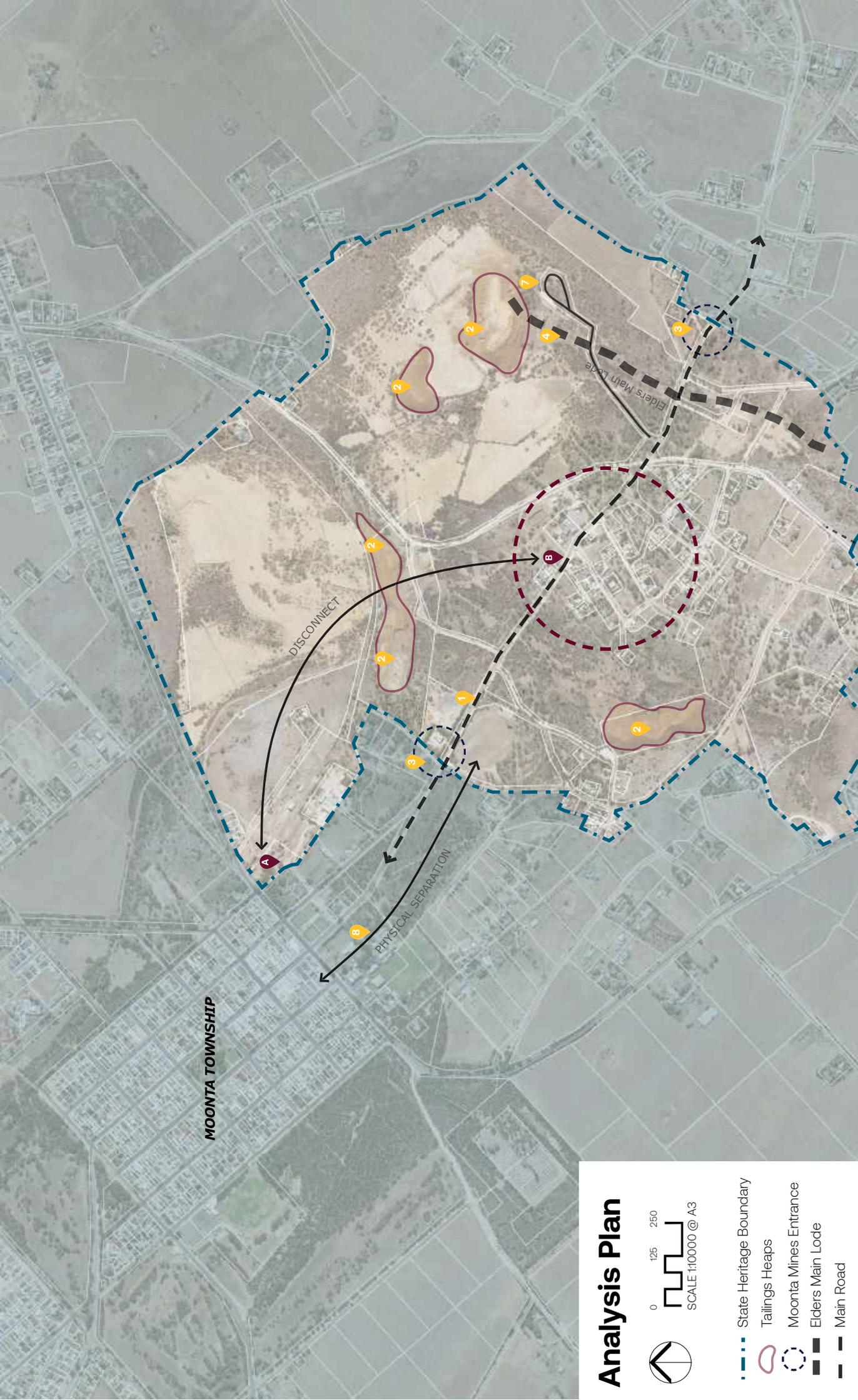
 SCALE 1:10000 @ A3

- State Heritage Boundary
- Planning Precincts

Precincts

1. Hamley
2. Hancock
3. Hughes
4. Mine Management
5. Moonta Mines Buffer
6. Moonta Station
7. Precipitation Works
8. Residential - Moonta Mines and North Yelta
9. Richmans
10. Ryans
11. Taylors
12. Yelta Slimes

Note planning precinct boundaries are diagrammatic only. Zoning boundaries and cadastral boundaries should be used if these precincts are to be adopted in the Regional Council of Goyder Development Plan.



MOONTA TOWNSHIP

DISCONNECT

PHYSICAL SEPARATION

Elders Main Lode

Analysis Plan

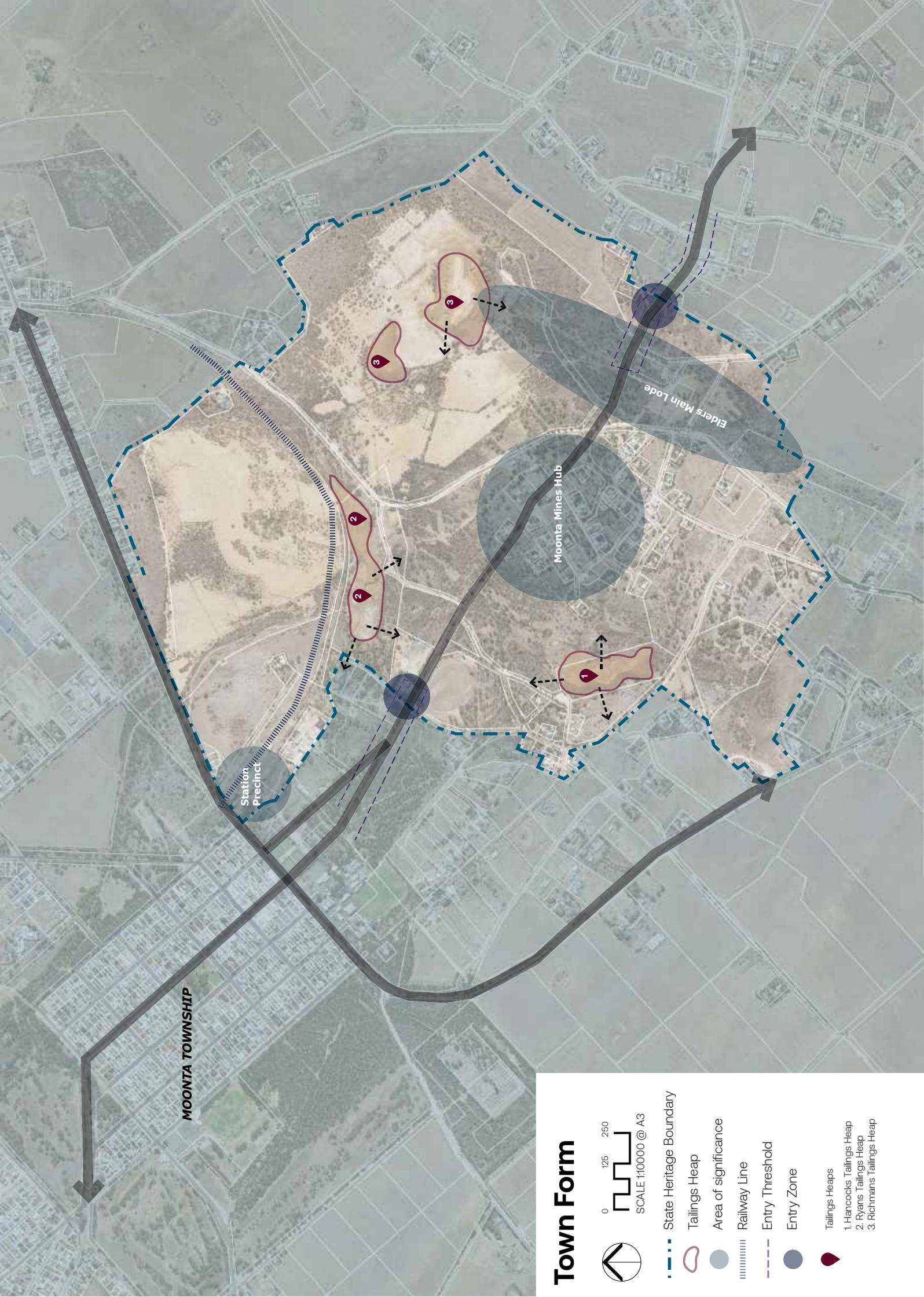


- State Heritage Boundary
- Tailings Heaps
- Moonta Mines Entrance
- Elders Main Lode
- Main Road

Points of Interest

- A. Tourist Office/Visitor Centre
- B. National Trust Museum (former school)

1. Road through the Moonta Mines heritage site presents a barrier/safety concern and disconnects the heritage places
2. The tailings heaps are visually prominent in the landscape and could have stronger interpretive purpose in the future
3. Entrances into the Moonta Mines heritage site are insignificant and do not reflect the importance of the place
4. The significance of Elders Main Lode and the heritage places along it could be better highlighted and showcased
5. The physical disconnect and lack of coordination between the railway station (visitors centre) and the Museum (former school) needs consideration and improvement
6. The separate but rich number of heritage places in the core of the Moonta Mines heritage site require consistent interpretation and conservation works as the centrepiece of Cornish mining interpretation
7. The road to Richmans Enginehouse traverses Elders Line of Lode and is intrusive to many Cornish mining archaeological ruins (such as ore floors and mine shafts)
8. The physical separation of the Township to Moonta Mines allows for the Mines to have a separate identity to the Township but is problematic for movement between the two



MOONTA TOWNSHIP

Station Precinct

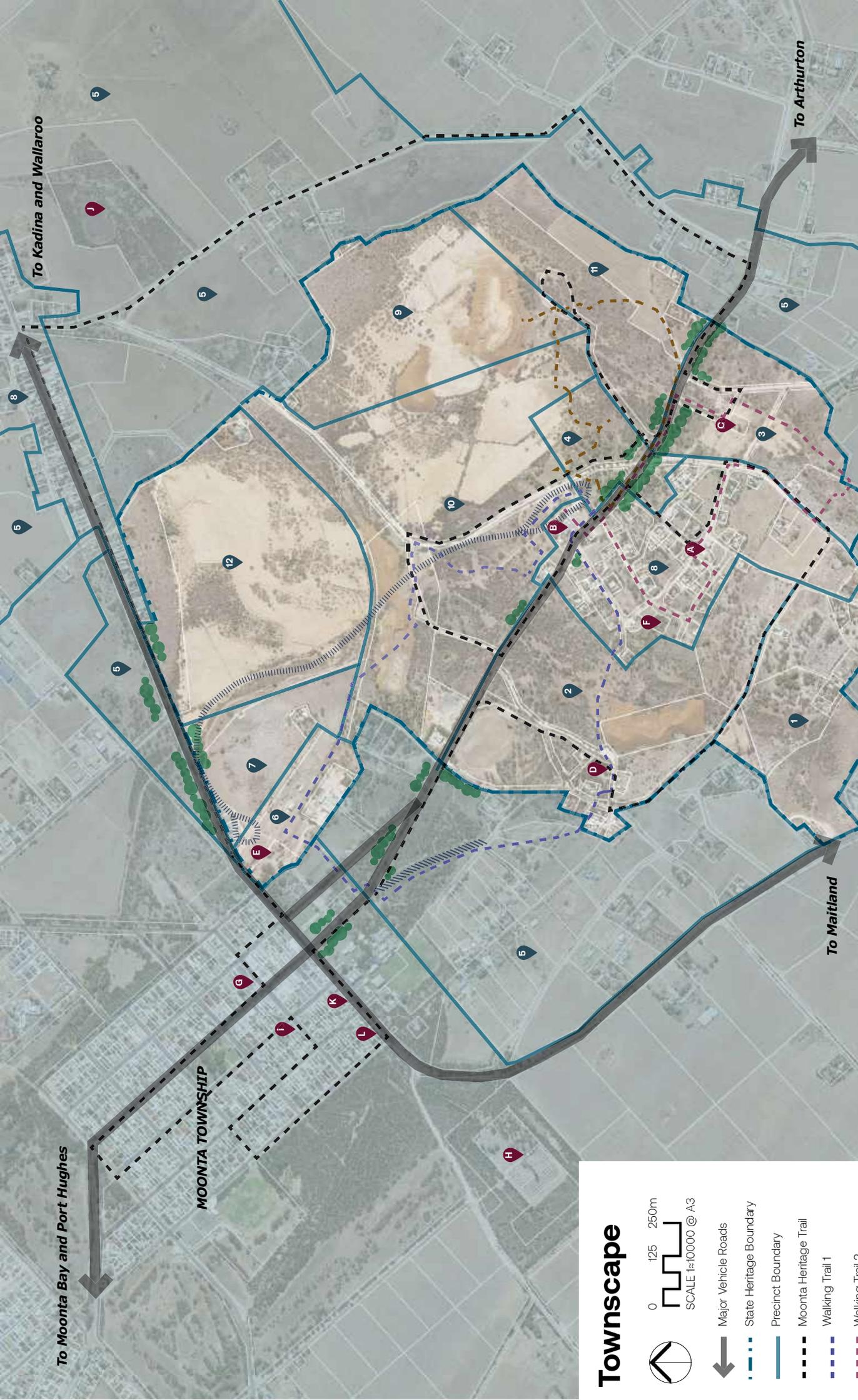
Moonta Mines Hub

Elders Main Lode

Town Form



-  State Heritage Boundary
 -  Tailings Heap
 -  Area of significance
 -  Railway Line
 -  Entry Threshold
 -  Entry Zone
 -  Tailings Heaps
1. Hancock's Tailings Heap
 2. Ryans Tailings Heap
 3. Richmans Tailings Heap



Townscape

- 0 125 250m
- SCALE 1:10000 @ A3
- Major Vehicle Roads
- State Heritage Boundary
- Precinct Boundary
- Moonta Heritage Trail
- Walking Trail 1
- Walking Trail 2
- Walking Trail 3
- Tourist Railway
- Old Tram Line
- Important Tree Groupings

- ### Copper Coast Development Plan Precincts
- 1. Hamley
 - 2. Hancock
 - 3. Hughes
 - 4. Mine Management
 - 5. Moonta Mines Buffer
 - 6. Moonta Station
 - 7. Precipitation Works
 - 8. Residential-Moonta Mines and North Yella
 - 9. Richmans
 - 10. Ryans
 - 11. Taylors
 - 12. Yella Slimes

- ### State Heritage Listed Places
- A. Moonta Mines Uniting Church, including fence and Sunday School Building
 - B. National Trust Museum (former school)
 - C. Former Hughes Pump
 - D. Miner's Cottage and Sunday School Office
 - E. Moonta Tourist Office
 - F. Moonta Mines Model
 - G. Sunday School Site
 - H. Moonta Cemetery, including walls, gate and waiting room
 - I. Former Moonta Branch of SA Moonta Branch, later Union Branch
 - J. Yella Smelter (Ruin) K. Masonic Hall
 - L. All Saints Anglican Church

- ### Other Locations
- House and Chimney
 - D. Miner's Cottage and Sunday School Office
 - E. Moonta Tourist Office
 - F. Moonta Mines Model
 - Sunday School Site
 - G. Dwelling (former Bank

8.1 ACMS (Moonta) Site Wide Planning Policy

The ACMS (Moonta) is currently comprised of a collection of mining remains, residences and community buildings within a scrub setting which has been generated by regrowth of the once denuded environment. Much of this existing character has been generated as a result of its history. The former mining areas are organised along the north-south aligned mineral lodes and form bands through the site, with the tailings or skimping heaps located at the lode ends marking the locations of the former treatment plants. Elders Main Line of Lode is particularly prominent, being the site of the earliest and last mining operations and marked by the prominent landmarks of Hughes and Richmans Enginehouses. Between these former mining areas are the former residences of the miners. While only relatively few of these cottages remain compared to the hundreds which once existed, these quite simple but characteristic buildings were placed in an unplanned manner by the miners. This is still evident in the seemingly haphazard pattern of remaining roadways, which is in distinct contrast with the surveyed and planned grid of streets of the adjacent government township of Moonta.

Future Desired Character

The ACMS (Moonta) needs to be preserved as a relatively intact place of historic and archaeological significance relating to Cornish mining influences. Conservation activities should be considered and undertaken in a coordinated manner to preserve the desired character of the place and uphold the National heritage values.

There is opportunity to capitalise on the conservation works in order to strengthen tourism, visitation, safety and interpretation across the site in a sustainable and coordinated manner without detracting from the heritage fabric or National heritage values.

Objectives

- > Increase interpretation opportunities across ACMS (Moonta) through the development and implementation of a coordinated interpretation strategy.
- > Allow for areas of clearing and areas of revegetation to enhance the interpretive offering whilst balancing native habitat and biodiversity through the development and implementation of a coordinated landscape management strategy for ACMS (Moonta).
- > Promote and encourage walking and cycling through the development and implementation of a walking and cycling strategy for the ACMS (Moonta).
- > Increase wayfinding through the development and implementation of a signage strategy for the ACMS (Moonta).

8.2 ACMS (Moonta) Precincts Policy

8.2.1 Hamley

Hamley is the southernmost precinct of the ACMS (Moonta) and contains the remnant archaeological ruins of the Hamley and Karkarilla mine sites. There is some minor intrusion of residential development, however this does not seem to have changed since the previous Management Plan was prepared in 1985, and generally it is not under development pressure. Some of the archaeology is difficult to find due to the regrowth of scrub land that obscures views into the precinct from Truer Street which is part of one of the Moonta Mines Walking Trails.

Future Desired Character

Hamley needs to be preserved as a relatively intact place of historic and archaeological significance relating to the Cornish mining influence at ACMS (Moonta). There is opportunity to strengthen visitation and interpretation at Hamley given its location along one of the Moonta Mines Walking Trails.

Objectives

- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development.
- > Prioritise conservation activities to heritage places at risk of decay and collapse through the preparation of a Conservation Management Plan for Hamley.

8.2.2 Prince Alfred & Beddome's Lode

This new precinct represents the merger of Hancocks and Ryans precincts and captures three main lines of lode: Prince Alfred, Green's and Beddome's in recognition of the collective significance of these lodes on the development of the ACMS (Moonta). Physically the precinct consists of Hancocks Tailing Heap, Ryans Tailing Heap and the remnant mining infrastructure ruins, archaeology and artefacts relating to the Cornish mining practices. Numerous engine houses, shafts, tanks and ore floors are present across the site. Note that it is proposed to exclude the residential component of this precinct on the western side and include this as part of the Residential – Moonta Mines and North Yelta precinct.

The precinct does contain some interpretive facilities at Hancocks Tailing Heap, Ryans Tailing Heap and along the Moonta Mines Walking Trails, however the facilities are somewhat dated and in poor condition, and some of the remnant infrastructure and archaeology is difficult to find due to the regrowth of scrub land which obscures views. The Tourist Railway does pass through this precinct which provides a separate level and offering of mining interpretation.

Dominics Shaft Way is an unsealed road that cuts through the precinct, it is an unnecessary vehicular intrusion that divides the precinct.

The safety and security of some of the mining infrastructure is questioned given a lack of fencing and signage in this precinct.

Future Desired Character

The precinct needs to be preserved as an intact place of historic and archaeological significance relating to the Cornish mining influence at ACMS Moonta. Hancocks and Ryans Tailing Heaps provide a strong opportunity to strengthen visitation and interpretation at the precinct given the scale of these elements and their location along the existing Moonta Mines Walking Trails.

Walking and cycling should be prioritised over vehicular movement and Dominics Shaft Way should be closed to through traffic between Verran Terrace and the car park at the base of Ryans Tailing Heap to reduce vehicular traffic cutting through the precinct and dust issues. This should however continue to function as a walking trail into the future.

Objectives

- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development.
- > Prioritise conservation activities to heritage places at risk of decay and collapse through the preparation of a Conservation Management Plan for the precinct.
- > Reduce vehicular traffic cutting through the ACMS (Moonta) by partly close Dominics Shaft Way.
- > Improve safety and security within the precinct by securing mine shafts and restricting unauthorized entry and use to sensitive places.
- > Develop the Tailing Heaps as key interpretive sites at the ACMS (Moonta) whilst considering pedestrian safety and stabilisation to alleviate ongoing erosion.

8.2.3 Elders Main Lode

Elders Main Lode combines the former precincts of Hughes, Taylors and part of Richmans in recognition of the significance of Elders Main Lode in the historical development of the ACMS (Moonta).

This precinct contains a significant amount of remnant mining infrastructure ruins, archaeology and artefacts relating to Cornish mining practices. Numerous engine houses, shafts, tanks and ore floors are present across the site. Hughes' Enginehouse along with Richmans Enginehouse and the surrounding associated mining structures and infrastructure present as the most intact elements demonstrating Cornish mining operation and processes in the whole of the ACMS (Moonta).

Richmans Tailing Heap (number 1) also forms part of this precinct and contains existing interpretive signage and pathways up to and across the top of the tailing heap. The condition of the pathways and interpretive information is in reasonable to poor condition.

The vista from Richmans Tailing Heap south past Richmans Enginehouse along the line of Elders Lode is considered vitally important to the cultural landscape of the ACMS (Moonta).

The vehicular road to Richmans Enginehouse and Tailing Heap traverses Elders Line of Lode and is intrusive to many archaeological ruins (such as ore floors and mine shafts).

Flightpath Architects prepared a Conservation Management Plan for Hughes' Enginehouse Precinct in 2012. The Conservation Policies and Recommendations from this report are still valid and in need of implementation.

Future Desired Character

The Elders Main Lode precinct and its elements need to be preserved as the centrepiece of the historical significance of Cornish mining practices in the ACMS (Moonta). The precinct has the potential to become a site of international significance with careful planning, conservation and curation.

Along with the mining focus, there is opportunity for broader interpretation and tourism opportunities along the line of lode amongst the rich array of mining artefacts and archaeology.

Objectives

- > The 2012 Conservation Management Plan for Hughes' Enginehouse Precinct should be updated and expanded upon to capture Taylors, Richmans, Elders and Truers enginehouses and other associated sites and ruins within this precinct. This Plan should then be endorsed, and the recommendations actioned.
- > Prioritise a strategic master planning process for Elders Main Lode precinct to realise its full potential as the centrepiece for Cornish mining interpretation in the ACMS (Moonta), and for broader tourism and interpretive opportunities possible across the line of lode.
- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development.
- > Reduce the impact of vehicular traffic on archaeological ruins by relocating the road to Richmans Enginehouse and the Tailings Heaps.
- > Improve safety and security within the precinct by securing mine shafts and restricting unauthorised entry and use to sensitive places.
- > Develop Richmans Tailing Heap (number 1) as key interpretive site at ACMS (Moonta) whilst considering pedestrian safety and stabilisation to alleviate ongoing erosion.



Elders Line of Lode looking south from Richmans Tailing Heap

8.2.4 Moonta Mines Management

This precinct contains numerous remnant mining infrastructure ruins, archaeology and artefacts that relate to the formal management of the ACMS (Moonta), including the Mine Offices ruins, Mine Stores ruins, Managers House ruins, Police Station site and the Mines Recreation Grounds. It is proposed to extend this precinct west to include the National Trust Museum (former Moonta Mines Model School), the Powder Magazine ruins and the remnant Water Reservoir as these elements also contributed to the management of the site.

The National Trust Museum is the only intact and operational significant building in this precinct and is an important focal point for the ACMS (Moonta). Its street presence and central locality make it an ideal location for further interpretation and tourism opportunities. A previous CMP does exist for the National Trust Museum; however, this document is more than twenty years old and would need significant reinvestigation.

Future Desired Character

This precinct and its elements need to be preserved as the finance and management centrepiece of the ACMS (Moonta). The remnant sites depict the scale of development and the significance of Cornish mining practices in the ACMS (Moonta). The precinct has the potential to become a site of international significance with careful planning, conservation and curation.

Along with this historical focus, there is opportunity for broader interpretation and tourism opportunities in this precinct given its central location and the existing tourism offerings available, including the tourist railway that links the Railway Station to this precinct, and the Museum which are both operated by the National Trust and run on a voluntary basis.

Tourism development needs to be undertaken in a sensitive way that does not affect the authenticity of the place. Adaptive re use ideas (including the re use of the water reservoir as a mining themed playground) are supported as long as they are designed and implemented in a way that does not detract from the place or damage the heritage fabric and therefore negatively effecting the values of the place.

Objectives

- > Facilitate conservation activities in a coordinated way through the preparation and endorsement of a Conservation Management Plan for the precinct.
- > Prioritise a strategic master planning process for the Moonta Mines Management precinct to realise its full potential as a financial and management centrepiece for Cornish mining interpretation in the ACMS (Moonta), and for broader tourism and interpretive opportunities across the various sites.
- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development / tourist development.
- > Develop a coordinated tourism and interpretation strategy for this precinct which considers how to link to the Moonta Railway Station precinct.
- > Improve safety and security within the precinct by securing and restricting unauthorized entry and use to sensitive places.
- > Develop a long-term sustainability strategy with the National Trust to consider how to better manage the Trust's assets into the future.



The National Trust Museum (former Moonta Mines School) is an important focal point in the Moonta Mines Management precinct.

8.2.5 Moonta Mines Buffer

This significant precinct was not initially listed as a precinct in the previous 1985 Draft Management Plan but is now contained in the current Development Plan as an integral area which serves to retain curtilage to the ACMS Moonta site.

The buffer zones sit outside of the State Heritage Boundary and have been subject to some development pressure since the 1985 Plan. Generally, this precinct has been maintained as an open landscape used for general farming and agricultural purposes.

Future Desired Character

This precinct shall be preserved as a transitional landscape and open area to provide a separation between the ACMS (Moonta) and the town of Moonta, and other surrounding land uses.

Objectives

- > Restrict any further development in this precinct to low intensity general farming purposes.
- > Restrict any further land subdivision to limit development in this precinct.
- > Improve safety and security within the precinct by securing and restricting unauthorized entry and use to sensitive places.

8.2.6 Moonta Station

This precinct is centred on the Moonta Railway Station and includes the Station building and other associated railway infrastructure including the Goods Shed, Railway Yards, Waiting Room and Toilets and Crane. It is proposed to extend this precinct north along Kadina Road to include the row of Railway Cottages that are associated with the precinct. In addition to these structures, the precinct contains numerous remnant mining infrastructure ruins, archaeology and artefacts that relate to the transportation process of ore for the ACMS (Moonta).

The Station is a visually striking building and represents a good entry statement to the town of Moonta and ACMS (Moonta) from the Kadina Road. It has been repurposed as the Moonta Tourist Office which is an appropriate sensitive and ongoing use for the building. Associated car parking, signage and landscaping has been undertaken to improve the function and attractiveness of the surrounding area.

Future Desired Character

This precinct and its elements need to be preserved to showcase a key function of the transportation process relating to the ACMS (Moonta). The Station building and other associated railway infrastructure depict the scale of development and the significance of Cornish mining practices at the ACMS (Moonta).

Along with the National Trust Museum, the Station represents a significant intact and operational building, and an important focal point for the ACMS (Moonta). Although the tourist train links the Moonta Station precinct to the Mines Management precinct there are very little synergies or physical links between these two places. This represents a significant opportunity for both interpretation and tourism. Given the National Trust are in control of both places a more coordinated offering could be considered in the future which could see tourists arriving at either the Railway Station or the Museum and moving between these two sites via the tourist railway rather than by car to experience a holistic interpretive experience across the ACMS (Moonta).

Tourism development needs to be undertaken in a sensitive way that does not affect the authenticity of the place. Adaptive re use ideas are supported if they are designed and implemented in a way that does not detract from the place or damage the heritage fabric, therefore negatively affecting the values of the place.

Objectives

- > Facilitate conservation activities in a coordinated way through the preparation and endorsement of a Conservation Management Plan for the precinct.
- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development / tourist development.
- > Develop a coordinated tourism and interpretation strategy for this precinct which considers how to link to the Moonta Mines Management precinct.
- > Improve safety and security within the precinct by securing and restricting unauthorised entry and use to sensitive places.
- > Develop a long-term sustainability strategy with the National Trust to consider how to better manage the Trust's assets into the future.



The Moonta Railway Station is a visually striking building and represents a significant entry marker to the Moonta Township and to the ACMS – Moonta.

8.2.7 Precipitation Works and Yelta Slimes

This precinct contains a significant amount of remnant mining infrastructure ruins, artefacts and archaeology relating to the precipitation process of mining. Numerous precipitation tanks, and canals, washing and drying house ruins, tools and sample store ruins, boiler house ruins, enginehouse ruins, reservoirs, drains, earthen ware pipework, embankments and discarded scrap iron used as part of the precipitation process are evident across the site.

The precinct has been extended to include the precipitation works on the eastern side of the railway corridor up to and including Richmans Tailing Heap (number 2). Some interpretation is evident in and adjacent to the site however it is inconsistent in nature and in relatively poor condition. Security and safety in this precinct are important, it is noted that unauthorized vehicle access and vandalism is prevalent in this precinct.

Future Desired Character

This precinct should continue to function primarily as an archaeological place with improved interpretation and signage for visitors and better security through fencing and strategic vegetation removal to provide more amenity and safety for visitors.

Objectives

- > Restrict any further development in this precinct to conservation, interpretation or related works, or sensitive alterations to existing development.
- > Improve safety and security within the precinct, and damage to archeological ruins by securing the site with fencing and installing signage to restrict unauthorized entry and use of sensitive places.

8.2.8 Residential – Moonta Mines and North Yelta

This precinct primarily contains remnant miners' cottages in the centre of the ACMS (Moonta) along with the unstructured ad-hoc streetscape pattern, and the additional more regular residential development along Kadina Road in North Yelta. Additional community places such as the Church and the sweets shop are contained in this precinct too. It is proposed to extend this precinct to include the pocket of residential miners' cottages west of Hancocks Tailing Heap.

This unplanned settlement pattern is unique and largely intact, although there is some minor recent infill development which is incongruous with the early settlement development.

Future Desired Character

The residential development along Kadina Road in North Yelta provides an opportunity for complementary infill development and rejuvenation of previously developed incongruous development. In addition, there is opportunity for the continued enhancement, conservation and rehabilitation of heritage listed places within this precinct.

The unplanned and unstructured streetscape patterns and miners' cottages in the centre of the ACMS (Moonta) and west of Hancocks Tailing Heap require specific streetscape design guidelines to conserve the authenticity and enhance the setting of these places. These should be in addition to the existing Copper Coast Council's Historic Conservation Guidelines which are more residential in focus.

Objectives

- > Conserve and enhance the unplanned and unstructured streetscape patterns and miners' cottages in the ACMS (Moonta) through the creation of streetscape design guidelines which should be included in Council's Development Plan.
- > Screen incongruous and intrusive development from streets using landscaping, street trees and new fencing in accordance with Council's Historic Conservation Guidelines.
- > Continue conservation works on all heritage places within this precinct and provide further guidance for residents to assist.
- > Investigate the long-term strategic acquisition of heritage places of significance identified in this CMP including policies for conservation and future compatible interpretive uses.



Cottage streetscape adjacent Elder Road

8.2.9 Northern Gateway

This new precinct is established to capture the gateway that demarcates the arrival point into the town of Moonta and the ACMS (Moonta) from the north on Kadina Road. It is adjacent to the Precipitation Works and Yelta Slimes and the Moonta Station precincts, and the Precipitation Works and Ryans Tailings Heap provide visual cues as to the mining history of the site upon approach.

The established trees (Sugar Gums) planted in the road reserve provide a continuous green sense of arrival which is terminated by the Moonta Railway Station Building. A series of Railway Cottages (which were directly associated with the station) do interrupt the view to the Moonta Railway Station, but also represent the typical housing typology related to the mining and transportation history of the site. The cottages are visually prominent and additional development to them, and the building of outbuildings visually detracts from the authenticity of the gateway setting.

Future Desired Character

The northern approach to the town of Moonta and to the ACMS (Moonta) is characterised by a green sense of arrival provided by the established trees, these should be retained and enhanced in the future with further planting of the same species.

Views to the Moonta Station building should be maintained and enhanced and any further intrusive development stopped. Current intrusive development should be removed or screened to reduce the visual impact on the setting of the place.

Objectives

- > Screen incongruous and intrusive development from view using landscaping, street trees and new fencing in accordance with the Copper Coast Council's Historic Conservation Guidelines.
- > Highlight the northern entrance to the town and the ACMS (Moonta) by considering an entry statement.

8.2.10 Western Gateway

This new precinct is established to capture the gateway that demarcates the departure point of the town of Moonta and the arrival point into the ACMS (Moonta) site along Verran Terrace. It sits within the Moonta Mines Buffer and is has a primarily rural landscape character.

The prominent existing school building and former show grounds sit adjacent Verran Terrace within this precinct. Some remnant Sugar Gums are apparent in this gateway, but they do not form the continuous entry portal that exists along Kadina road. The old Hamley tramline cuts across Verran Terrace in a diagonal path towards Verco Street but there is little interpretive information at the beginning of this pathway to acknowledge this. A Council depot is located opposite the former show grounds and is screened with pine trees.

Unlike the northern gateway there are no visual cues to the mining history of the ACMS (Moonta) in this area. It was also noted during the physical investigation exercise that vehicle speed through this precinct was not conducive to walking and cycling or to town or entry precinct.

Future Desired Character

The western approach to the ACMS (Moonta) should provide a better sense of arrival to the site. A green sense of arrival (similar to the northern gateway) is sought to provide a visual cue to people that this precinct is different. The existing Sugar Gums should be supplemented with future with further planting of the same species.

Formal signage, interpretive signage and other wayfinding opportunities should be considered in this precinct, along with a review of the speed limit to increase the ambience, amenity and offering to visitors to the ACMS (Moonta).

Objectives

- > Screen incongruous and intrusive development from view using landscaping, street trees and new fencing in accordance with the Copper Coast Council's Historic Conservation Guidelines.
- > Highlight the western entrance to the town and the ACMS (Moonta) by considering an entry statement.

8.2.11 Eastern Gateway

This new precinct is established to capture the gateway that demarcates the arrival point into the ACMS (Moonta) from the east on Verran Terrace. It sits within the Moonta Mines Buffer and is has a primarily rural landscape character.

This is the poorest entry into the ACMS (Moonta), with residential and commercial development scattered along Verran Terrace out to Artherton Road, interspersed with agricultural fields. Some pockets of Sugar Gums are still evident closer to and within the ACMS (Moonta) State Heritage area, but the transition is not as strong as the western or northern gateways.

Future Desired Character

The sense of arrival to the Moonta Mines needs significant consideration in this precinct. Increased tree planting, additional signage and a review of the speed limit should be considered to increase the ambience, amenity and offering to visitors to the ACMS (Moonta).

Objectives

- > Screen incongruous and intrusive development from view using landscaping, street trees and new fencing in accordance with the Copper Coast Council's Historic Conservation Guidelines.
- > Highlight the eastern entrance to the town and the ACMS (Moonta) by considering an entry statement.

9. Implementation

This Chapter seeks to identify who will be responsible for implementing the CMP and the conservation policies contained within it, a timeframe for implementation, and the process involved.

9.1 Responsibilities

An assessment of the roles and responsibilities for different parties, along with some recommendations and policy actions have been conducted in Chapter 7: Management and Governance.

As the ACMS (Moonta) site is currently in disparate ownership and managed in a variety of ways there is no central authority to provide consistent management and care across all places of National Heritage value, and therefore the implementation of this CMP will need to be actioned by a number of different parties.

The following parties have shared responsibilities for the implementation of this CMP and the policies contained within it:

- > Private landowners
- > Copper Coast Council
- > ACMS (Moonta) Advisory Committee (to be established by Council)
- > National Trust of South Australia
- > Heritage SA (Government of South Australia)
- > Department for Environment and Water (DEW) (Government of South Australia)
- > Department of the Environment and Energy (Federal Government)

Where possible responsibilities have been allocated in the following priority actions, noting that some actions will require multiple parties to be involved.

9.2 Priority Actions

The following provides an outline of the work recommended based on the principles established within Chapter 7: Conservation Management Policy, Chapter 8 Planning Policy and the nature of works described in Chapter 6: Key Issues and Opportunities.

Work can be divided into three priorities, namely:

Priority A - Work to be completed in the next two years.

- > Immediate maintenance or stabilisation work required to improve the heritage value of the place.
- > Immediate strategy / planning / design work required to establish a framework for funding, procurement and delivery to improve the heritage value of key places.

Priority B - Work to be completed in the next five years.

- > Work necessary to ensure the longevity of the fabric of the place but not immediately required.
- > Strategy / planning / design work required to establish a framework for funding, procurement and delivery to improve the heritage value of key places.

Priority C - Work to be completed in more than five years.

- > Desirable work to reveal the significance of the place, primarily removing accretions and provision of new capital works.
- > Longer term strategy / planning / design work required to establish a framework for funding, procurement and delivery to improve the heritage value of other places.

9.2.1 Site Wide Priorities

The following site wide priorities are recommended.

Priority A

- > Facilitate endorsement of this CMP for the ACMS (Moonta). Responsibility: Copper Coast Council, Heritage SA, Department of the Environment and Energy (Federal Government)
- > Establish an Advisory Committee to advise and report independently back to Council on the management of the ACMS (Moonta) site and implementation of the recommendations contained in this CMP. Responsibility: Copper Coast Council
- > Prepare a Development Plan Amendment to integrate the objectives and recommendations of this CMP into the planning policy of Council's Development Plan (or planning code equivalent given the planning reform process underway in SA). Responsibility: Copper Coast Council
- > Establish an agreement between the Commonwealth and State governments to formalise a review of proposed developments to determine whether they meet the threshold for referral under the EPBC Act. Responsibility: Department of the Environment and Energy (Federal Government), Department of Environment and Water (State Government).
- > Training of Heritage SA officers on the requirements and obligations under the EPBC Act 1999 should an agreement occur between the Commonwealth and State governments for Heritage SA overview of National Heritage values, together with the preparation of a guide for their internal use to help facilitate this additional role. Responsibility: Department of the Environment and Energy (Federal Government), Department of Environment and Water (State Government).
- > Undertake a land tenure review of the ACMS (Moonta) to understand and rationalise land ownership and leaseholds, and therefore definitively identify responsibilities for heritage places across the site. Responsibility: National Trust South Australia, Department for Environment and Water (in consultation with the Copper Coast Council) The review should include Crown Lands policy with respect to the conservation of cottages occupied under licence.
- > Develop an archaeological map to identify areas of high and low potential for undisturbed sites. Responsibility: Department for Environment and Water (State Government).
- > Review and audit all tourism strategies and proposals contained to ensure the authenticity of National Heritage listed places are not lost or compromised. Responsibility: Copper Coast Council
- > Undertake a site safety and security audit of all places at risk of collapse, sensitive sites requiring fencing, and places that have been vandalised such as mine shafts for actioning to improve safety and amenity across ACMS (Moonta). Pending its completion, this should include immediate works to repair existing barriers or fencing at existing mine shafts and install barriers to prevent vehicle entry to the slimes flats and tailing heaps. Responsibility: Copper Coast Council, National Trust, Department for Environment and Water
- > Prepare a stormwater management plan and undertake environmental testing of the tailings heaps and slimes to understand their composition and future management requirements for these sites. Responsibility: Department for Environment and Water
- > Prepare a Reconciliation Action Plan and develop Indigenous policies to enable authentic collaboration, engagement and celebration of Nharangga culture alongside the Cornish and western culture. Responsibility: Copper Coast Council
- > Prepare a traffic management plan for the ACMS (Moonta) that investigates general vehicle speeds and the closure / relocation / sealing of certain roads to discourage through traffic and heavy vehicles. Responsibility: Copper Coast Council

Priority B

- > Investigate opportunities for the inclusion ACMS – Moonta as part of existing world heritage listing for the Cornwall and West Devon Mining Landscape. Responsibility: Copper Coast Council, Heritage SA, Department of the Environment and Energy (Federal Government)
- > Identify current market trends and research from the Copper Coast Economic Development and Marketing Plan (titled Precious Time) and the District Council of the Copper Coast Strategic Plan 2015–2025 to identify key places and future social and community needs that could support the adaptive re use and conservation of vacant or underutilised places in ACMS (Moonta). Responsibility: Copper Coast Council
- > Develop a coordinated interpretation strategy to increase understanding and education of the significance of the ACMS (Moonta). Responsibility: Copper Coast Council, ACMS (Moonta) Advisory Committee, National Trust South Australia
- > Develop a walking and cycling strategy for the ACMS (Moonta) to encourage walking and cycling opportunities. Responsibility: Copper Coast Council, ACMS (Moonta) Advisory Committee
- > Develop a signage strategy for the ACMS (Moonta) to increase wayfinding and safety through the site. Responsibility: Copper Coast Council, ACMS (Moonta) Advisory Committee
- > Develop a coordinated landscape management strategy for this precinct to allow for areas of clearing and areas of revegetation to enhance the interpretive offering whilst balancing native habitat and biodiversity. Responsibility: Copper Coast Council, ACMS – Moonta Advisory Committee, Department for Environment and Water
- > Develop a maintenance programme for the major components of the ACMS (Moonta), including buildings, ruins, fencing and interpretation. Responsibility: Copper Coast Council, ACMS (Moonta) Advisory Committee, National Trust South Australia
- > Establish a Heritage Grant Scheme for the ACMS (Moonta) to enable funding for heritage conservation works. Responsibility: Copper Coast Council, Heritage SA
- > Facilitate training of those responsible for the management of the ACMS (Moonta) to highlight obligations under the EPBC Act and the recommendations outlined in this CMP. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA, Department for Environment and Water
- > Catalogue and assess the heritage significance of moveable heritage on public land, including a review of mining related artefacts held by the National Trust associated with the site, particularly original records, maps, and mining and scientific equipment.

Priority C

- > Investigate the long-term strategic acquisition of heritage places of significance identified in this CMP for conservation and future compatible interpretive uses. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA, Department for Environment and Water
- > Consider entry statements at the northern, eastern and western approaches into the ACMS (Moonta) to better highlight the entrance thresholds. Responsibility: Copper Coast Council
- > Develop strategy for the ACMS (Moonta) to be a base for training in conservational based skills, building upon the existing association created by the Burra Charter. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA, Department for Environment and Water
- > Develop a long-term sustainability strategy with the National Trust to consider how to manage the Trust's assets into the future. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA, Department for Environment and Water
- > Screen incongruous and intrusive development from streets using landscaping, street trees and new fencing in accordance with the Copper Coast Council's Historic Conservation Guidelines. Responsibility: Copper Coast Council, Private landowners

9.2.2 Precinct Wide Priorities

The following precinct wide priorities are recommended.

Priority A

- > Implement the immediate actions recommended in the 2012 Conservation Management Plan for Hughes' Enginehouse Precinct. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA
- > Encourage and guide the conservation of the remaining miners' cottages in the ACMS (Moonta) through the creation of a Design Guide for owners based on the existing State Heritage Area Guidelines and the Historic Conservation Guidelines in the Copper Coast Development Plan. Responsibility: Copper Coast Council

Priority B

- > Prioritise a strategic master planning process for Elders Main Lode precinct to realise its full potential as the centrepiece for Cornish mining interpretation in the ACMS (Moonta), and for broader tourism and interpretive opportunities possible across the line of lode. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA
- > Conserve and enhance the unplanned and unstructured streetscape patterns and miners' cottages in the ACMS (Moonta) through the creation of streetscape design guidelines to complement the existing Historic Conservation Guidelines in the Copper Coast Development Plan. Responsibility: Copper Coast Council
- > Update and extend the 2012 Conservation Management Plan for Hughes' Enginehouse Precinct and expand upon to capture Taylors, Richmans, Elders and Truers enginehouses and other associated sites and ruins within the Elders Main Lode precinct. This Plan should then be endorsed, and the recommendations actioned. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA
- > Undertake a Conservation Management Plan for the Prince Alfred and Beddome's Lode precinct to prioritise conservation activities at heritage places at risk of decay and collapse. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA
- > Prioritise a strategic master planning process for the Moonta Mines Management precinct to realise its full potential as a financial and management centrepiece for Cornish mining interpretation in the ACMS (Moonta), and for broader tourism and interpretive opportunities possible across the various sites. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA
- > Develop a coordinated tourism and interpretation strategy for the Moonta Mines Management Precinct which considers how to better link to the Moonta Railway Station precinct. Responsibility: Copper Coast Council, National Trust of SA, Heritage SA

Priority C

- > Addition of new public toilet facilities to the Moonta Mines Management precinct of

the ACMS (Moonta) site.

9.2.3 Site Specific Place Priorities

The following site-specific priorities are recommended.

Priority A

- > Undertake an assessment to facilitate the stabilisation of the top of Taylors shaft to prevent the collapse of the surrounding fabric. Responsibility: Copper Coast Council, Department for Environment and Water
- > Improve safety and security within the Precipitation Works and Yelta Slimes, and damage to archeological ruins by securing the site with fencing and installing signage to restrict unauthorized entry and use of sensitive places. Responsibility: Copper Coast Council, Department for Environment and Water
- > Based on previous assessment, facilitate works to stabilise the top of Taylors shaft to prevent the collapse of the surrounding fabric. Responsibility: Copper Coast Council, Department for Environment and Water

Priority B

- > Undertake a Conservation Management Plan for the Wesleyan Methodist Church to prioritise conservation activities at this heritage place. Responsibility: Copper Coast Council, Heritage SA
- > Undertake a Conservation Management Plan for the National Trust owned Miners Cottage to prioritise conservation activities at this heritage place. Responsibility: Copper Coast Council, Heritage SA
- > Develop the Tailing Heaps as key interpretive sites at Moonta Mines whilst considering pedestrian safety and stabilisation to alleviate ongoing erosion. Responsibility: Copper Coast Council, Department for Environment and Water
- > Enhance links between the town of Moonta and the ACMS (Moonta) site, specifically the Hamley Tramline route, for pedestrians and cyclists and for Cornish mining interpretation. Responsibility: Copper Coast Council, Department for Environment and Water
- > Based on the previously completed traffic management plan for the ACMS (Moonta) reduce vehicular traffic cutting through the ACMS (Moonta) by partly closing Dominics Shaft Way. Responsibility: Copper Coast Council
- > Based on the previously completed traffic management plan for the ACMS (Moonta) introduce traffic calming measures to reduce speed and consider sealing to minimise dust generation from through roads, such as Ryan and Karkarilla Roads, Verco and Truer Streets. Responsibility: Copper Coast Council

Priority C

- > Based on the previously completed traffic management plan for the ACMS (Moonta) reduce the impact of vehicular traffic on archaeological ruins by relocating the road to Richmans enginehouse and the Tailings Heaps in Elders Main Lode precinct. Responsibility: Copper Coast Council
- > Undertake a Conservation Management Plan for the Hamley mine site to prioritise conservation activities at heritage places at risk of decay and collapse. Responsibility: Copper Coast Council, Heritage SA

Appendix A: Statement of Significance

Environment Protection and Biodiversity Conservation Act 1999

INCLUSION OF TWO PLACES IN THE NATIONAL HERITAGE LIST

AUSTRALIAN CORNISH MINING SITES: BURRA AND MOONTA

I, Josh Frydenberg, Minister for the Environment and Energy, having considered in relation to the two places and the National Heritage values described in the Schedule of this instrument:

- (a) the Australian Heritage Council's assessment whether the places meet any of the National Heritage criteria; and
- (b) the comments given to the Council under sections 324JG and 324JH of the *Environment Protection and Biodiversity Conservation Act 1999*; and

being satisfied that the two places described in the Schedule have the National Heritage values specified in the Schedule, pursuant to section 324JJ of the *Environment Protection and Biodiversity Conservation Act 1999*, include the places and the specified National Heritage values in the National Heritage List.

Dated 4/5/2017

[signed]

Josh Frydenberg

Minister for the Environment and Energy

SCHEDULE

SOUTH AUSTRALIA

Copper Coast District

NAME: Australian Cornish Mining Sites: Moonta

BOUNDARY:

Approximately 320ha at Moonta comprising the Moonta Mines State Heritage Area (Heritage Number 27551 and State Heritage ID 13975) designated as a state heritage area in 1984.

Criterion

- (a) the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history.

Values

The Moonta copper mine in South Australia operated for sixty one years from c1862 to 1923. In the late nineteenth century it was one of the world's largest producers and exporters of copper; evidence of Australia's emerging international position in an increasingly industrialised global economy. This achievement was made possible by the successful transfer of Cornish mining technology and skills from Cornwall to Australia.

The copper mine at Moonta demonstrates the resilience of the Cornish mining system in Australia following its earlier transfer in other smaller mines in South Australia. At Moonta the Cornish mining system was able to be repeated and applied at a larger scale. Improvements to the system were also progressed in the areas of labour organisation, labour relations (advocacy for a minimum wage through the 'down' times) and in a number of improvements made to mining and ore processing technology. The Hancock Jig is noted in particular.

A generation of Cornish miners, engineers and tradespeople worked in the copper mines of South Australia, including at Moonta. The cumulative impact of their contribution to Australia's wealth production, nation building and development of Australia's mining industry was substantial. The Cornish way of mining started in South Australia and dispersed to many of Australia's other key mining regions like Broken Hill, Bendigo, Kalgoorlie and Charters Towers. While Cornish miners were the main work force Welsh smelter technology and skills are also noted for their contribution to the mining system's profitability and success.

The Moonta copper mine is of outstanding importance because the remnant mining structures and their layout on the surface and underground can demonstrate to a very high degree the Cornish mining system.

The Cornish way of working developed over generations in the mines of Cornwall. The mining system generally includes the knowledge applied to identify the ore body in the first instance. Then the labour force was organised in a specific way to develop a system of vertical shafts and horizontal levels organised in the efficient exploitation of the ore body. Teams of underground miners were organised into tut-work or tribute teams. Young boys were employed on the surface to sort the ore prior to further processing. The mine's Captain (superintendent) acted to manage the mine for the mine's owners. This was a critical and powerful position. Mine owners kept the Captain accountable for the profitability of the mine. The Cornish practice of applying levies to miner wages for the support of families and miners in times of illness or death is also noted as an early form of worker's insurance.

Mining for copper required the development of deep hard rock mining techniques. In the process of extracting the ore large underground rooms or stopes were created. The use of explosives formed part of the underground mining process. Various technologies were then applied to process the ore once hauled to the surface. Critically Cornish steam engines were used in various roles but mainly in the work to keep the mines free of water. In Australia, until the 1890s all work underground at the Moonta mine was done by manual labour. To get from one level to another miners climbed up and down step ladders (a double decker man skip was introduced after 1880). Some shafts went as deep as 750m. The ore was hauled to the surface by horse whims and the engine houses were built to pump water from the mine. An estimated 80 miles of shaft and levels were constructed in the mining area.

The mine Captain, Henry Richard Hancock, made numerous improvements. An enthusiast for machinery he introduced a steam-engine to replace hand worked pumps, winches and ore crushers; by 1865 tramways had reduced barrow work and by 1866 a railway replaced wagon teams for carrying ore to the smelters at Wallaroo. The mine's engineering shops were the largest in the southern hemisphere. These workshops enabled Hancock to experiment in replacing the slow and arduous labour of drilling holes by sledge hammer in the hard Moonta rock. He designed and patented a percussion drill driven by compressed air and capable of boring forty feet of shot holes in an eight hour shift. For separating sulphides from the ores he made and patented a jigger which was also used later at Broken Hill. He also introduced wire rope and skips in place of chain and kibles. Hancock, a devout Wesleyan, also worked to establish minimum wages for miners, established a brass band, library and reading room and compulsory night school for boys from the mine's sorting tables. He also encouraged cricket, football, chess and glee clubs and many mutual improvement societies (Australian Dictionary of Biography ' Hancock, H. R.). This 'tinkering' with machines and the introduction of benevolent activity is reflective of a 'Cornish' approach.

Religion played a strong part in holding the mining community together through the hardships of work, illness and difficult living conditions. In Moonta fresh water was scarce and epidemics of typhoid, cholera and diphtheria were decimating. At one time there were 6,000 people living on the Moonta mining leases surrounded by the industrial workings of the mine; a mining settlement pattern typical of the nineteenth century. In the leased mining areas at Moonta the Moonta Mines Methodist Church (1865) was the focus of the settlement.

Features which express these values include the physical evidence of nineteenth and early twentieth century Cornish mining in the area known as the Moonta Mine. The remnant surface and underground mining structures are significant where they demonstrate Cornish mining practice and technology. Specific features of significance include but are not limited to the following features and items.

The layout of the mine on the surface demonstrates the way the ore body was mined. The shafts, engine houses, processing areas, supporting functions and administrative facilities are all located in a pattern which is oriented to the underground lines of lode (Fergussons Lode, Greens Lode, Beddomes Lode, Trevers Lode, Elders Lode). This arrangement and pattern of mining infrastructure also demonstrates the focus of mining operations on efficiency and function. As a demonstration feature therefore the remnant arrangement and pattern of surface mining infrastructure is significant.

In more detail the features which demonstrate Moonta's mining significance include but are not limited to the Hughes enginehouse and stack, the Hughes engine pool, the ruins of Elders enginehouse, Richmans enginehouse and nearby tailings dumps, Hancocks tailings dump (including the tailings and the form and shape of the heap, nearby former mining shafts, remnant ore floors and the foundations of Hancocks enginehouse and crusher house), Ryans tailings heap, Ryans shaft, Taylors shaft, Treuers shaft, ruins of precipitation works, site of the mine workshops, site of mine offices, site of General Manager's residence, site of the assayers residence, the ruins of the powder magazine, the remnant water reservoir (Ryan Road), site and remnant structures of the Hamley mine, the remnant route of the Hamley tramline and the Moonta Railway Station (including disused railway line within the Moonta Mines State Heritage Area).

Churches are also important because they demonstrate the importance of religion in these mining communities and the Cornish influence more generally. Items of significance include but are not limited to the site of the Bible Christian church, site of the Primitive Methodist church, the Moonta Mines Methodist Church (1865) and the Moonta Mines Model Sunday School.

The historic miner's cottage and garden (Verco Street) is significant as a place which demonstrates the way miners and their families lived on the mining lease.

Appendix B: Community Engagement

List of Invitees

Organisation	Name
National Trust SA	Darren Peacock
Drakes Supermarkets Moonta	Ryan
Greg Drew	Greg Drew
Cornish Association of SA	Carlene Woolcock
YP Cornish Association	Liz Coole
Kernewek Lowender	Lynn Spurling
Moonta & District Progress Association	Pamela Kerr
Graham Sobey	
Moonta Business & Traders	Sharon – Amanda's Gifts
Bank SA	Ian Crispe
CC Councillors	Brent Walker/Bruce Schmidt/Tim Love
Southern Cross Austereo	To the Station
YP Country Times	Michael Ellis
Peninsula Community Broadcasters Inc, Gulf FM	To the station
Moonta Area School	Kirsty Amos Principal
Moonta & District Uniting Church	To the church Secretary
NYP Pony Club	Kay Johnson
State Member for Nharangga	Fraser Ellis
Federal Member for Grey	Rowan Ramsey
YP Tourism	Deb Clarke
Minister for Tourism	Hon David Ridgway
Nharangga Elders	Michael Wanganeen
Marshalls Menswear	Peter Marshall
Hatchers Newsagency	Adrian Hatcher
Moonta Antiques	Cheryl Linke
Taste the Yorke	Jo Gibbons
Amanda's Gifts	Sharon
Walsthead Quality Homes	Garry Walsthead
Country Living Homes	Mark Ravenscroft
Moonta Health and Aged Care	Brett Walker
Copper Coast Lifestyle Village	Brad Perks
Moonta Engineering	Kevin Stock
Masonic Lodge	Roger Day
National Trust Kadina	Graham Hancock
National Trust Wallaroo	Colin Boase
Moonta Lions Club	Lorraine Darling
NYP Rotary Club	Neville Andrews
Statewide Cinemas	Carol Burford

Last Name	First Name
Alford	LJ
Behndt	TR
Berry	TD
Betts	GA
Blanchard	AC
Bourne	PA
Bunting	PTI
Burlinson	TD
Campbell	RA
Chapman	SA
Darling	KER
Di Gorsky	S
Dyson	KW
Elkington	LP
Environment	DO
Fabian	PC
Farley	CE
Farley	PK
Fear	WM
Griffin	CL
Hibbert	JD
Hilbert	S
Hill	JE
Howard	GD
Howard	TD
Irlam	SJ
Jarratt	SC
Johns	ME
Jones	RM
Kneebone	BA
Leaney	PJ
Macleod	CD
Martin	J
Matheson	JKS
Minister For Sustainability Environment & Conservation	
Minister For Transport	
Morgan	KD
Morris	K
National Trust of SA	
Nuzzo	LP
Oldfield	WN
Patterson	KL
Penn	KH
Pollard	JL
Pollard	DW

Last Name	First Name
Rampling	IR
Richards	PA
Richardson	JT
Rohrlach	MD
Russell	AM
Scaife	DJ
Schiller	SJ
Schultz	MR
Sharpe	DR
Slade	J
Sobey	JR
South Australian Housing Trust	
Stock	MK
Stone	CA
Stone	BD
Stott	DK
Sutton	DRE
Tait	CT
Thomas	GG
Trestrail	HW
Trestrail	LK
Truran Earthmovers Pty Ltd	
Tyndall	TM
Underlin	LJ
Uniting Church In Australia	
Uniting Church Of Australia	UCO
Vink	SA
Warner	MR
Wellington	AW
White	MG
Whitham	ST
Wilson	RK
Wilson	RK
Woods	R
Yates	BW

Community Information Sessions – Response Table

CIS 1 = Community Information Session 1: 12th November 2019 6pm

CIS 2 = Community Information Session 2: 13th November 2019 10am

Moonta Mines: As they are now

What are your favourite heritage places at Moonta Mines and why?

- CIS 1 - Train
- + CIS 2 - Sweet shop
- Museum
- School
- Church
- Explosives Magazine
- Engine Houses
- The ability to walk on the Tailing Heaps

Where would you take a visitor who has not been to Moonta Mines before?

- CIS 1 - Museum
- Lolly Shop
- CIS 2 - Museum
- Train ride

Which places best tell the story of the development of mining history?

- CIS 1 - Railway
- Museum
- CIS 2 - Museum
- Tailing Heaps
- Miner's Cottage
- Rossiter's Point - water taken for the mine
- Train - received 14,000 passengers last year

Moonta Mines: In the future

Are there other heritage places that could be made accessible in the future for visitors?

- CIS 1 Hughes Engine House could be reactivated, and the area used for underground tours
- CIS 2 - Upgrade walking tracks
- Link back to the town better
- Open up a mine shaft

What would future Moonta Mines have that the place currently does not have?

- CIS 1
 - Signage
 - Public walking trails, particularly the tram route
 - Bike tracks
- CIS 2
 - Signage
 - Walking trails
 - Camping opportunities
 - Need to stop dumping
 - Need to make safer
 - Post card opportunity (like big Banana)

What will future visitors want/ expect the place to have?

- CIS 1
 - Toilets + amenities
- CIS 2
 - Picnic facilities
 - An interpretive centre (blends heritage and environment, café, people dressed in costume, possible light and sound show)
 - Combine all offerings near the museum

How do we attract more people to visit Moonta Mines in the future?

- CIS 1
 - The town is currently a great tourist attraction; the presence/best qualities of the town just need to be extended into the mine site
- CIS 2
 - Clean up the site (remove rubbish and dumped items)
 - More interpretive signage
 - Have a better marketing strategy

What would detract from the image of Moonta Mines in the future?

- CIS 1
 - Non-native plants
 - Rubbish
 - Modern buildings
- CIS 2
 - New development that is out of place and doesn't look like a heritage place

What are the barriers preventing these things from occurring?

- CIS 1
 - A lack of knowledge and respect from outsiders
 - Safety around shafts collapsing
- CIS 2
 - Money
 - Lack of interest

Other Comments + Enquiries

- CIS 1
 - Residents were unclear on listing status of individual properties, and what it meant to be covered by the State Heritage Area.
- CIS 1
 - The community would like access to the photographs taken on the trip, and access to the report once it has been completed.

- CIS 1 The community would love to see the Museum + Lolly Shop listed/mentioned on the heritage listing.
- CIS 1 Some said that fences + signage would improve the rubbish situation; however, others feel that this has not worked in the past with fences and signs having been taken down/ignored.
- CIS 1
+ CIS 2 Uncertainty of land tenure – many people are on leases and cannot get finance to make improvements to their property.
Note: There seems to be 7 types of land tenure within the Moonta Mines site- crown land, National Trust freehold, National Trust leasehold, Council freehold, Council leasehold, private freehold and private leasehold.
- CIS 2 Residents / owners can't see what's in this CMP for them - how will the CMP personally help them with their property and enable them to make improvements.

Note: Idea of a local resident's handbook / guide with basic conservation + enhancement ideas for them to manage their property within the Mines site is under consideration by the consultant team as part of the CMP in the next phase of the project.

Appendix C: Lists of Protected Species of Flora and Fauna

NSXCODE	FAMILY NAME	SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING	NUMBER OF RECORDS	DATE OF LAST RECORD
U01206	CHENOPODIACEAE	Maireana rohrlachii	Rohrlach's Bluebush	Y		R	2	14-Apr-2011
U03254	COMPOSITAE	Olearia picridifolia	Rasp Daisy-bush	Y		R	1	30-Sep-1967
Z32639	COMPOSITAE	Podolepis decipiens		Y		R*	1	09-Sep-1982
M32638	COMPOSITAE	Podolepis jaceoides	Showy Copper-wire Daisy	Y		R	1	15-Oct-1939
C03281	COMPOSITAE	Podolepis jaceoides (NC)	Showy Copper-wire Daisy	Y		R	1	21-Sep-1994
Q00156	GRAMINEAE	Austrostipa tuckeri	Tucker's Spear-grass	Y		R	1	30-Dec-1997
G01579	LEGUMINOSAE	Acacia lineata	Streaked Wattle	Y		R	1	13-Sep-1975
Z02807	MYOPORACEAE	Myoporum parvifolium	Creeping Boobiella	Y		R	2	
W05147	ORCHIDACEAE	Caladenia brumalis	Winter Spider-orchid	Y	VU	V	6	24-Aug-2006
W02755	OROBANCHACEAE	Orobanche cernua var. australiana	Australian Broomrape	Y		R	1	18-Nov-1880
Y04780	RUTACEAE	Phebalium glandulosum ssp. macrocalyx	Glandular Phebalium	Y		E*	3	13-Sep-1975
K04757	SAPINDACEAE	Dodonaea subglandulifera		Y	EN	E	4	25-Nov-2003
C03697	SCROPHULARIACEAE	Euphrasia collina ssp. osbornii	Osborn's Eyebright	Y	EN	E	1	01-Sep-1974

NSXCODE	CLASS NAME	SPECIES	COMMON NAME	NATIVE	NATIONAL RATING	STATE RATING	NUMBER OF RECORDS	DATE OF LAST RECORD
E00186	AVES	Ardea intermedia	Intermediate Egret	Y		R	3	7-Sep-10
K00129	AVES	Arenaria interpres	Ruddy Turnstone	Y		R	6	12-Feb-06
K00217	AVES	Biziura lobata	Musk Duck	Y		R	1	1-Jan-00
Q00164	AVES	Calidris canutus rogersi	Red Knot	Y	sp	E	3	23-Dec-00
Y00160	AVES	Calidris cinereus	Terek Sandpiper	Y		R	2	16-Jan-82
K00161	AVES	Calidris ferruginea	Curlew Sandpiper	Y	CR	E	5	12-Feb-06
S00165	AVES	Calidris tenuirostris	Great Knot	Y	CR	E	1	21-Jan-00
M00198	AVES	Cereopsis novaehollandiae novaehollandiae	Cape Barren Goose	Y		R	2	12-Feb-06
E04066	AVES	Charadrius leschenaultii	Greater Sand Plover	Y	VU	R	2	16-Jan-82
C04101	AVES	Charadrius mongolus mongolus	Lesser Sand Plover	Y	sp	E	2	16-Jan-82
Z00147	AVES	Cladorhynchus leucocephalus	Banded Stilt	Y		V	4	25-Jan-00
C04197	AVES	Egretta sacra sacra	Pacific Reef Heron	Y		R	2	24-Mar-01
S00237	AVES	Falco peregrinus	Peregrine Falcon	Y		R	1	23-Dec-00
U00238	AVES	Falco subniger	Black Falcon	Y		R	1	7-Sep-05
M04094	AVES	Haematopus fuliginosus	Sooty Oystercatcher	Y		R	13	16-Nov-14
U00130	AVES	Haematopus longirostris	(Australian) Pied Oystercatcher	Y		R	22	30-Dec-16
M00226	AVES	Haliaeetus leucogaster	White-bellied Sea Eagle	Y		E	1	23-Dec-00
K04077	AVES	Hieraaetus morphnoides	Little Eagle	Y		V	2	6-Jul-00
Z00007	AVES	Leipoa ocellata	Malleefowl	Y	VU	V	1	1-Jan-00
Y04384	AVES	Lichenostomus cratitius occidentalis	Purple-gaped Honeyeater (mainland SA)	Y		R	1	1-Jan-00
U04118	AVES	Manorina flavigula	Yellow-throated Miner	Y	ssp	ssp	7	14-Apr-11
K04385	AVES	Melanodryas cucullata cucullata	Hooded Robin (YP, MN, AP, MLR, MM, SE)	Y		R	1	12-Jul-03
S00377	AVES	Microeca fascinans	Jacky Winter	Y		ssp	1	17-Jun-01
M00306	AVES	Neophema chrysostoma	Blue-winged Parrot	Y		V	3	30-May-10
Z00307	AVES	Neophema elegans	Elegant Parrot	Y		R	4	15-Sep-06
Q00308	AVES	Neophema petrophila	Rock Parrot	Y		R	6	10-Apr-06
S00297	AVES	Northiella haematogaster (NC)	Bluebonnet	Y		ssp	1	14-Apr-11
K00585	AVES	Plectorhyncha lanceolata	Striped Honeyeater	Y		R	2	9-Feb-04
M04182	AVES	Spatula rhynchotis	Australasian Shoveler	Y		R	1	12-Feb-06
Y00980	AVES	Stercorarius antarcticus	Brown Skua	Y		V	1	25-May-99
U04070	AVES	Sternula nereis	Fairy Tern	Y	VU	E	2	25-Jan-00
M00138	AVES	Thinornis cucullatus cucullatus	Hooded Plover	Y	VU	V	6	14-Nov-14
Z00155	AVES	Tringa brevipes	Grey-tailed Tattler	Y		R	4	23-Dec-00
U04178	AVES	Turnix varius	Painted Buttonquail	Y		R	1	26-Feb-02
K01561	MAMMALIA	Eubalaena australis	Southern Right Whale	Y	EN	V	5	15-Oct-92
W01003	MAMMALIA	Tachyglossus aculeatus	Short-beaked Echidna	Y	ssp	ssp	1	4-Aug-15
S02013	REPTILIA	Dermochelys coriacea	Leatherback Turtle	Y	EN	V	1	12-Jul-91



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about [Environment Assessments](#) and the EPBC Act including significance guidelines, forms and application process details.

LGA COPPER COAST COUNCIL, SA

Report created: 04/02/20 11:48:42

[Summary](#)

[Details](#)

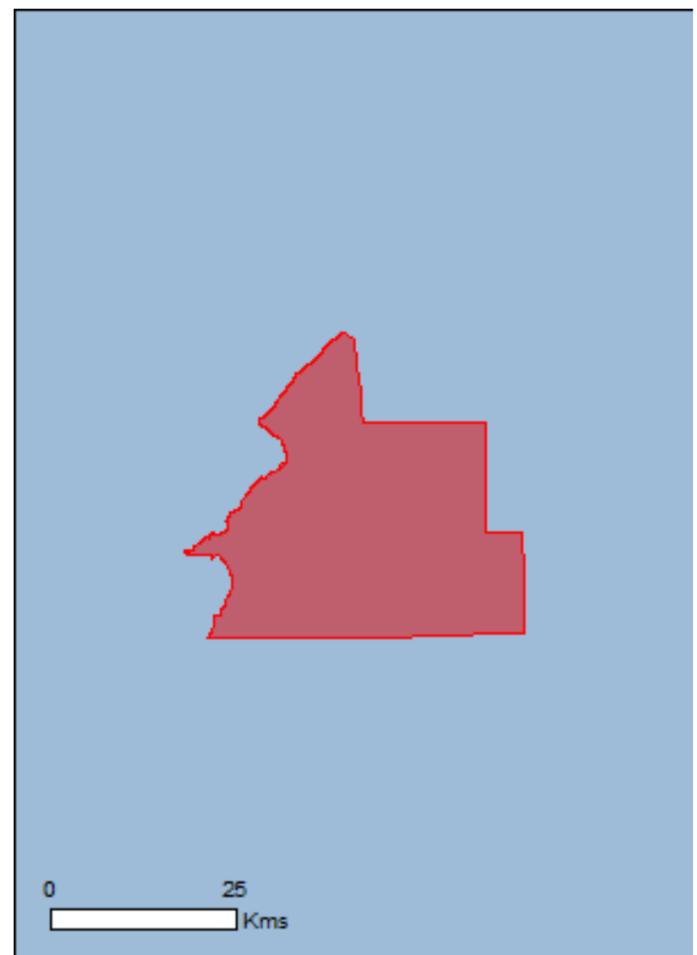
[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

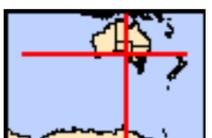
[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010



Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://environment.gov.au/protection/environment-assessments>

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Significance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Threatened Ecological Communities:	1
Threatened Species:	44
Migratory Species:	43

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage>

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits-and-application-forms>

Commonwealth Lands:	3
Commonwealth Heritage Places:	None
Listed Marine Species:	81
Whales and Other Cetaceans:	8
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	22
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

National Heritage Properties [\[Resource Information \]](#)

Name	State	Status
Historic		
Australian Cornish Mining Sites: Moonta	SA	Listed place

Threatened Ecological Communities [\[Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area

Threatened Species [\[Resource Information \]](#)

Name	Status	Type of Presence
------	--------	------------------

BIRDS

Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Extinct within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat known to occur within area
Thalassarche cauta cauta Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
MAMMALS		
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat may occur within area
PLANTS		
Caladenia brumalis Winter Spider-orchid [54993]	Vulnerable	Species or species habitat known to occur within area
Caladenia intuta Ghost Spider-orchid [82821]	Critically Endangered	Species or species habitat likely to occur within area
Caladenia macroclavia Large-club Spider-orchid [55012]	Endangered	Species or species habitat likely to occur within area
Caladenia tensa Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat likely to occur within area
Dodonaea subglandulifera Peep Hill Hop-bush [11956]	Endangered	Species or species habitat known to occur within area
Olearia pannosa subsp. pannosa Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush [12348]	Vulnerable	Species or species habitat likely to occur within area
Prasophyllum validum Sturdy Leek-orchid [10268]	Vulnerable	Species or species habitat may occur within area
Pterostylis lepida Halbury Greenhood [86227]	Endangered	Species or species habitat likely to occur within area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat likely to occur within area
REPTILES		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
SHARKS		
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Migratory Species [Resource Information]		
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area

Name	Threatened	Type of Presence
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Phoebastria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Sternula albifrons Little Tern [82849]		Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Balaena glacialis australis Southern Right Whale [75529]	Endangered*	Breeding known to occur within area
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Carcharodon carcharias White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or

Name	Threatened	Type of Presence
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	related behaviour known to occur within area Foraging, feeding or related behaviour known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat may occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species

Name	Threatened	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	habitat may occur within area Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Lands [\[Resource Information \]](#)

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Australian National Railways Commission Commonwealth Land - Minister of Transport Defence - KADINA TRAINING DEPOT Drill Hall)

Listed Marine Species [\[Resource Information \]](#)

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area
Calidris alba Sanderling [875]		Species or species habitat likely to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area
Catharacta skua Great Skua [59472]		Species or species habitat may occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Species or species habitat known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Halobaena caerulea Blue Petrel [1059]	Vulnerable	Species or species habitat may occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species

Name	Threatened	Type of Presence
Motacilla flava Yellow Wagtail [644]		habitat may occur within area Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area
Neophema chrysogaster Orange-bellied Parrot [747]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Phalacrocorax fuscescens Black-faced Cormorant [59660]		Foraging, feeding or related behaviour likely to occur within area
Phoebetria fusca Sooty Albatross [1075]	Vulnerable	Species or species habitat may occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area
Pterodroma mollis Soft-plumaged Petrel [1036]	Vulnerable	Species or species habitat may occur within area
Puffinus carneipes Flesh-footed Shearwater, Fleshy-footed Shearwater [1043]		Foraging, feeding or related behaviour likely to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat may occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Sterna albifrons Little Tern [813]		Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis Hooded Plover [59510]		Species or species habitat known to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Fish		
Acentronura australe Southern Pygmy Pipehorse [66185]		Species or species habitat may occur within area
Campichthys tryoni Tryon's Pipefish [66193]		Species or species habitat may occur within area
Filicampus tigris Tiger Pipefish [66217]		Species or species habitat may occur within area
Heraldia nocturna Upside-down Pipefish, Eastern Upside-down Pipefish, Eastern Upside-down Pipefish [66227]		Species or species habitat may occur within area
Hippocampus breviceps Short-head Seahorse, Short-snouted Seahorse [66235]		Species or species habitat may occur within area
Histiogamphelus cristatus Rhino Pipefish, Macleay's Crested Pipefish, Ring-back Pipefish [66243]		Species or species habitat may occur within area
Hypsognathus rostratus Knifesnout Pipefish, Knife-snouted Pipefish [66245]		Species or species habitat may occur within area
Kaupus costatus Deepbody Pipefish, Deep-bodied Pipefish [66246]		Species or species habitat may occur within area
Leptoichthys fistularius Brushtail Pipefish [66248]		Species or species habitat may occur within area
Lissocampus caudalis Australian Smooth Pipefish, Smooth Pipefish [66249]		Species or species habitat may occur within area
Lissocampus runa Javelin Pipefish [66251]		Species or species habitat may occur within area
Maroubra perserrata Sawtooth Pipefish [66252]		Species or species habitat may occur within area
Notiocampus ruber Red Pipefish [66265]		Species or species habitat may occur within area
Phycodurus eques Leafy Seadragon [66267]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Phyllopteryx taeniolatus Common Seadragon, Weedy Seadragon [66268]		Species or species habitat may occur within area
Pugnaso curtirostris Pugnose Pipefish, Pug-nosed Pipefish [66269]		Species or species habitat may occur within area
Solegnathus robustus Robust Pipehorse, Robust Spiny Pipehorse [66274]		Species or species habitat may occur within area
Stigmatopora argus Spotted Pipefish, Gulf Pipefish, Peacock Pipefish [66276]		Species or species habitat may occur within area
Stigmatopora nigra Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
Stipecampus cristatus Ringback Pipefish, Ring-backed Pipefish [66278]		Species or species habitat may occur within area
Urocampus carinirostris Hairy Pipefish [66282]		Species or species habitat may occur within area
Vanacampus margaritifer Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
Vanacampus phillipi Port Phillip Pipefish [66284]		Species or species habitat may occur within area
Vanacampus poecilolaemus Longsnout Pipefish, Australian Long-snout Pipefish, Long-snouted Pipefish [66285]		Species or species habitat may occur within area
Vanacampus vercoi Verco's Pipefish [66286]		Species or species habitat may occur within area
Mammals		
Arctocephalus forsteri Long-nosed Fur-seal, New Zealand Fur-seal [20]		Species or species habitat may occur within area
Arctocephalus pusillus Australian Fur-seal, Australo-African Fur-seal [21]		Species or species habitat may occur within area
Neophoca cinerea Australian Sea-lion, Australian Sea Lion [22]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
Whales and other Cetaceans		[Resource Information]
Name	Status	Type of Presence
Mammals		

Name	Status	Type of Presence
Balaenoptera edeni Bryde's Whale [35]		Species or species habitat may occur within area
Caperea marginata Pygmy Right Whale [39]		Species or species habitat may occur within area
Delphinus delphis Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
Eubalaena australis Southern Right Whale [40]	Endangered	Breeding known to occur within area
Lagenorhynchus obscurus Dusky Dolphin [43]		Species or species habitat may occur within area
Megaptera novaeangliae Humpback Whale [38]	Vulnerable	Species or species habitat may occur within area
Tursiops aduncus Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
Tursiops truncatus s. str. Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Extra Information

Invasive Species [\[Resource Information \]](#)

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resources Audit,

Name	Status	Type of Presence
Birds		
<i>Alauda arvensis</i> Skylark [656]		Species or species habitat likely to occur within area
<i>Anas platyrhynchos</i> Mallard [974]		Species or species habitat likely to occur within area
<i>Carduelis carduelis</i> European Goldfinch [403]		Species or species habitat likely to occur within area
<i>Columba livia</i> Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
<i>Passer domesticus</i> House Sparrow [405]		Species or species habitat likely to occur within area
<i>Streptopelia chinensis</i> Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
<i>Sturnus vulgaris</i> Common Starling [389]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environment and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [-Forestry Corporation, NSW](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

[Please feel free to provide feedback via the Contact Us page.](#)

Appendix D: CMP Project Brief

Copper Coast Council



lifestyle location of choice

Request for Tender

Conservation Management Plan

For

Australian Cornish Mining Sites: Moonta

Tender Number - T2019-012

Open Request for Tenders

Closing Date 3pm Monday 5th August 2019



Lifestyle location of choice

SPECIFICATION

FOR

**Conservation Management Plan
For
Australian Cornish Mining Sites**

5th July 2019

COPPER COAST COUNCIL

6. Section E – Specifications for the Services

- **Target place**

Australian Cornish Mining Sites: Moonta

- **Project scope and description, including key eligible activities**

The RFT is to develop a new Conservation Management Plan of a target place being the National Heritage List Australian Cornish Mining Sites: Moonta. The Plan is to be developed in accordance with The Burra Charter, (The Australia ICOMOS Charter for Places of Cultural Significance) 2013, and the Australian Government guidelines for Managing National Heritage places.

This is also a State Listed Heritage place and the Plan needs to take into account State Heritage guidelines.

It will follow A Guide to The Preparation of Conservation Plans for Places of European Cultural Significance by Dr James Semple Kerr and Ask First: a guide to respecting Indigenous heritage places and values. The plan will meet all the requirements of the EPBC Act.

The scope of the RFT is completion of a Conservation Management Plan as the tool to be implemented by council and other managers to conserve and protect the National and State Heritage values of the Australian Cornish Mining Site: Moonta.

The plan will be a written document identifying among other things the heritage values of the sites and the conservation policies and plans that can be followed.

- **Project outcomes**

The project outcome will be identification, protection, conservation, presentation and transmitting to all generations, of the National Heritage values of the Australian Cornish Mining: Moonta

Sites: Moonta. This National Heritage area at Moonta Mines is a place of cultural significance which will be managed to enrich people's lives and provide a deep and inspirational sense of connection to community and landscape, to the past and to living experiences. (based on hardrock copper mining)

Moonta Mines has been recognised as being a nationally significant heritage area as it is only one of two areas in Australia that reflect the successful transplantation of Cornish mining systems to Australia, and the development of mining settlements, that are an important expression of Australian identity and experience.

As a place of cultural significance, the outcome will reflect the diversity of our communities, telling us about whom we are and the past that has formed us and the Australian landscape.

Once developed, the Conservation Management Plan will become part of the day- to-day management and decision-making processes of Council, Federal and State Government Agencies and others.

The Objectives of this project are to:

- review, identify and analyse the heritage values of the target place and its components
- develop conservation policies and guidelines for inclusion in the Copper Coast Council Development Plan
- make practical recommendations for its ongoing conservation, management and promotion of an historic township
- contribute to the community's sense of identity – its past, present and future
- provide the basis for ongoing cultural resource management

Copper Coast Council - Request For Tender "Conservation Management Plan For Australian Cornish Mining Sites - Moonta"

- **National Heritage List Place ID: 106304**

<http://www.environment.gov.au/heritage/places/national/australian-cornish-mining-sites>



- **The work**

The preparation of the Conservation Management Plan will involve the following:

1. Historical Outline

The consultant team will:

- focus on the physical history of the area
- identify, review and suggest historical themes that reinforce the settlement patterns and growth of the area
- compile historical maps, photographs and plans, illustrating the settlement patterns and growth of the area at regular intervals
- add, as necessary, to existing information for the identified sites, places or landscapes of particular historical and/or aesthetic interest

2. Physical Investigations

The consultant team will:

- undertake fieldwork identifying elements of built and natural environment which provide evidence of historical themes, settlement patterns, events etc. previously identified. The survey will address both the private and public domain
- identify important vistas, views and cultural landscapes
- expand as necessary, to the existing inventory of the buildings, gardens (if relevant) and structures to include:
 - Name (if relevant)
 - Address

Copper Coast Council - Request For Tender "Conservation Management Plan For Australian Cornish Mining Sites - Moonta"

- Brief description
- Photograph
- Physical condition
- Modifications/integrity
- Contributory value (potential heritage place, contributory, neutral, intrusive)
- Historical information (if available)
- Brief Conservation Policy
- Brief Statement of Desired Future Character
- Identify all buildings and structures on a map indicating level of contribution

3. Analysis of Documentary Evidence

The consultant team will:

- examine the historical outline and revise in light of evidence gathered through the fieldwork
- undertake any comparative research, if required
- prepare a brief summary of issues arising from the documentary and physical evidence in relation to heritage value

4. Conservation Policy

The consultant team will:

- prepare general Conservation Policies for the built and natural environment, relating to both the private and public domain
- prepare specific Conservation Policies in the form of Objectives and Principles of Development Control for the area. These will be drafted in accordance with the format and terminology used in Development Plans. The policies will include, but not be limited to:
 - Form of Development
 - Setbacks
 - Appearance of Land and Buildings
 - Alterations and Additions
 - Environment
 - Open space, landscaping and gardens
 - Demolition
 - Infill Development
 - Land Division
 - Streetscape and Street Furniture
 - Public Buildings
 - Signs, Advertisements and Hoardings
 - Utilities Infrastructure
- The consultant will also prepare Conservation Guidelines which address all of the above issues. The Conservation Guidelines will provide practical advice to both the Regional Council of Goyder and property owners within the project brief and be illustrated with line drawings, as appropriate. The Guidelines will apply equally to the private and public domain in providing a management framework for decision making and development applications.

5. Consultation

The consultants will:

- Liaise with Heritage South Australia at the start and Progress report stages
- Liaise, as necessary with various government agencies, including Council, Department of , Planning, Transport & Infrastructure, Department Environment & Water, PIRSA (Primary Industries & Resources SA)
- Relevant community organisations
- Present draft report to Moonta National Trust and the Copper Coast Council prior to finalising

6. Consultants

The consultants should have demonstrated heritage assessment experience and/or expertise in the following areas:

- (i) Historical research
- (ii) Architectural assessment
- (iii) Planning
- (iv) Landscape assessment (ie. Landscape Architect/Geographer)

▪ **Land owners and community**

With the diversity of land owners, including Council, State Government and private landowners, Article 6.3 will be applied with plan development including consideration of other factors affecting the future of a place such as the owner's needs, resources, external constraints and its physical condition. In developing the plan as an effective policy, different ways to retain cultural significance and address other factors will be explored. This will include planning approaches which identify a use or combination of uses or constraints on uses that retain the cultural significance of the place. We will be providing for the participation of people for whom the place has significant associations and meanings, or who have social, spiritual or other cultural responsibilities for the place.

▪ **Traditional owners**

As a place of cultural significance, the plan will reflect the diversity of our communities, telling us about who we are and the past that has formed us and the Australian landscape.

The Australian Heritage Cornish Sites: Moonta is listed for the values relating to the Cornish mining activities and settlement. However, taking into consideration that the traditional owners of the area around Moonta are the Narrunga people, the Ask First guidelines will be used to consult with the traditional owners to have input from them during the preparation of the Conservation Management plan.

▪ **EPBC Act**

The Australian Government Department of the Environment and Energy guidelines for Managing National Heritage places, clearly state that a management plan should be prepared that sets out how the heritage values of the site will be protected or conserved. These guidelines identify that these management plans need to be consistent with the National Heritage management principles; and that where National Heritage place is in a state or territory, the Australian Government must endeavour to ensure that a management plan is prepared and implemented with the relevant state or territory government.

The Conservation Management Plan to be prepared will be developed in accordance with the Australian Government Department of the Environment and Energy National Heritage management principles. The preparation of the Conservation Management Plan will also support the operation of the Australian Government Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), Under the EPBC Act, approval is required from the Australian Government Minister for the Environment before any action takes place that could have significant impact on the national heritage values of a listed place.

▪ **Project milestones**

Milestone 1

Heritage Consultant engaged to prepare Conservation Management Plan
6th September 2019

Milestone 2

Research, gathering and analysis of evidence
18th November 2019

**Copper Coast Council - Request For Tender "Conservation Management Plan For
Australian Cornish Mining Sites - Moonta"**

Milestone 3

Completion of the Australian Cornish Mining Sites: Moonta Mines Conservation Management Plan, including consultation and strategies implementation
27th January 2020

▪ **Project manager**

The Project will be managed by Russell Peate, Chief Executive Officer, Copper Coast Council

N.B. – all tenderers should be aware that blank returns will be considered as a Non-Conforming Tender Response.

It is the best interest of all tenderers to make an entry in all available cells.

Refer to - SCORE SHEET for examples of what the Evaluation Panel will score against.

To help with this process Council have included a Tenderers Self-help Check Sheet.

This check sheet is for tenderers reference only.

TENDERERS SELF HELP CHECKLIST

	Schedule description	Sign off to check that you have completed this form.
Schedule 1	Tender Form - Formal Offer	
Schedule 2	Tenderer's Details	
Schedule 3	Insurance	
Schedule 4	Conflict of Interest	
Schedule 5	Referees	
Schedule 6	Statement of Conformity	
Schedule 7	Organisation Structure, Facilities and Resources	
Schedule 8	Experience	
Schedule 9	Value added Services	
Schedule 10	Response Times	
Schedule 11	Pricing	

Appendix E: Mapping

MOONTA
TOWNSHIP

HALL'S LODE

1

2

3

PRINCE ALFRED LODE

2

4

GREEN'S LODE

5

ELDER'S WEST LODE

4

BEDDOME'S LODE

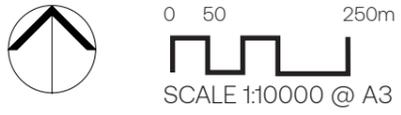
6

TRUER'S LODE

ELDER'S MAIN LODE
ELDER'S EAST LODE

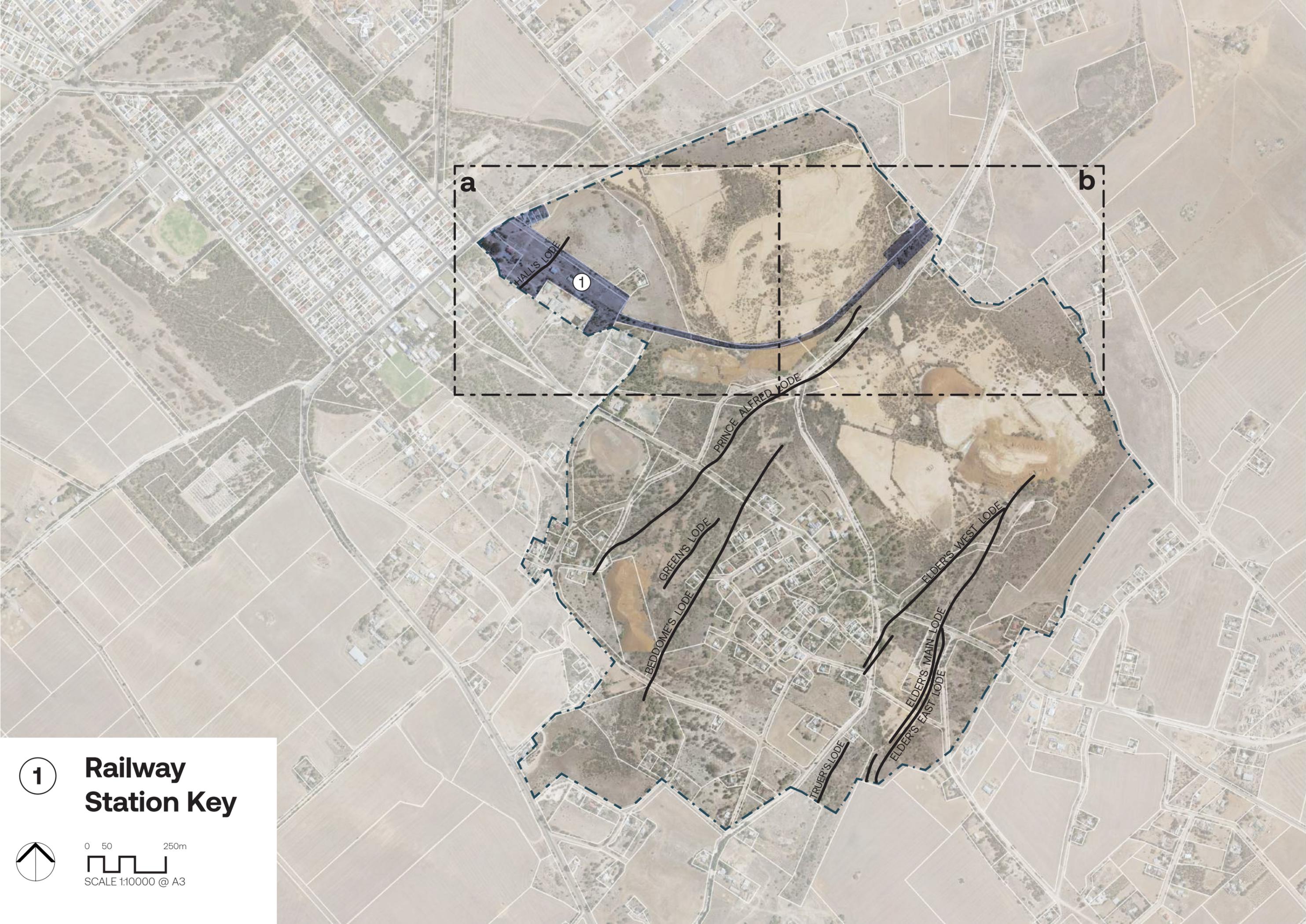
7

Historic Areas



- State Heritage Boundary
- Lode
- 1 Railway Station
- 2 Precipitation Works
- 3 Prince Alfred & Beddome's Lode
- 4 Moonta Mines Settlement
- 5 Moonta Mines Management
- 6 Hamley Mine
- 7 Elder's Main Lode

Note historic configuration boundaries are not indicative of planning precincts or zoning.

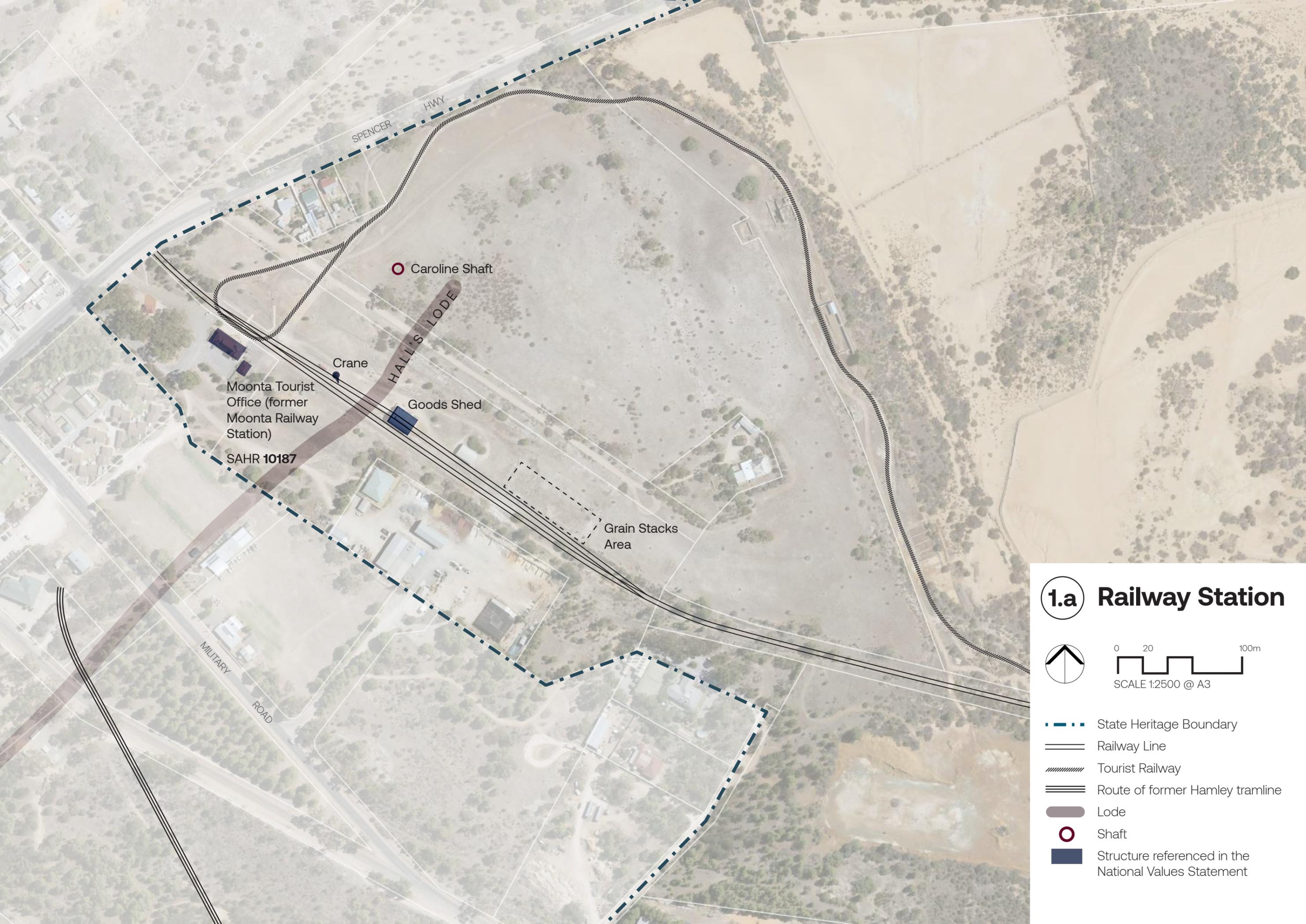


1

Railway Station Key



0 50 250m
SCALE 1:10000 @ A3



SPENCER HWY

Caroline Shaft

Crane

Moonta Tourist Office (former Moonta Railway Station)

Goods Shed

SAHR 10187

Grain Stacks Area

HALL'S LODGE

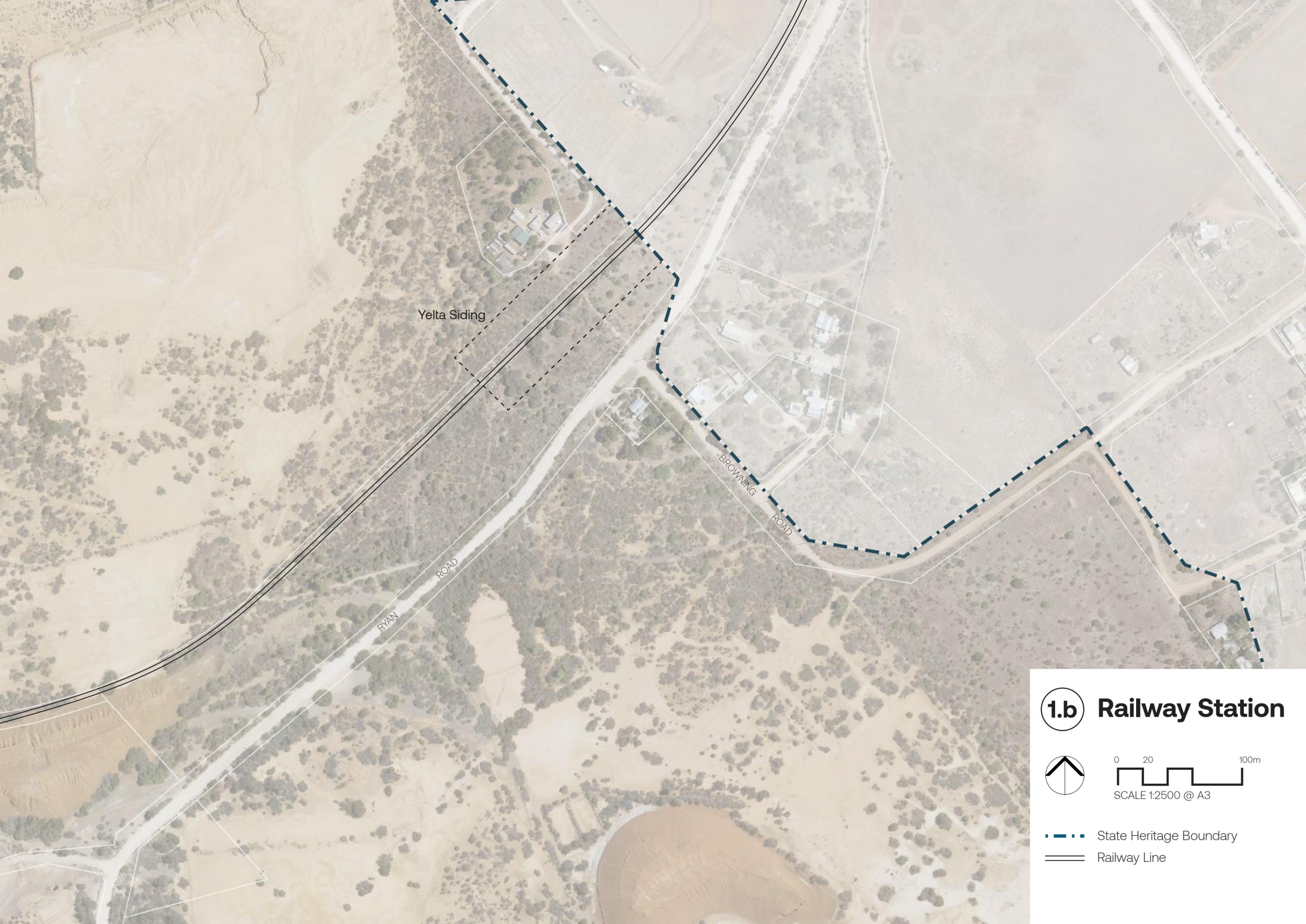
MILITARY ROAD

1.a Railway Station



0 20 100m
SCALE 1:2500 @ A3

- State Heritage Boundary
- Railway Line
- Tourist Railway
- Route of former Hamley tramline
- Lode
- Shaft
- Structure referenced in the National Values Statement



Yelta Siding

RYAN ROAD

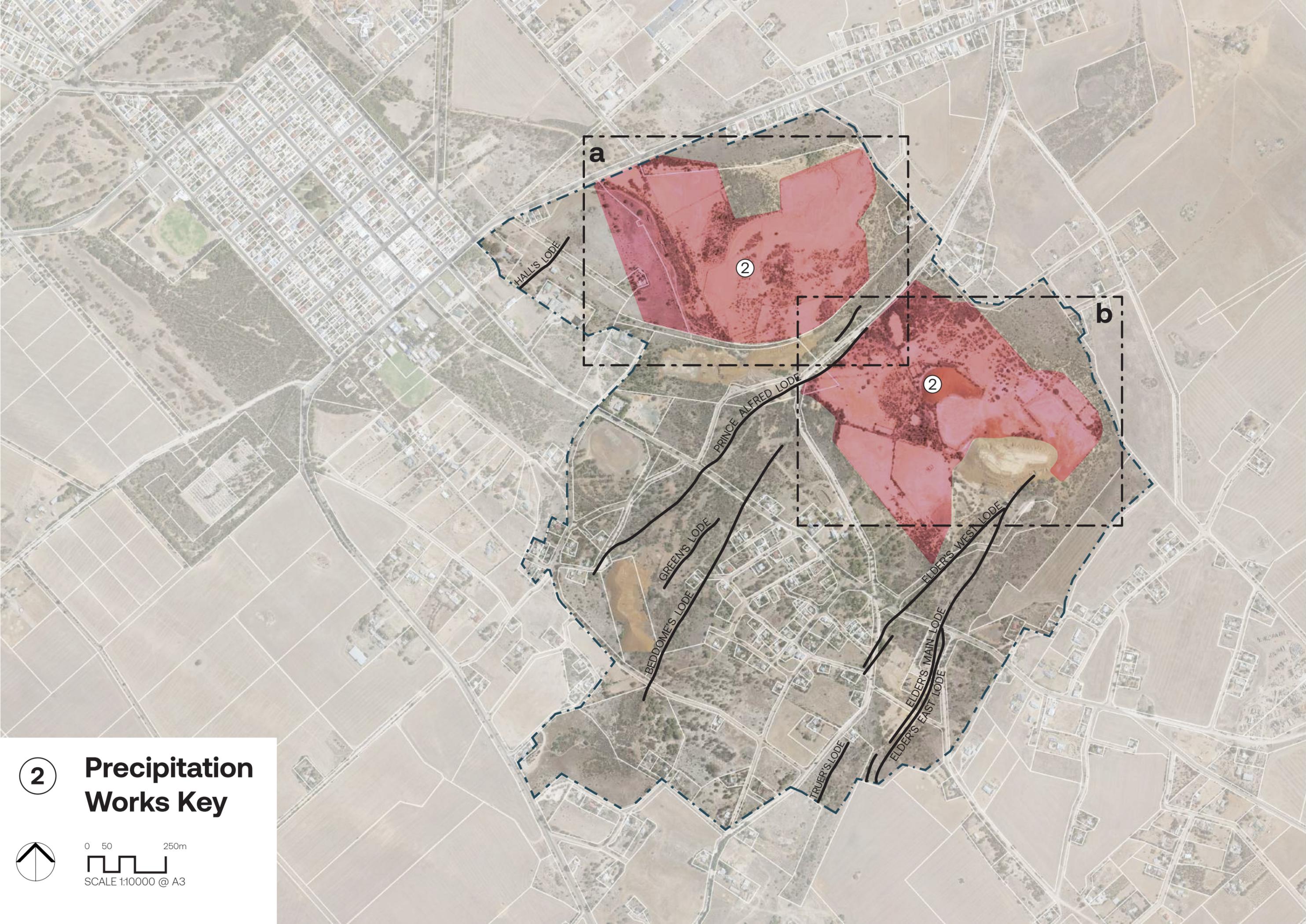
BROWNING ROAD

1.b Railway Station



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Railway Line



2

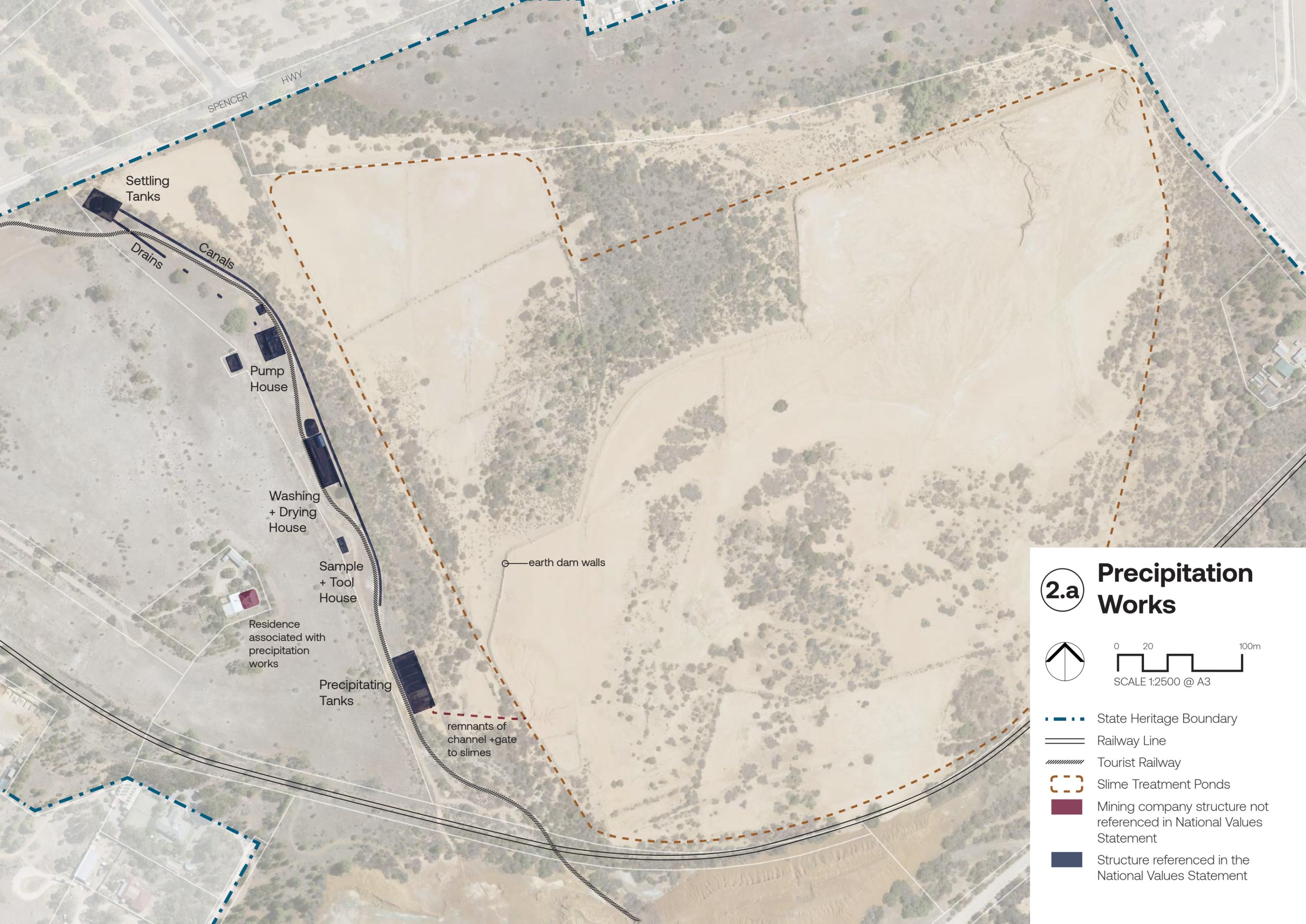
Precipitation Works Key



0 50 250m



SCALE 1:10000 @ A3



SPENCER HWY

Settling Tanks

Drains

Canals

Pump House

Washing + Drying House

Sample + Tool House

Residence associated with precipitation works

Precipitating Tanks

remnants of channel + gate to slimes

earth dam walls

2.a Precipitation Works



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Railway Line
-  Tourist Railway
-  Slime Treatment Ponds
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement



RYAN ROAD

Clarifying Pits

Richman's Tailing Heap

Clarifying Pits

Clarifying Pit

area of collapse

dry stone and earth dam walls

Tanks

Richman's Tailing Heap

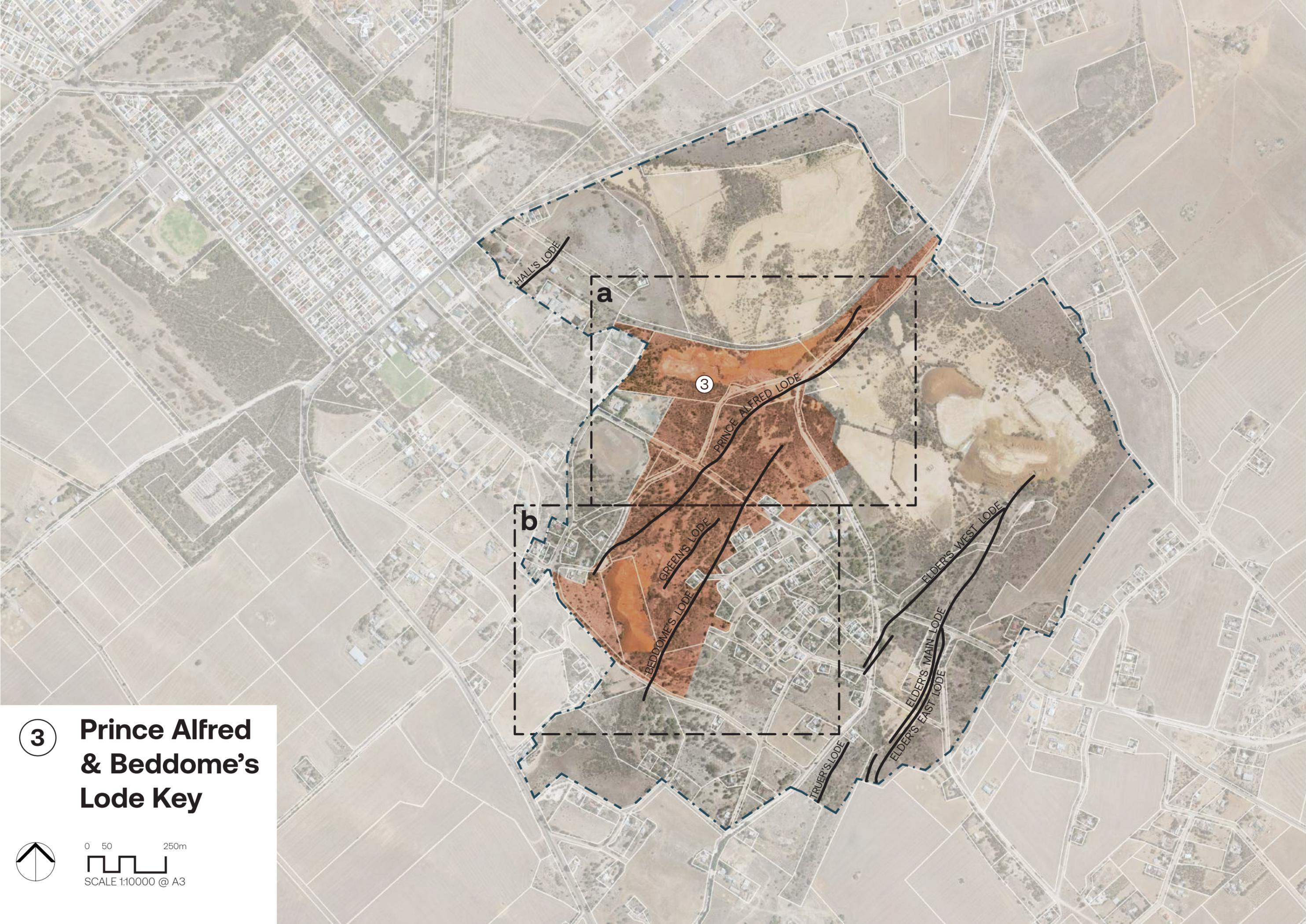
flotation residues

2.b Precipitation Works



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Tailing Heap
-  Slime Heap Area
-  Mining company structure not referenced in National Values Statement



3

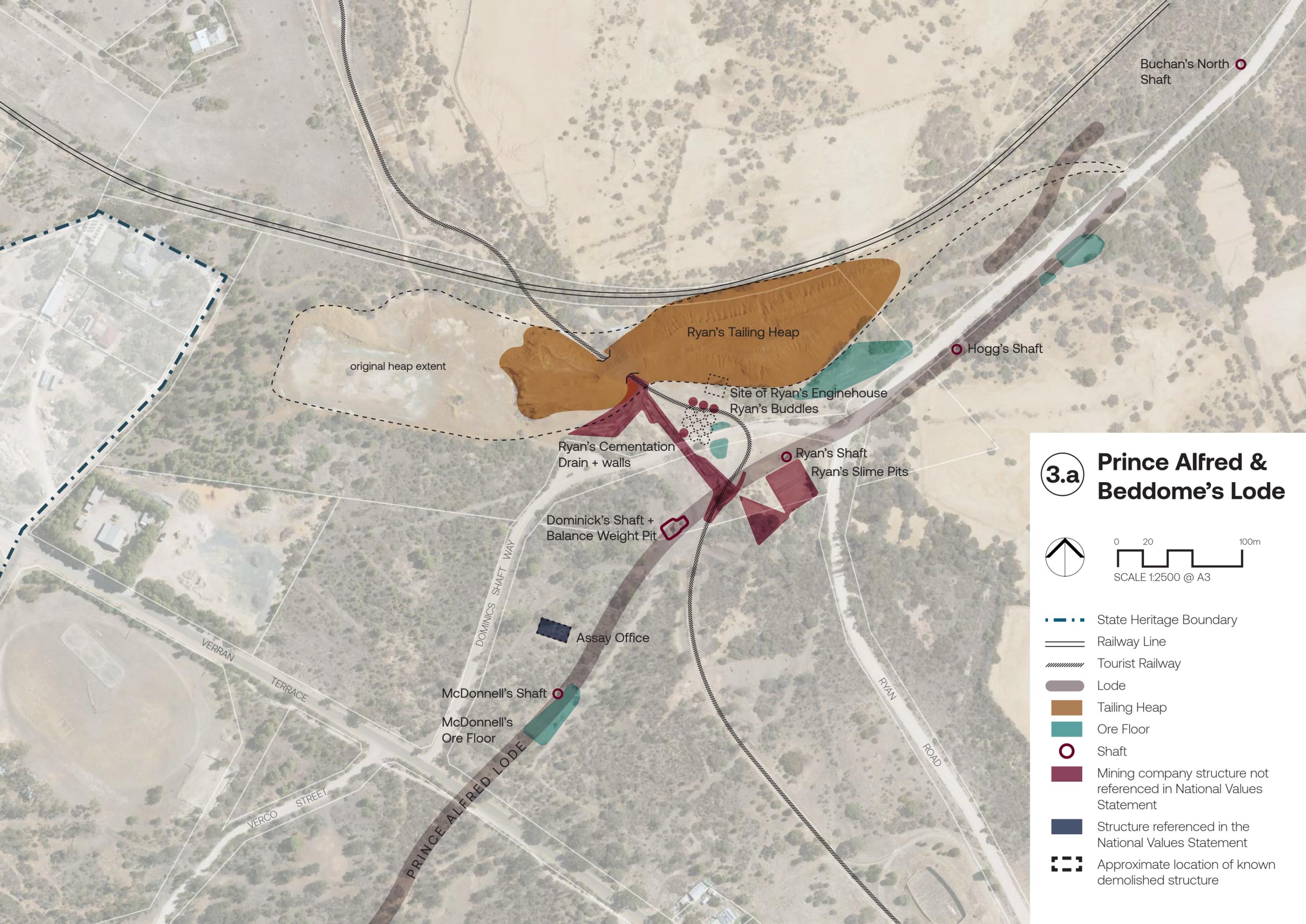
Prince Alfred & Beddome's Lode Key



0 50 250m



SCALE 1:10000 @ A3



Buchan's North Shaft

Hogg's Shaft

Ryan's Tailing Heap

original heap extent

Site of Ryan's Enginehouse
Ryan's Buddles

Ryan's Cementation
Drain + walls

Ryan's Shaft
Ryan's Slime Pits

Dominick's Shaft +
Balance Weight Pit

Assay Office

McDonnell's Shaft

McDonnell's
Ore Floor

VERRAN
TERRACE

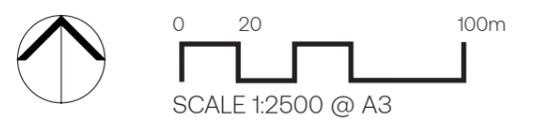
VERCO
STREET

DOMINICKS
SHAFT WAY

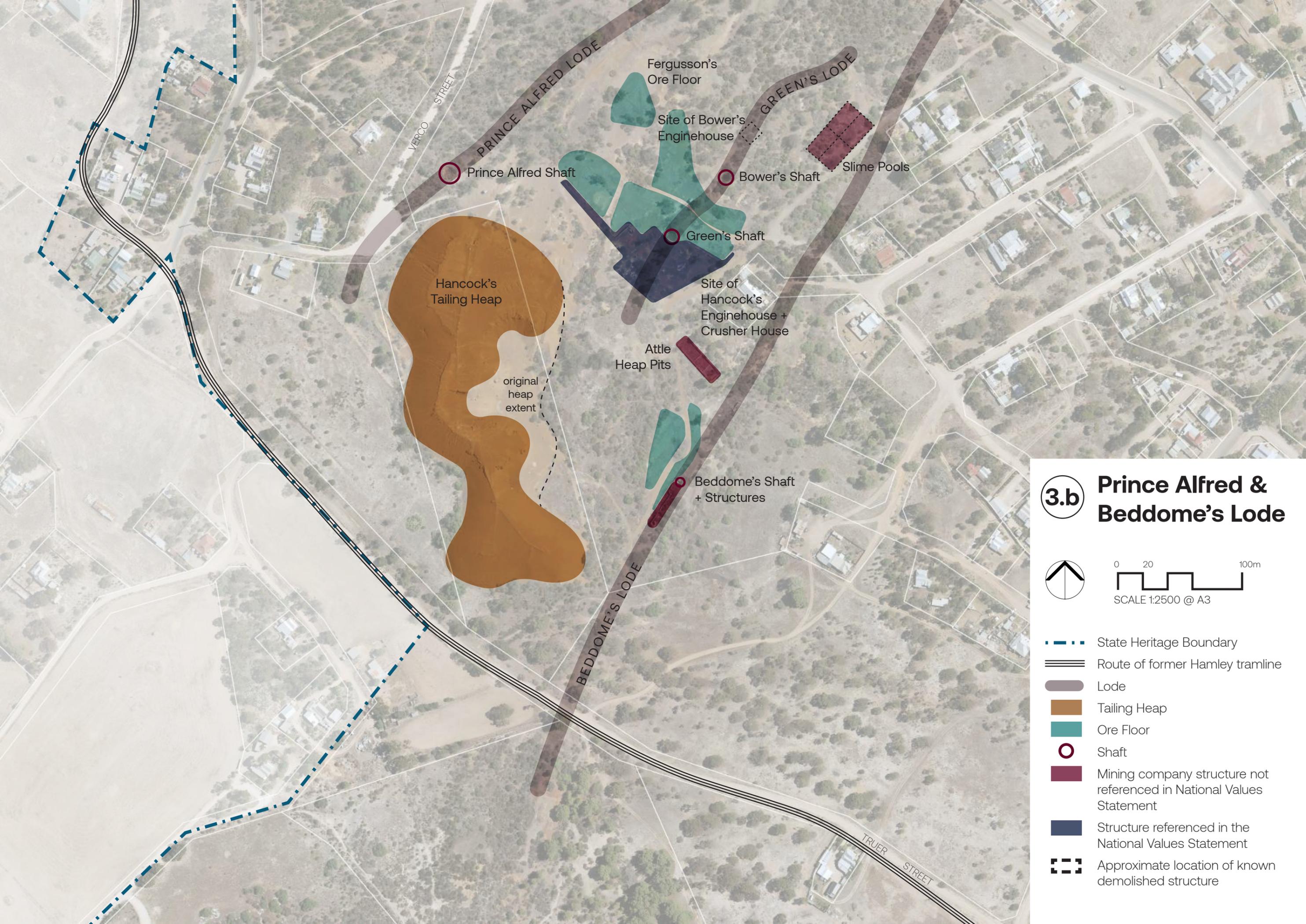
RYAN
ROAD

PRINCE ALFRED LODE

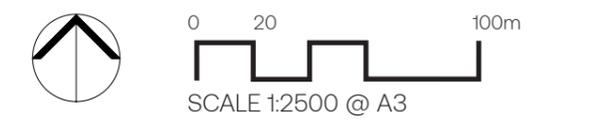
3.a Prince Alfred & Beddome's Lode



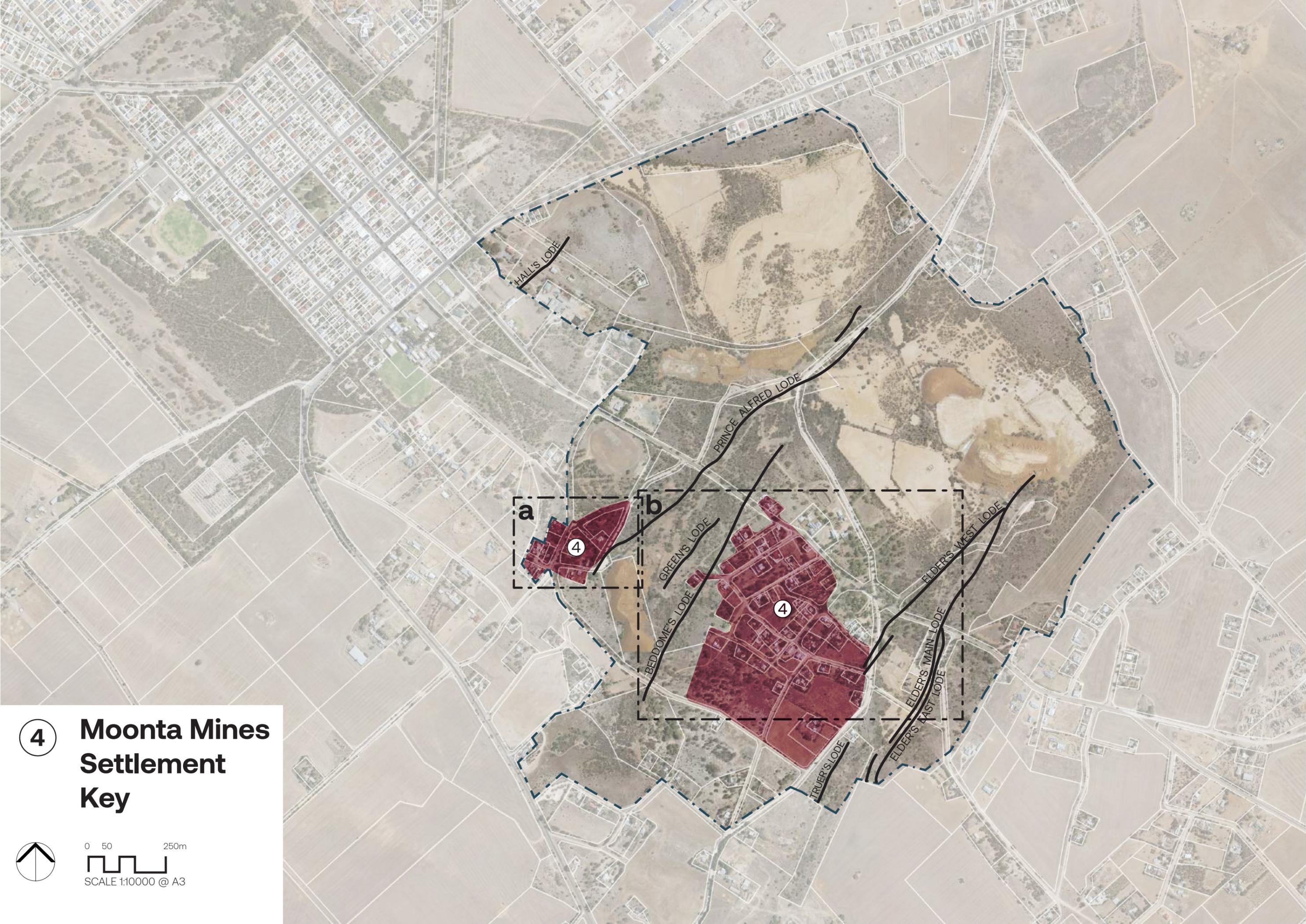
-  State Heritage Boundary
-  Railway Line
-  Tourist Railway
-  Lode
-  Tailing Heap
-  Ore Floor
-  Shaft
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement
-  Approximate location of known demolished structure



3.b Prince Alfred & Beddome's Lode



-  State Heritage Boundary
-  Route of former Hamley tramline
-  Lode
-  Tailing Heap
-  Ore Floor
-  Shaft
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement
-  Approximate location of known demolished structure

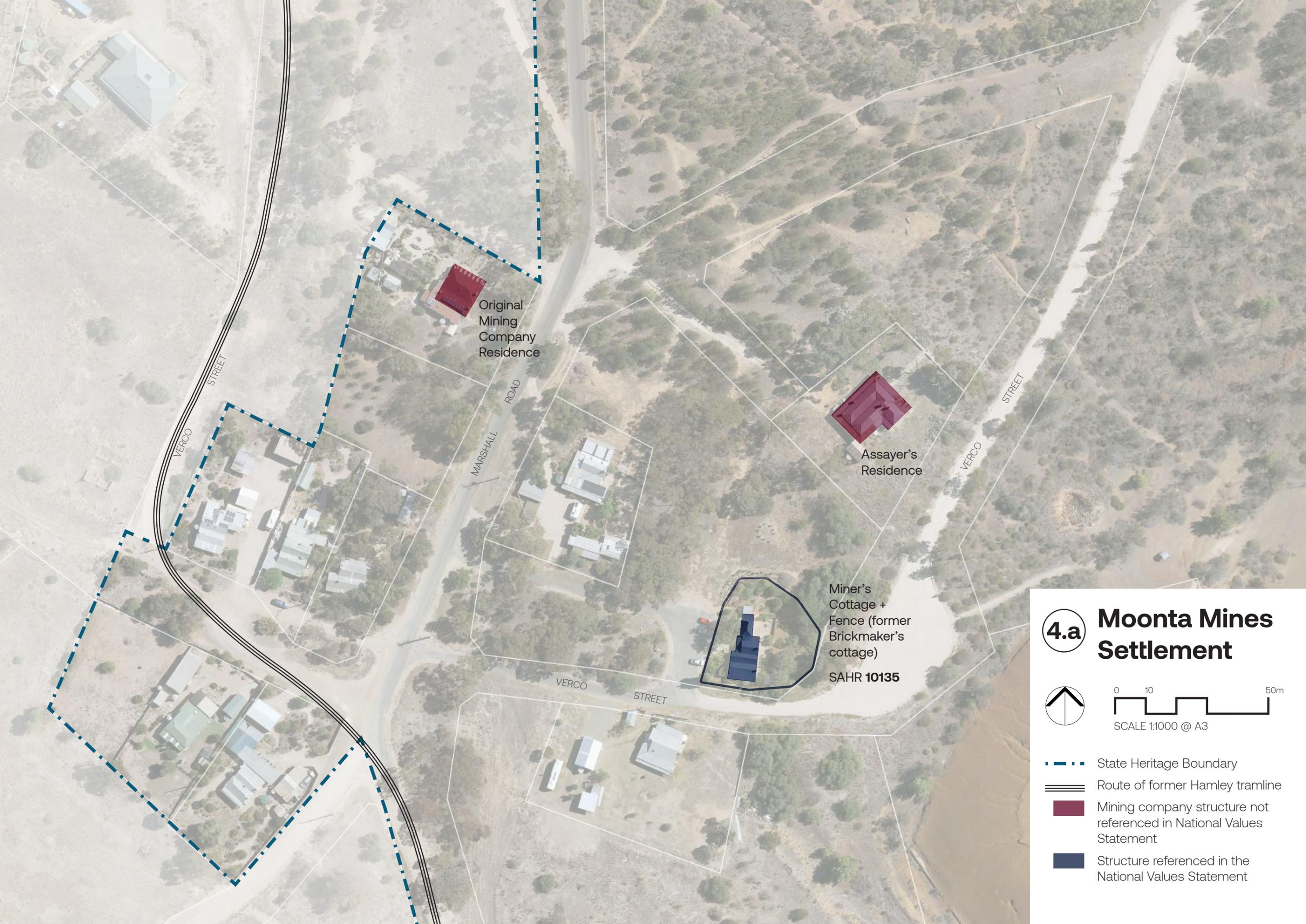


4

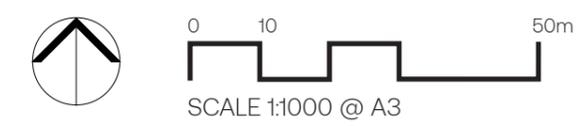
Moonta Mines Settlement Key

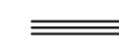


0 50 250m
SCALE 1:10000 @ A3



4.a Moonta Mines Settlement



-  State Heritage Boundary
-  Route of former Hamley tramline
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement



Moonta Mines Model
Sunday School Site
(Primitive Church)
SAHR 13110

Moonta Mines Bible
Christian Church Site

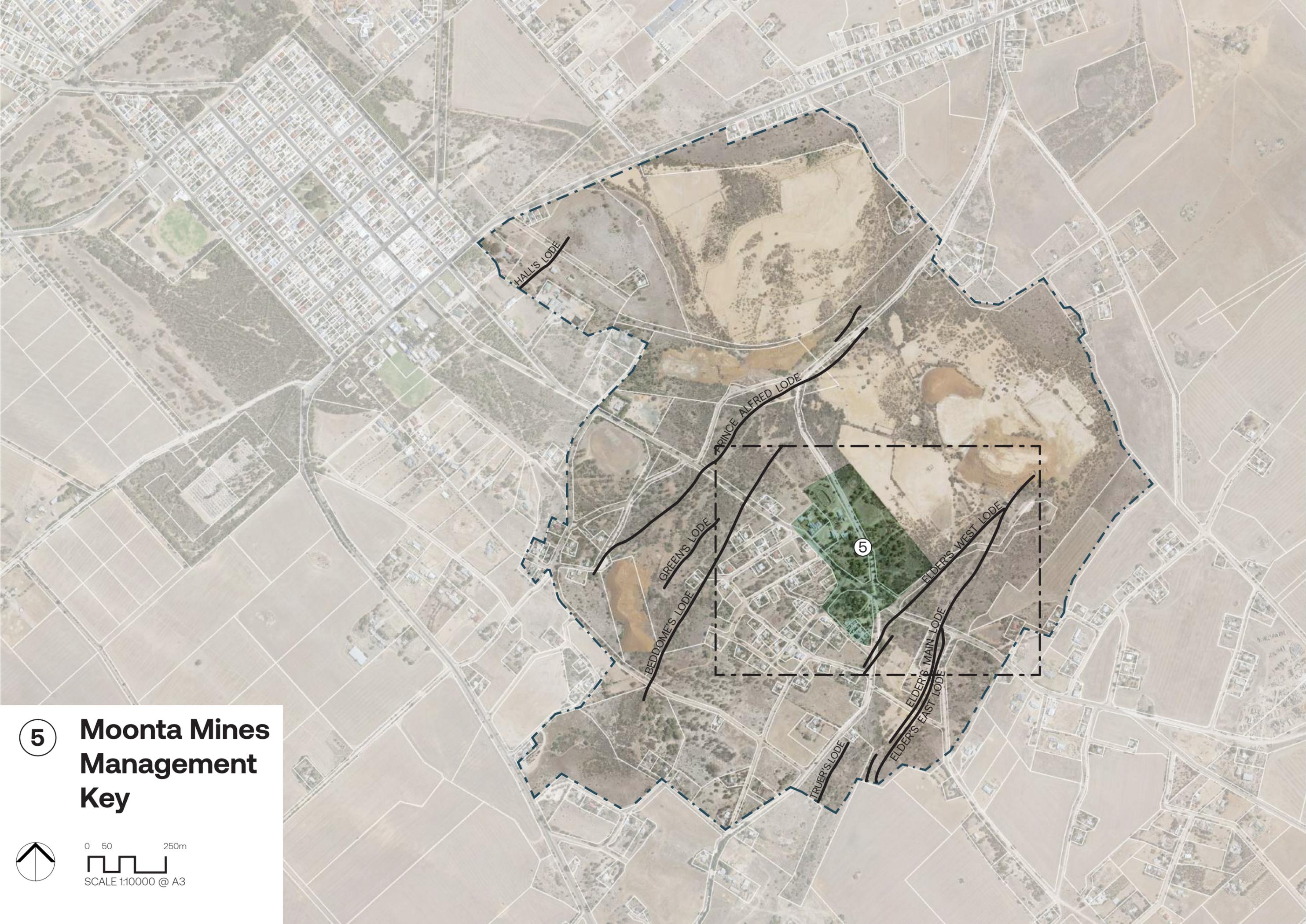
Moonta Mines Uniting
Church (former Wesleyan
Methodist) including Fence
+ Sunday School Site
SAHR 10114

4.b Moonta Mines Settlement



0 20 100m
SCALE 1:2500 @ A3

-  State Heritage Boundary
-  Structure referenced in the National Values Statement
-  Approximate location of known demolished structure

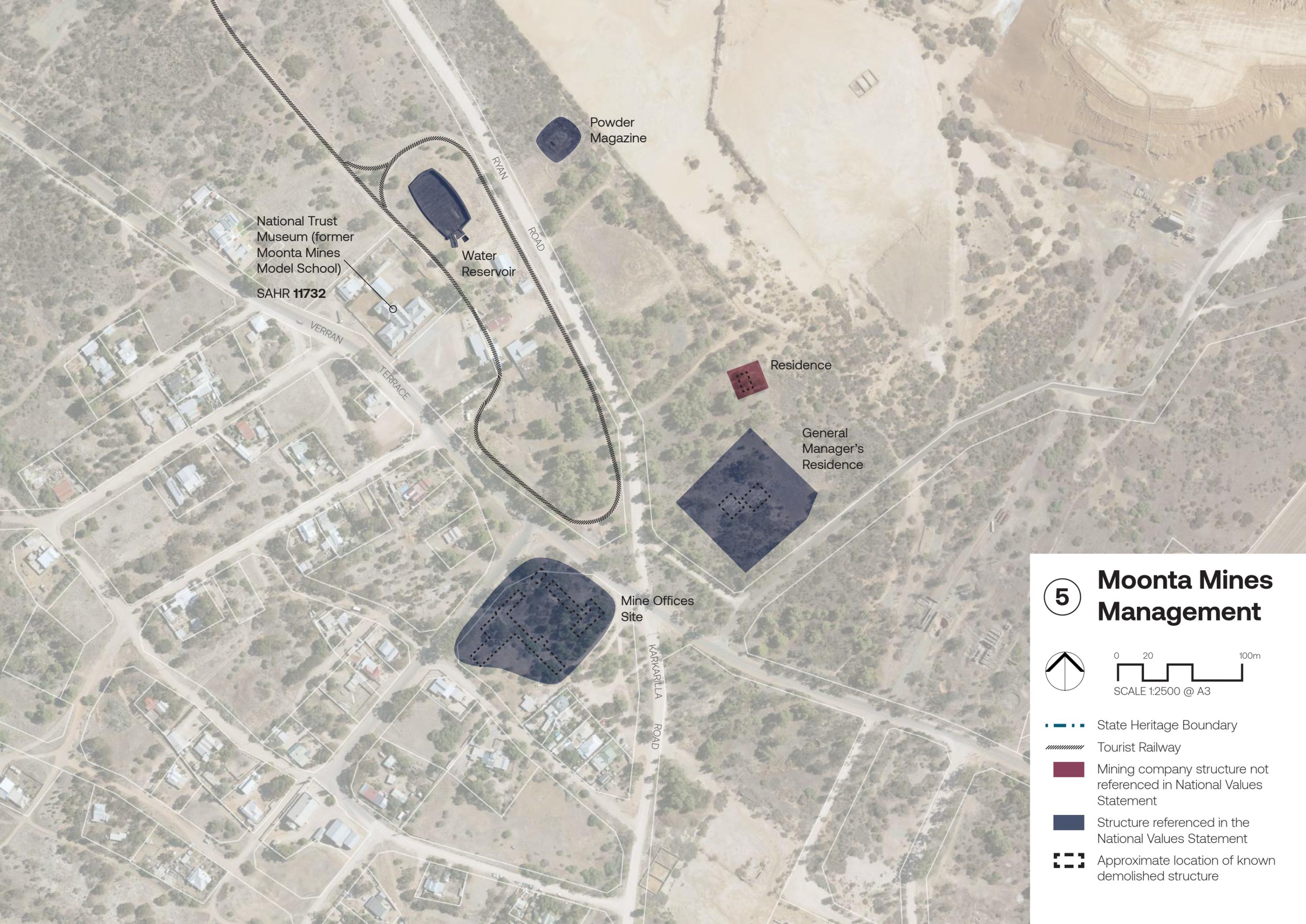


5

Moonta Mines Management Key



0 50 250m
SCALE 1:10000 @ A3



National Trust
Museum (former
Moonta Mines
Model School)
SAHR 11732

Powder
Magazine

Water
Reservoir

Residence

General
Manager's
Residence

Mine Offices
Site

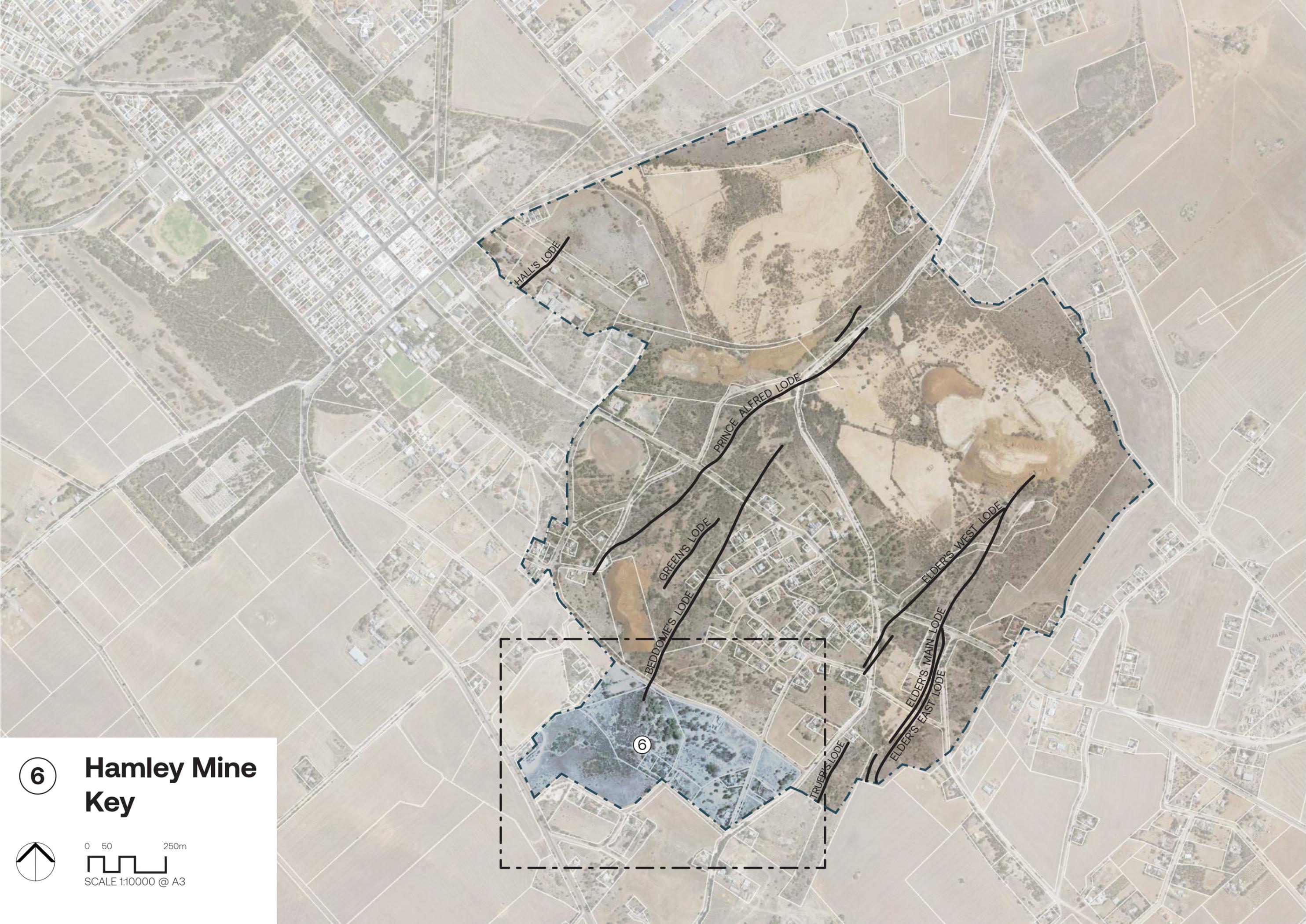
5

Moonta Mines Management



0 20 100m
SCALE 1:2500 @ A3

- State Heritage Boundary
- Tourist Railway
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure

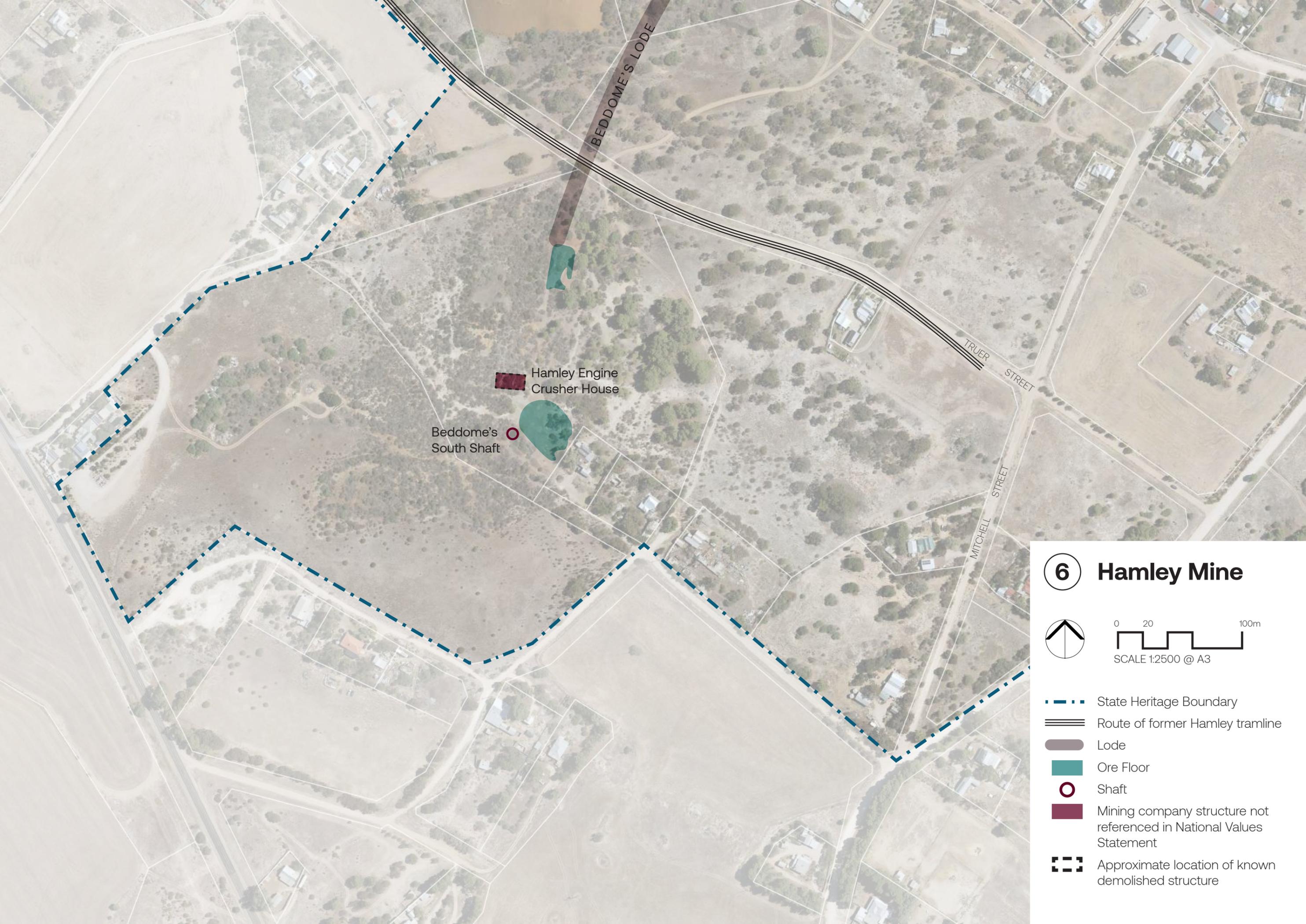


6

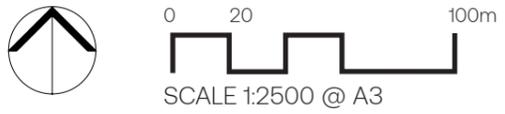
Hamley Mine Key



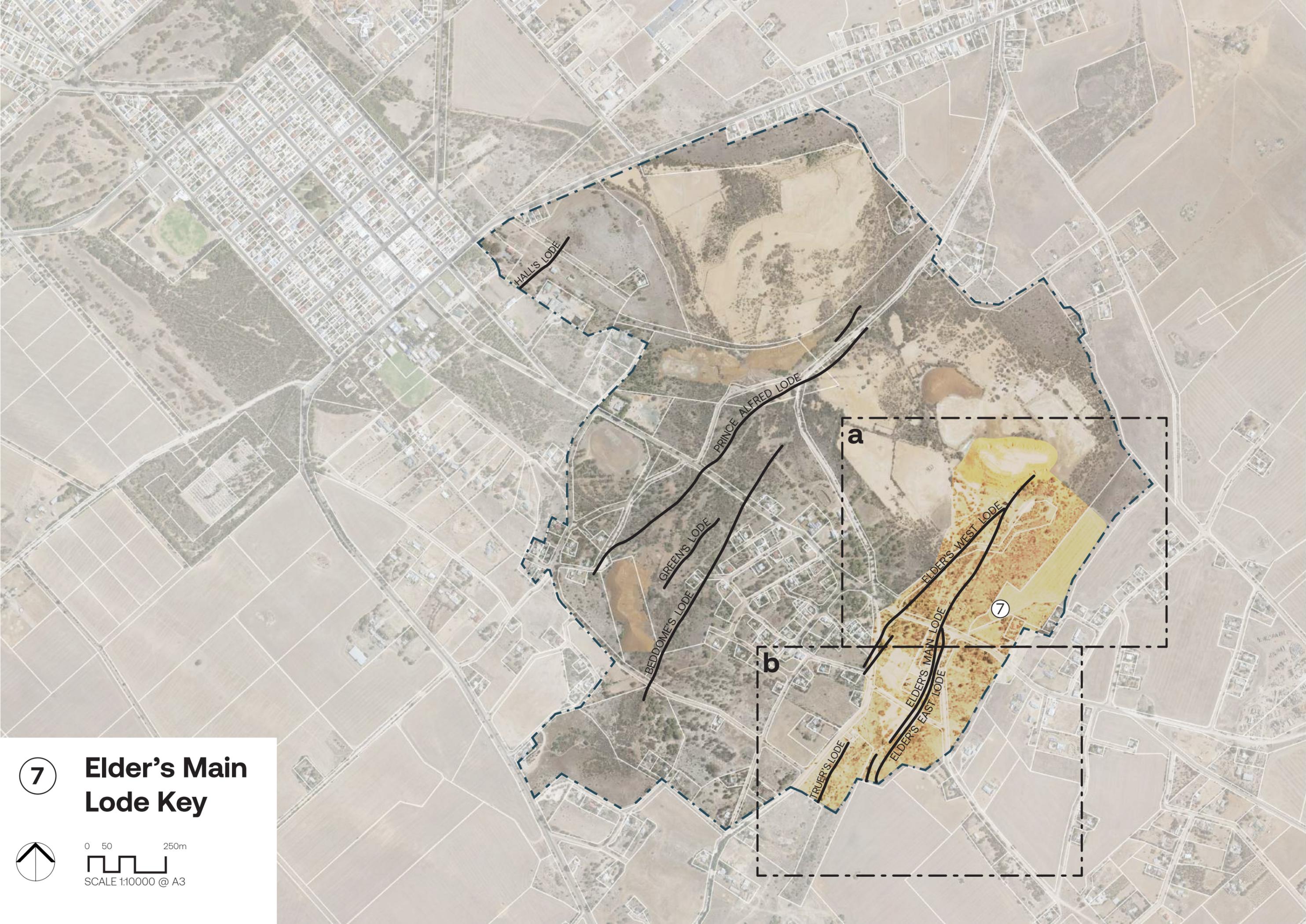
0 50 250m
SCALE 1:10000 @ A3



6 Hamley Mine



- State Heritage Boundary
- Route of former Hamley tramline
- Lode
- Ore Floor
- Shaft
- Mining company structure not referenced in National Values Statement
- Approximate location of known demolished structure

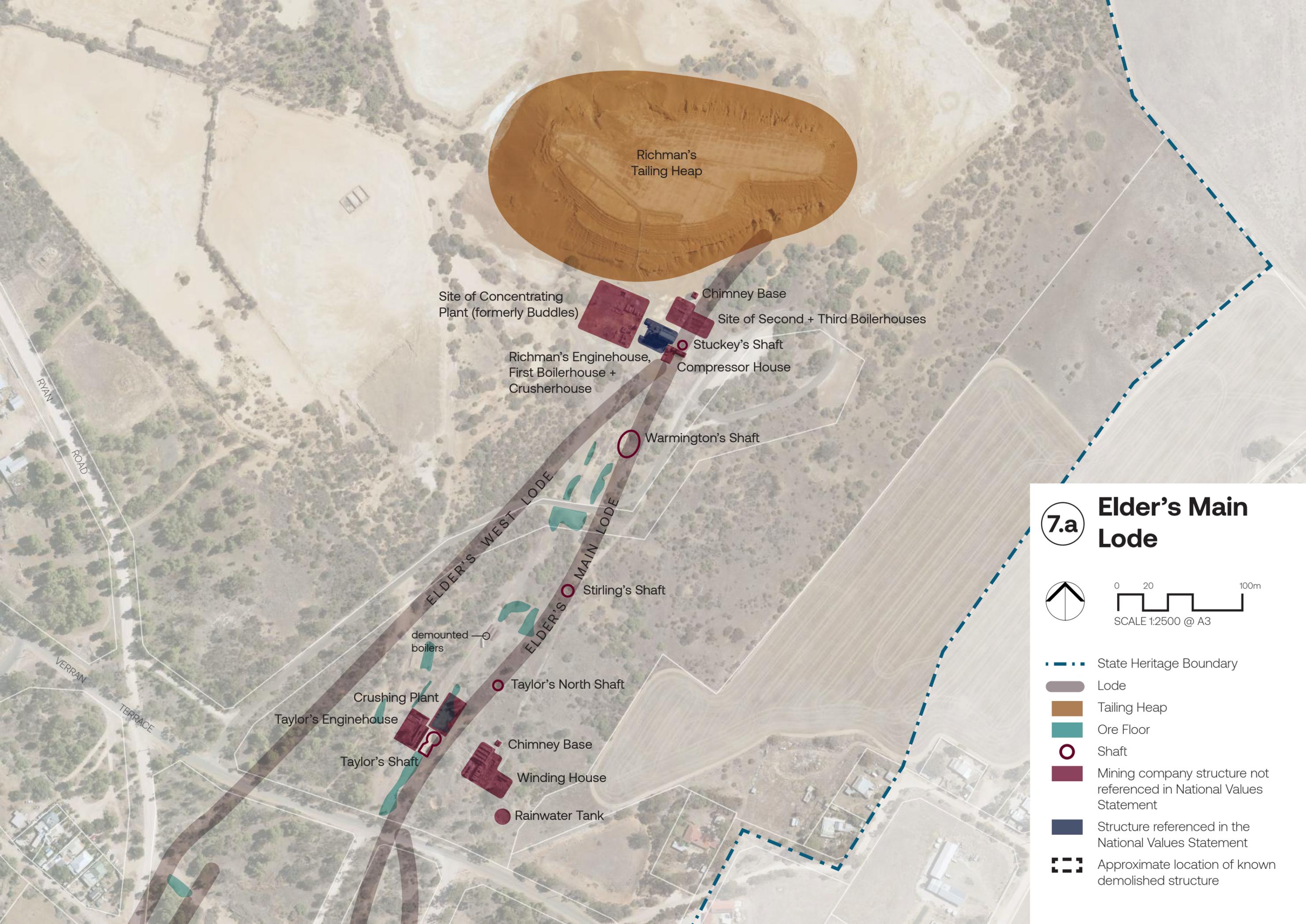


7

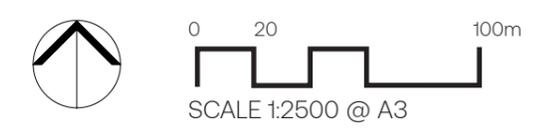
Elder's Main Lode Key



0 50 250m
SCALE 1:10000 @ A3



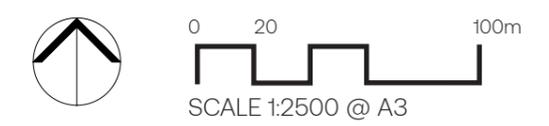
7.a Elder's Main Lode



- State Heritage Boundary
- Lode
- Tailing Heap
- Ore Floor
- Shaft
- Mining company structure not referenced in National Values Statement
- Structure referenced in the National Values Statement
- Approximate location of known demolished structure



7.b Elder's Main Lode



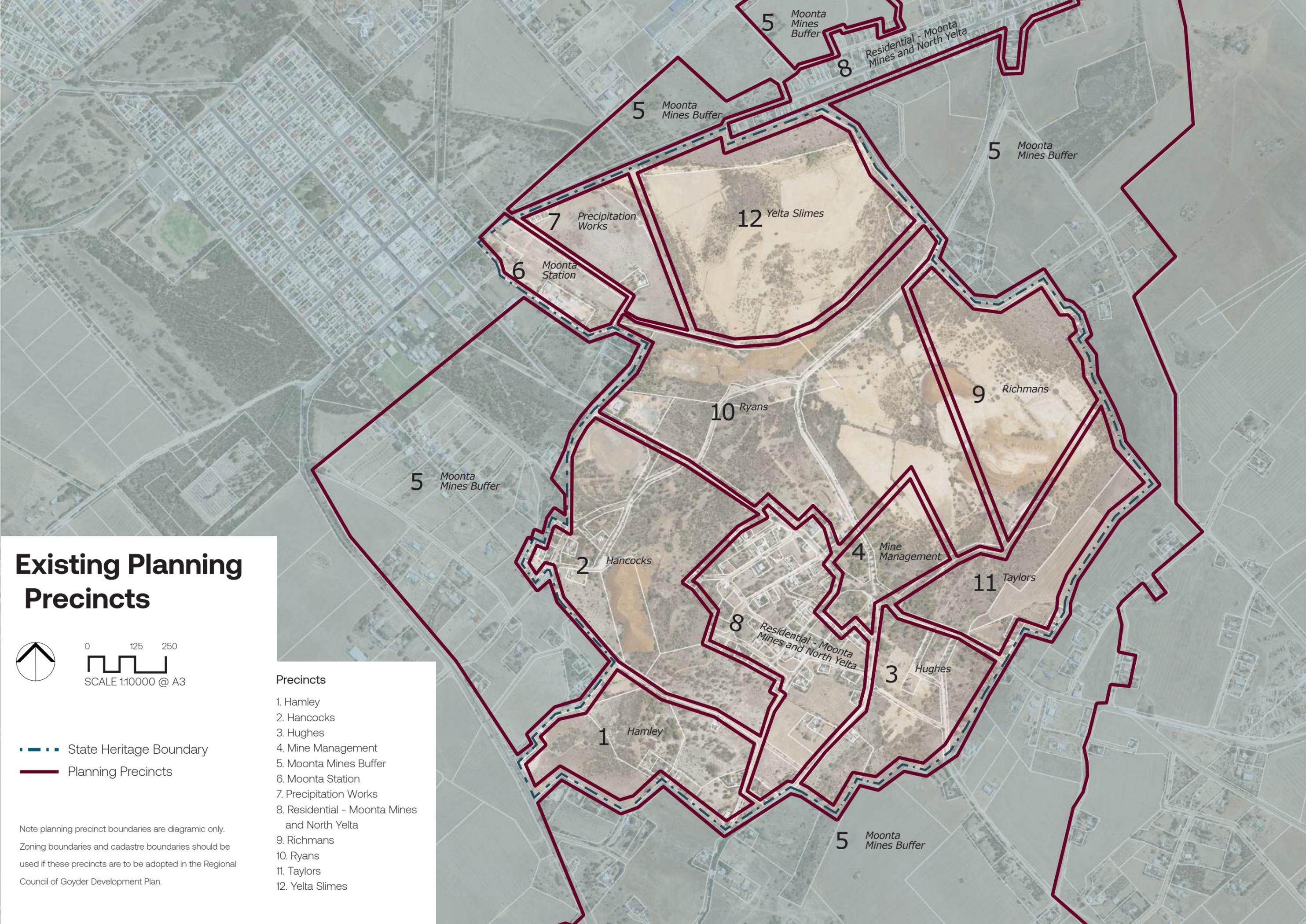
-  State Heritage Boundary
-  Lode
-  Ore Floor
-  Shaft
-  Mining company structure not referenced in National Values Statement
-  Structure referenced in the National Values Statement
-  Approximate location of known demolished structure



Zoning Plan



-  State Heritage Boundary
-  PrPro Primary Production
-  RuL Rural Living
-  HM Historic Mining
-  TCe Town Centre
-  In Industry
-  C Commercial
-  Cu Community
-  R Residential



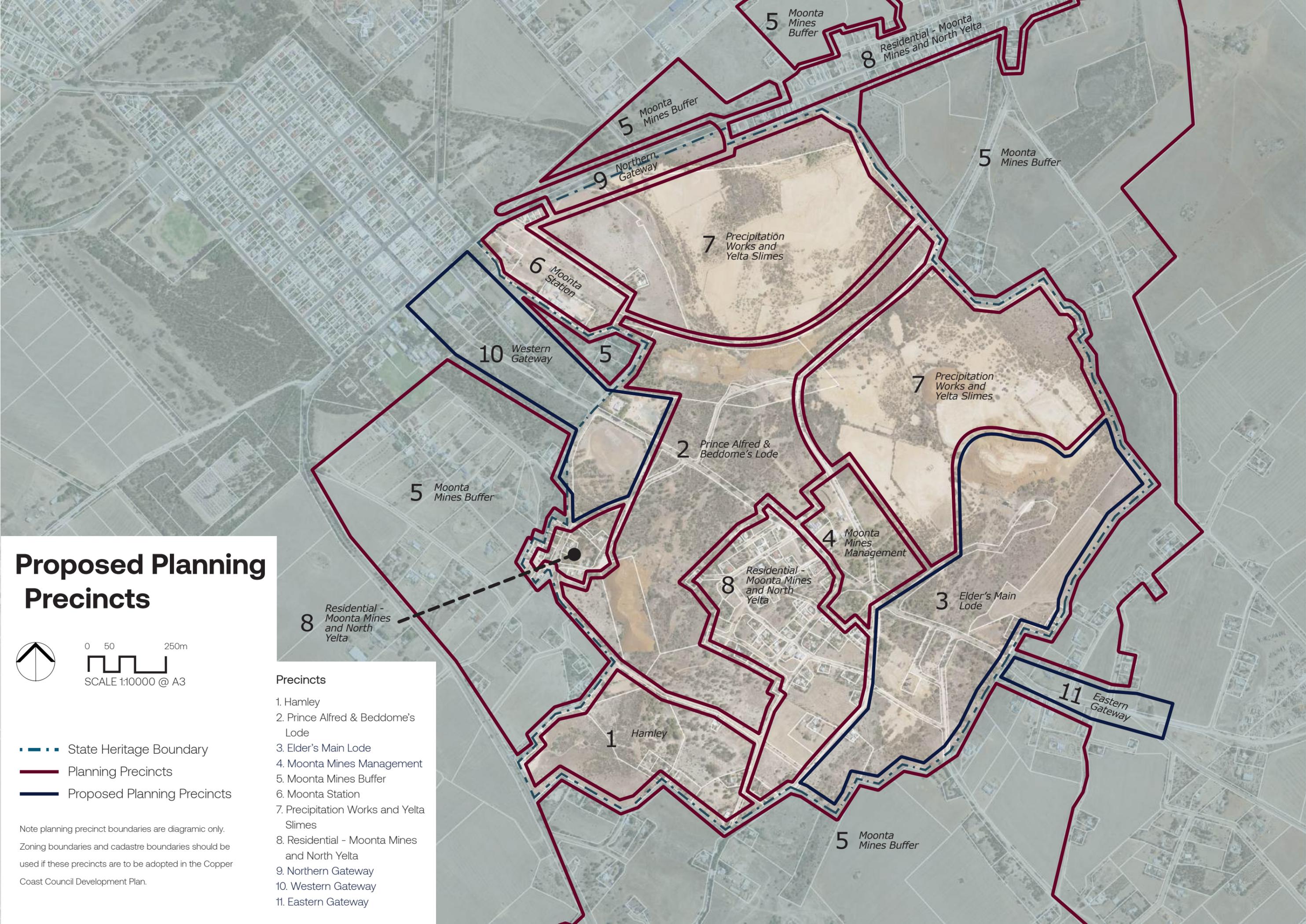
Existing Planning Precincts



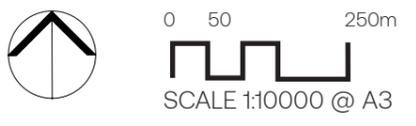
- - - State Heritage Boundary
- Planning Precincts

- Precincts**
1. Hamley
 2. Hancocks
 3. Hughes
 4. Mine Management
 5. Moonta Mines Buffer
 6. Moonta Station
 7. Precipitation Works
 8. Residential - Moonta Mines and North Yelta
 9. Richmans
 10. Ryans
 11. Taylors
 12. Yelta Slimes

Note planning precinct boundaries are diagramic only. Zoning boundaries and cadastre boundaries should be used if these precincts are to be adopted in the Regional Council of Goyder Development Plan.



Proposed Planning Precincts



- - - State Heritage Boundary
- Planning Precincts
- Proposed Planning Precincts

Note planning precinct boundaries are diagramic only. Zoning boundaries and cadastre boundaries should be used if these precincts are to be adopted in the Copper Coast Council Development Plan.

- Precincts**
1. Hamley
 2. Prince Alfred & Beddome's Lode
 3. Elder's Main Lode
 4. Moonta Mines Management
 5. Moonta Mines Buffer
 6. Moonta Station
 7. Precipitation Works and Yelta Slimes
 8. Residential - Moonta Mines and North Yelta
 9. Northern Gateway
 10. Western Gateway
 11. Eastern Gateway

MOONTA TOWNSHIP

DISCONNECT

PHYSICAL SEPARATION

Elders Main Lode

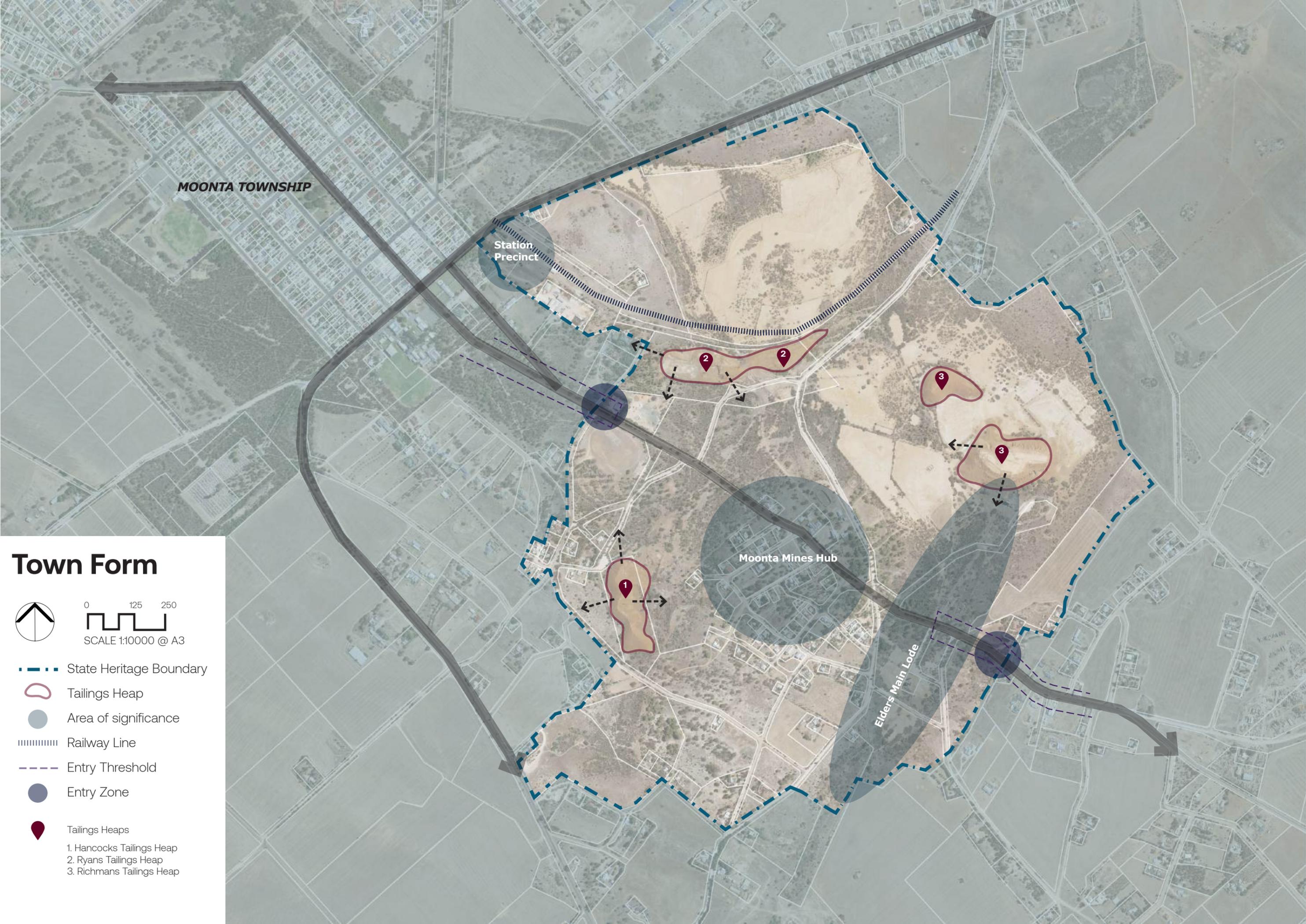
Analysis Plan



-  State Heritage Boundary
-  Tailings Heaps
-  Moonta Mines Entrance
-  Elders Main Lode
-  Main Road

-  **Points of Interest**
- A. Tourist Office/Visitor Centre
 - B. National Trust Museum (former school)

-  1. Road through the Moonta Mines heritage site presents a barrier/safety concern and disconnects the heritage places
-  2. The tailings heaps are visually prominent in the landscape and could have stronger interpretive purpose in the future
-  3. Entrances into the Moonta Mines heritage site are insignificant and do not reflect the importance of the place
-  4. The significance of Elders Main Lode and the heritage places along it could be better highlighted and showcased
-  5. The physical disconnect and lack of coordination between the railway station (visitors centre) and the Museum (former school) needs consideration and improvement
-  6. The separate but rich number of heritage places in the core of the Moonta Mines heritage site require consistent interpretation and conservation works as the centrepiece of Cornish mining interpretation
-  7. The road to Richmans Enginehouse traverses Elders Line of Lode and is intrusive to many Cornish mining archeological ruins (such as ore floors and mine shafts)
-  8. The physical separation of the Township to Moonta Mines allows for the Mines to have a separate identity to the Township but is problematic for movement between the two



MOONTA TOWNSHIP

Station
Precinct

Moonta Mines Hub

Elders Main Lode

2

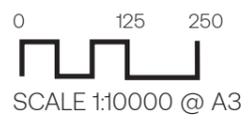
2

3

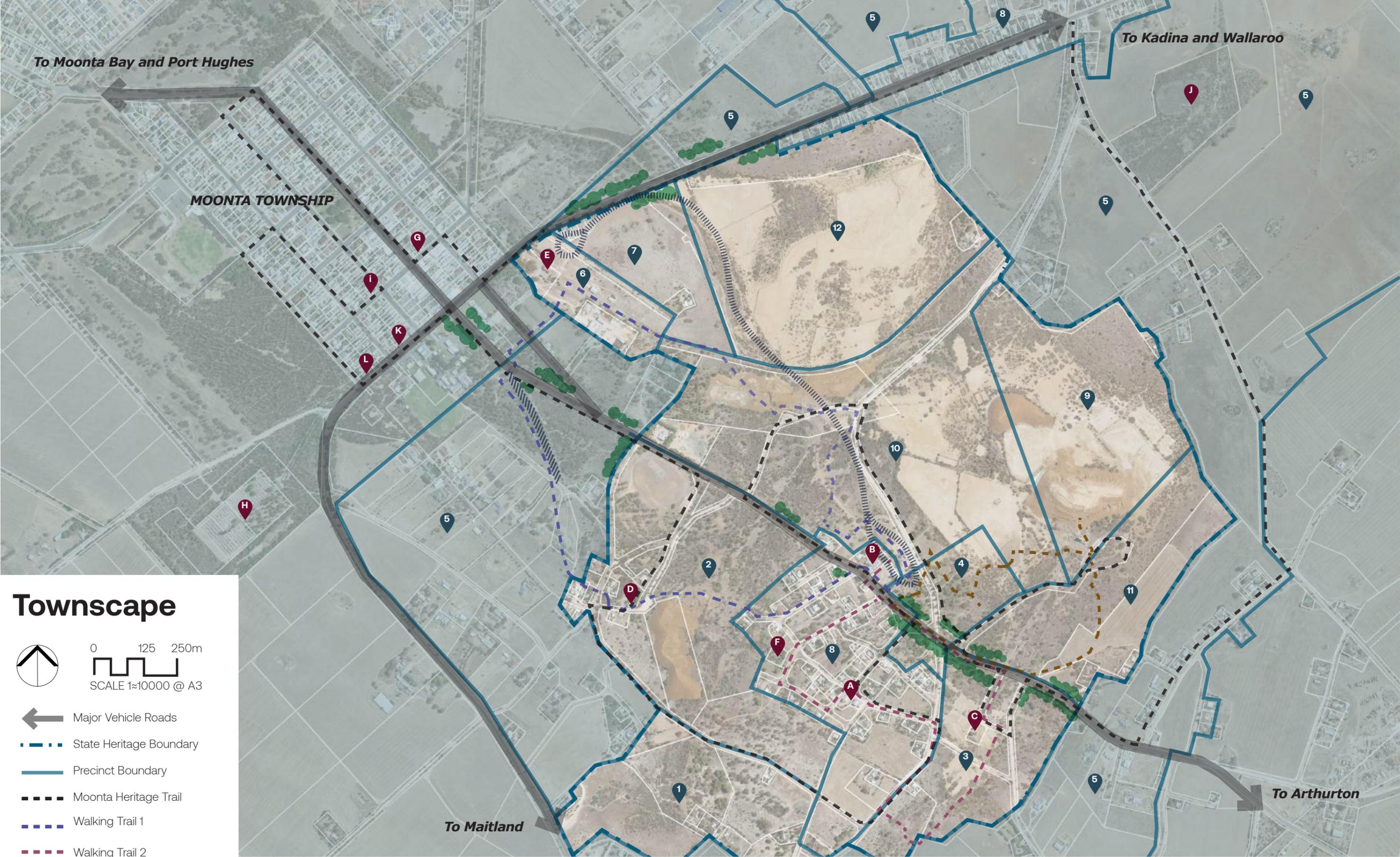
3

1

Town Form



- State Heritage Boundary
- Tailings Heap
- Area of significance
- Railway Line
- Entry Threshold
- Entry Zone
- Tailings Heaps
 - 1. Hancocks Tailings Heap
 - 2. Ryans Tailings Heap
 - 3. Richmans Tailings Heap



Townscape



- Major Vehicle Roads
- State Heritage Boundary
- Precinct Boundary
- Moonta Heritage Trail
- Walking Trail 1
- Walking Trail 2
- Walking Trail 3
- Tourist Railway
- Old Tram Line
- Important Tree Groupings

- Copper Coast Development Plan Precincts**
- | | | |
|------------------------|---|------------------|
| 1. Hamley | 6. Moonta Station | 10. Ryans |
| 2. Hancocks | 7. Precipitation Works | 11. Taylors |
| 3. Hughes | 8. Residential-Moonta Mines and North Yelta | 12. Yelta Slimes |
| 4. Mine Management | 9. Richmans | |
| 5. Moonta Mines Buffer | | |

- State Heritage Listed Places**
- | | | |
|--|--|--|
| A. Moonta Mines Uniting Church, including fence and Sunday School Building | D. Miner's Cotage and fence of SA Moonta Branch, later Union Branch) | I. Former Moonta School of Mines and fence |
| B. National Trust Museum (former school) | E. Moonta Tourist Office | J. Yelta Smelter (Ruin) |
| C. Former Hughes Pump House and Chimney | F. Moonta Mines Model Sunday School Site | K. Masonic Hall |
| G. Dwelling (former Bank | H. Moonta Cemetery, including walls, gate and waiting room | L. All Saints Anglican Church |

Bibliography

Archival Sources

Heritage South Australia

Heritage SA research packets: 10135R, 10187R, 11732R, 13110R, 13975R.

State Library of SA (SLSA)

Photographs

B 8126

B 9207

B 10510, B 10513, B 10514

B12243, B 12570, B 12587, B 12588, B 12593, B 12595, B

12602, B 12603, B 12604, B 12609, B 12612, B 12616, B

12652, B 12755 B 12756, B 12759, B 12761, B 12762

B 21313, B 23893, B 24093, B 24094, B 24096, B 25648,

B 26969

B 30343, B 30595, B 30597, B 33882, B 34838, B

34846, B 34851, B 34852, B 34857, B 34860, B 34860,

B 34862, B 34863, B 35676, B 36081

B 45889, B 48281

B 56065, B 58893, B 58894, B 5905/1

B 72434/2

PRG 280/1/44/293

PRG 1185/7/1

Maps

C754, C755, C881, Map N1900 - BRG 40/16/21.

Newspaper Articles

"A Model Railway Station", *Yorke's Peninsula Advertiser*, 9 April 1909, p3.

"Aboriginal Miners", *South Australian Register*, 20 May 1869, p3.

Adelaide Observer, 5 December 1874.

"Advertising", *The Wallaroo Times and Mining Journal*, 10 January 1866, p1.

"Council of Education", *Adelaide Observer*, 19 May 1877, p10.

"Demolition at Wallaroo Mines", *Observer*, 12 November 1927, p31.

"Earth Tremors at Moonta", *The Advertiser*, 21 June 1952, p9.

"Early Moonta, Native Miners: Mr. S. Paynter Looks Back", *Mail*, 10 September 1927 p15.

"Events of the Month", *The Wallaroo Times and Mining Journal*, 23 August 1865, p6.

"Events of the Month [Corroboree]", *Wallaroo Times and Mining Journal*, 27 February 1869, p3.

"Events of the Month", *Wallaroo Times and Mining Journal*, 26 March 1870, p4.

"His Excellency's Visit to Yorke's Peninsula", *Evening Journal*, 11 July 1870, p2.

"Historic Engine", *Recorder*, 27 March 1953, p4.

"Mining", *Wallaroo Times and Mining Journal*, 21 May 1870, p4.

"Mining Intelligence", *South Australian Weekly Chronicle*, 29 June 1861, p2.

"Moonta", *The Wallaroo Times and Mining Journal*, 26 August 1865, p3.

"Moonta", *South Australian Weekly Chronicle*, 3 March 1866, p1.

"Moonta", *Wallaroo Times and Mining Journal*, 6 February 1869, p5.

"Moonta and Its Activities", *The Register*, 10 August 1926, p7.

"Moonta Mines Reservoir", *Yorke's Peninsula Advertiser and Miners' News*, 11 July 1873, p2.

"Moonta Mines Wesleyan Church", *Yorke's Peninsula Advertiser*, 17 December 1897, p2.

"New Wesleyan Chapel, Moonta Mines", *South Australian Chronicle*, 19 August 1865, p1.

"New Wesleyan Chapel Moonta Mines", *The Wallaroo Times and Mining Journal*, 9 December 1865, p5.

"Opening of the Moonta Railway", *South Australian Register*, 12 July 1866, p2.

"Provincial Telegrams", *South Australian Register*, 10 July 1878, p5.

Pryor, Oswald, "History of Moonta Cementation", *The People's Weekly*, 1943.

"Re-opening of the Moonta Mines Wesleyan Chapel", *The Wallaroo Times and Mining Journal*, 24 December 1872, p3.

South Australian Weekly Chronicle, 29 June 1861, p2.

"The Copper Metropolis: The Wallaroo Mines, Their Discovery and Growth", *The Advertiser*, 16 May 1899, p6.

"The Mining District of Yorke's Peninsula", *South Australian Register*, 17 June 1873, p6.

"The Yorke's Peninsula Mission", *Wallaroo Times and Mining Journal*, 22 March 1871, p3.

"VII - Mining Affairs", *The South Australian Advertiser*, 23 May 1870, p4.

"Wallaroo and Moonta Mines", *Chronicle*, 26 July 1902, p33.

Wallaroo Times and Mining Journal, 2 March 1870, p2.

"Yorke's Peninsula Aboriginal Mission", *Wallaroo Times and Mining Journal*, 25 November 1871, p2.

Pamphlets

Narungga Aboriginal Progress Association, "Nharungga" brochure, undated.

Moonta on site heritage signage

"Assay Office", Moonta on site heritage signage

"Cementation works", Moonta on site heritage signage.

"Elders Enginehouse", Moonta on site heritage signage.

"Explosives Magazine", Moonta on site heritage signage.

"Goods Shed", Moonta on site heritage signage.

"Hughes Engine", Moonta on site heritage signage.

"Hughes Enginehouse", Moonta on site heritage plaque.

"Hughes Pump Engine and Chimney", Moonta on site heritage signage.

"Hughes Walk", Moonta on site heritage signage.

"Mechanical Workshop Site", Moonta on site heritage signage

"Moonta's Himalayas", Moonta on site heritage signage.

"Precipitation Tanks", Moonta on site heritage signage.

"Ryans Shaft and Enginehouse", Moonta on site heritage signage

"Ryans Walk", Moonta on site heritage signage.

"Sir Walter Watson Hughes, 1803-1887", Moonta on site heritage signage.

"Slimes", Moonta on site heritage signage.

"Sunday School", Moonta on site heritage signage.

"Tailings Heaps", Moonta on site heritage signage.

"Taylors Shaft", Moonta on site heritage signage.

"Tramway to Hamley Flat", Moonta on site heritage signage.

Conservation Plans and Reports

Australian Antarctic Division, Department of Sustainability, Environment, Water, Population and Communities, "Mawson's Huts Historic Site Management Plan 2013-2018", (Commonwealth of Australia 2013).

Bell, P. and McCarthy, J., Historical Research Pty Ltd, Austral Archaeology Pty Ltd, "Walleroo Smelters Site: Heritage Assessment: Report to Incitec Pivot Ltd", January 2008.

Bone & Tonkin Planners Pty Ltd in association with Danvers Architects, Applied Development Research Pty Ltd, "Moonta Wallaroo Mines Site & Item Identification Volume 1", (Department of Lands, Government of South Australia 1988).

Bone & Tonkin Planners Pty Ltd in association with Danvers Architects, Applied Development Research Pty Ltd, B.C. Tonkin & Associates, "Moonta Wallaroo Mines Planning Study Volume 2 and Management Plan Volume 3", (Department of Lands, Government of South Australia 1988).

"Cornwall and West Devon Mining Landscape World Heritage Site Management Plan 2013-2018", (Cornish Mining World Heritage, November 2012).

District Council of the Copper Coast, "Strategic Plan 2015 – 2025 – Moving Towards 2025", 2015.

Drew, G.J., "Notes on the Moonta-Walleroo Mining District", 2014.

Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012.

Flightpath Architects, "District Council of the Copper Coast Heritage Survey", August 2010.

Great Barrier Reef Marine Park Authority, "Dent Island Lightstation Heritage Management Plan" (Commonwealth of Australia 2013).

Jean Rice Architect, CONTEXT, GML Heritage, "Kingston and Arthur's Vale Historic Area Heritage Management Plan – Norfolk Island", (Commonwealth of Australia 2016).

Kerr, James S., "Fremantle Prison", (Fremantle: Department of Contract & Management Services for the Fremantle Prison Trust Advisory Committee, 1998).

Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994.

Locales Ltd, TRC Tourism Pty Ltd, "Moonta Mines Heritage Area – Site Development Plan and Business Case", June 2018

Lovell Chen, "Glenrowan Heritage Precinct Conservation and Landscape Management Plan", (Rural City of Wangaratta 2018).

Parallax Design, Evans + Ayers, "Precious Time – Copper Coast Economic Development & Marketing Plan", 2019.

State Heritage Branch, Department of Environment and Planning, "Moonta Mines State Heritage Area Draft Management Plan", (Department of Environment and Planning Government of South Australia 1985).

Swanbury Penglase Architects, "Australian Cornish Mining Sites: Burra, Conservation Management Plan", September 2019.

Sydney Harbour Federation Trust, "Cockatoo Island Management Plan" 2017, (Sydney Harbour Federation Trust 2017).

URPS, "Kapunda Historic Mine Site Conservation Management Plan", (Light Regional Council, September 2008).

Weidenhofer Architects, Historical Research Pty Ltd, Austral Archaeology, "Yorke Peninsula Heritage Survey", 1997.

Conference Proceedings and Journal Articles

Drew, Greg, "The Significance of the Australian Cornish Mining Heritage Site", *South Australian Engineering Heritage Conference: Transactions Proceedings*, 2014.

Keith Johns, R., "The Cornish at Burra, South Australia", *Journal of Australasian Mining History*, Volume 4, September 2006.

Payton, Philip, "1848 and all that", *Journal of the Historical Society of South Australia*, No. 42, 2014.

Sumerling, P., "Fraud- Walter Watson Hughes & the Moonta and Wallaroo Mines", *18th State History Conference*, 31 July – 2 August 2009.

"The Horse Tramways of the Moonta District", *Trolleywire: Journal of Australian Tramway Museums*, October 1980.

Books and Book Chapters

Auhl, Ian, *The Story of the 'Monster Mine': The Burra Burra Mine and Its Townships 1845-1877*, (Hawthorndene: Investigator Press Pty. Ltd., 1986).

Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012).

Drew, Greg J., *Discovering Historic Moonta: South Australia*, (Adelaide: District Council of the Copper Coast, 2019).

Heritage Office of New South Wales and the Department of Urban Affairs and Planning, *Heritage Curtilages*, (Sydney: The Department of Urban Affairs and Planning, c.1996).

Kerr, James S., *The Conservation Plan: a guide to the preparation of conservation plans for places of European cultural significance* (Sydney: National Trust of Australia (NSW), 1990).

Krichauff, Skye, *Nharangga Wargunni Bugi-Buggillu: A Journey through Narungga History*, (Adelaide: Wakefield Press, 2011).

Krichauff, Skye, "Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism", in Brock, Peggy, and Gara, Tom, *Colonialism and its aftermath: A history of Aboriginal South Australia*, (Adelaide: Wakefield Press, 2017), pp171-191.

Payton, Philip, *Making Moonta: The invention of Australia's Little Cornwall*, (Exeter: University of Exeter Press, 2007).

Pryor, Oswald, *Australia's Little Cornwall*, (Adelaide: Rigby Limited, 1962)

Scott, J.S. *The Penguin Dictionary of Building*, (London: Penguin, 1999).

Walker, Meredith, *Protecting the social value of public places* (Canberra: Australian Council of National Trusts, 1998).

Walker, Meredith and Marquis-Kyle, Peter, *The Illustrated Burra Charter: good practice for heritage places*, (Burwood: Australian ICOMOS, 2004).

The Aborigines and the Chinese in Australia, (Sydney: Joseph Cook and Co., Printers, 1868).

Online references

Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed 7 April 2020.

Australian Government, Geoscience Australia, <http://www.australianminesatlas.gov.au/history/index.html>, accessed 7 April 2020.

Australian Government, Inclusion of Two Places in the National Heritage List, Australian Cornish Mining Sites: Burra and Moonta, Government Gazette, 4 May 2017, <https://www.legislation.gov.au/Details/C2017G00516>, accessed 7 April 2020.

BBC Legacies, Cornwall: Immigration and Emigration, http://www.bbc.co.uk/legacies/immig_emig/england/cornwall/article_1.shtml, accessed 7 April 2020.

Britannica website, <https://www.britannica.com/biography/James-Watt>, accessed 7 April 2020.

Cooper, Barry, "Geologists and the Burra Copper Boom, South Australia, 1845-1851", History of Research In Mineral Resources, pp193-200, http://www.samininghistory.com/wp-content/uploads/2014/02/cooper2011_burracopperboom.pdf, accessed 7 April 2020.

Copper Coast council Development Plan, https://www.dpti.sa.gov.au/_data/assets/pdf_file/0010/249967/Copper_Coast_Council_Development_Plan.pdf accessed 7 April 2020.

Cornish Mining World Heritage Site website <https://www.cornwall.gov.uk/environment-and-planning/conservation/world-heritage-site/delving-deeper/the-spread-of-cornish-mining-around-the-globe/the-spread-to-other-world-regions/>, accessed 7 April 2020.

Cornwall Association of South Australian website, <http://www.cornishsa.org.au/>, accessed 7 April 2020.

Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 7 April 2020.

Department of Planning Transport and Infrastructure – Copper Coast Council Development Plan – Consolidated 23 May 2019 https://www.dpti.sa.gov.au/_data/assets/pdf_file/0010/249967/Copper_Coast_Council_Development_Plan.pdf, accessed 7 April 2020.

Department of the Environment, Water, Heritage and the Arts, "Working Together: Managing National Heritage Places", "Applying the Principles", 2008, <https://www.environment.gov.au/resource/working-together-managing-national-heritage-places>, accessed 7 April 2020.

Faull, Jim, 'Pryor, Oswald (1881–1971)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/pryor-oswald-8127/text14197>, accessed 7 April 2020.

Federal Register of Legislation – Australian Government website, <https://www.legislation.gov.au/Details/C2017G00516>, accessed 7 April 2020.
Gohman, Sean, "Cornish Periphery Analysis", Readings in the History of Technology, http://www.academia.edu/9097419/Cornish-Periphery_Analysis_Contextualizing_Invention_Innovation_and_the_Diffusion_of_Technological_Practice_in_the_Mid-Nineteenth_Century_Copper_Mining_Districts_of_South_Australia_and_Michigan, accessed 7 April 2020.

Heritage Information Series, "How to Carry Out Work on Heritage Buildings & Sites", <https://www.environment.nsw.gov.au/resources/heritagebranch/heritage/infocarryoutwork.pdf>, accessed 7 April 2020.

Heritage SA, Moonta State Heritage Area, website, https://www.environment.sa.gov.au/topics/heritage/state-heritage-areas/Moonta_Mines, accessed 7 April 2020.

Historical Cornwall website, <http://www.historic-cornwall.org.uk/flyingpast/age.html>, accessed 7 April 2020.

Kernewek Lowender Festival, <https://www.kernewek.org/index.php/2-uncategorised>, accessed 7 April 2020.

Mining in Cornwall, State Library of South Australia: <https://bound-for-south-australia.collections.slsa.sa.gov.au/Mining%20In%20Cornwall.htm>, accessed 7 April 2020.

Mining Legacy website, <https://www.mininglegacies.org/mines/nsw/>, accessed 7 April 2020.

"Moonta Mines Methodist Sunday School Album, 1913", National Library of Australia (NLA) PIC/15646/26 LOC Album 1175, accessed 7 April 2020.

Narungga Aboriginal Progress Association Inc: <https://www.acnc.gov.au/charity/41ee73ca532cf94ea3741931aefc3657#overview>, accessed 7 April 2020.

NSW Mining website, <http://www.nswmining.com.au/industry/nsw-mining-history>, accessed 7 April 2020.

Protected Matters Search tool, <http://www.environment.gov.au/epbc/protected-matters-search-tool> accessed 7 April 2020.

Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, accessed 7 April 2020.

State Library of SA (SLSA), <https://digital.collections.slsa.sa.gov.au/nodes/view/815> accessed 1 October 2018, accessed 7 April 2020.

State Library of SA (SLSA), "Place names of South Australia", <https://published.collections.slsa.sa.gov.au/placenamesofsouthaustralia/T.pdf>, accessed 7 April 2020.

SA Heritage Places Database, <http://maps.sa.gov.au/heritagesearch/HeritageSearchLocation.aspx> accessed 7 April 2020.

"South Australian – Legislation, Education Act 1875 (1875–1916)", <https://www.findandconnect.gov.au/ref/sa/biogs/SE01438b.htm>, accessed 7 April 2020.

South Australian Mining History website, <http://www.samininghistory.com/wp-content/uploads/2014/03/kapunda-mine-cmp.pdf>, accessed 7 April 2020.

Sumerling, P, Adelaidia "Sir Walter Watson Hughes" website, <http://adelaidia.sa.gov.au/people/sir-walter-watson-hughes>, accessed 7 April 2020.

The Manning Index of South Australian History, State Library of SA (SLSA), <http://www.slsa.sa.gov.au/manning/pn/m/moonta.htm>, accessed 7 April 2020.

UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 7 April 2020.

Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, accessed 7 April 2020.

Warrior et al, 2005:67 cited in Australian Government, Australian Heritage Database website, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;search=place_name%3Dmoonta%3Bkeyword_PD%3Don%3Bkeyword_SS%3Don%3Bkeyword_PH%3Don%3Blatitude_1dir%3DS%3Blongitude_1dir%3DE%3Blongitude_2dir%3DE%3Blatitude_2dir%3DS%3Bin_region%3Dpart;place_id=106096, accessed 7 April 2020.

Yorke Peninsula Council website, <https://yorke.sa.gov.au/discover/local-history-and-heritage/indigenous-culture/the-move-to-point-pearce/>, accessed 7 April 2020.

Images

All sourced images are referenced in relevant chapters of this Conservation Management Plan. All other imagery and photography is the property of Swanbury Penglase.

Endnotes

- 1 Welcome to Country & Acknowledgement of Country - Creative Spirits, retrieved from <https://www.creativespirits.info/aboriginalculture/spirituality/welcome-to-country-acknowledgement-of-country>
- 2 Drew, G.J., *Discovering Historic Moonta: South Australia*, p5.
- 3 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 4 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019. Pryor cited in Payton, Philip, *Making Moonta: The invention of Australia's Little Cornwall*, (Exeter: University of Exeter Press, 2007), p30.
- 5 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 6 Gohman, Sean, "Cornish Periphery Analysis", Readings in the History of Technology, http://www.academia.edu/9097419/Cornish-Periphery_Analysis_Contextualizing_Invention_Innovation_and_the_Diffusion_of_Technological_Practice_in_the_Mid-Nineteenth_Century_Copper_Mining_Districts_of_South_Australia_and_Michigan, accessed 1 October 2018, p9.
- 7 Mining in Cornwall, State Library of South Australia, <http://www.slsa.sa.gov.au/BSA/Mining%20In%20Cornwall.htm>, accessed 1 October 2018.
- 8 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 9 Mining in Cornwall, State Library of South Australia, <http://www.slsa.sa.gov.au/BSA/Mining%20In%20Cornwall.htm>, accessed 1 October 2018.
- 10 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 11 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 12 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 13 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 14 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 15 Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012), p14.
- 16 Cornish Mining WHS website, <https://www.cornwall.gov.uk/environment-and-planning/conservation/world-heritage-site/delving-deeper/inventions-and-technological-advances/early-mining-methods/>, accessed 27 February 2020.
- 17 Cornish Mining WHS website, <https://www.cornwall.gov.uk/environment-and-planning/conservation/world-heritage-site/delving-deeper/mining-processes/breaking-ore-underground/>, accessed 27 February 2020.
- 18 Cornish Mining WHS website, <https://www.cornwall.gov.uk/environment-and-planning/conservation/world-heritage-site/delving-deeper/mining-processes/breaking-ore-underground/>, accessed 27 February 2020.
- 19 Cornish Mining WHS website, <https://www.cornwall.gov.uk/environment-and-planning/conservation/world-heritage-site/delving-deeper/mining-processes/breaking-ore-underground/>, accessed 27 February 2020.
- 20 Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p14.
- 21 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 22 Historical Cornwall website, <http://www.historic-cornwall.org.uk/flyingpast/age.html>, accessed 1 October 2018.
- 23 Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p21.
- 24 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 25 Britannica website, <https://www.britannica.com/biography/James-Watt>, accessed 1 October 2018.
- 26 Auhl, Ian, *The Story of the 'Monster Mine': The Burra Burra Mine and Its Townships 1845-1877*, (Hawthorndene: Investigator Press Pty. Ltd., 1986), p195.
- 27 Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p61.
- 28 Historical Cornwall website, <http://www.historic-cornwall.org.uk/flyingpast/age.html>, accessed 1 October 2018.
- 29 Historical Cornwall website, <http://www.historic-cornwall.org.uk/flyingpast/age.html>, accessed 1 October 2018.
- 30 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 31 Drew, Greg, and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p14.
- 32 Payton, P., *Making Moonta: The invention of Australia's Little Cornwall*, p32.
- 33 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 34 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 35 Todd cited in Gohman, Sean, "Cornish Periphery Analysis", p10.

- 36 BBC Legacies, Cornwall: Immigration and Emigration, http://www.bbc.co.uk/legacies/immig_emig/england/cornwall/article_1.shtml, accessed online 15 November 2019.
- 37 Cornwall Heritage Trust website, <http://www.cornwallheritagetrust.org/discover/industry-in-cornwall/>, accessed 1 October 2018.
- 38 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 39 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 40 UNESCO World Heritage List website, <https://whc.unesco.org/en/list/1215/>, accessed 1 October 2018.
- 41 NSW Mining website, <http://www.nswmining.com.au/industry/nsw-mining-history>, accessed 27 February 2020.
- 42 Mining Legacy website, <https://www.mininglegacies.org/mines/nsw/>, accessed 27 February 2020.
- 43 Auhl, Ian, The Story of the ‘Monster Mine’: The Burra Burra Mine and Its Townships 1845-1877, p3.
- 44 Auhl, Ian, The Story of the ‘Monster Mine’: The Burra Burra Mine and Its Townships 1845-1877, p13.
- 45 South Australian Mining History website, <http://www.samininghistory.com/wp-content/uploads/2014/03/kapunda-mine-cmp.pdf>, accessed 1 October 2018.
- 46 Cooper, Barry, “Geologists and the Burra Copper Boom, South Australia, 1845-1851”, History of Research In Mineral Resources, pp193-200, http://www.samininghistory.com/wp-content/uploads/2014/02/cooper2011_burracopperboom.pdf, accessed 1 October 2018, p196.
- 47 Australian Government, Geoscience Australia, <http://www.australianminesatlas.gov.au/history/index.html>, accessed 27 February 2020.
- 48 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 49 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 50 The Manning Index of South Australian History, State Library of SA, <http://www.slsa.sa.gov.au/manning/pn/m/moonta.htm>, accessed online 28 October 2019.
- 51 Australian Government, Australian Heritage Database website, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106304, accessed 1 October 2018.
- 52 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p171.
- 53 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p189.
- 54 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p172.
- 55 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p172.
- 56 South Australian Government Gazette, 1846-1847 cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p177.
- 57 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p177.
- 58 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 59 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 60 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 61 “Moonta Mines State Heritage Area Draft Management Plan”, State Heritage Branch, Department of Environment and Planning, 1985, p3.
- 62 Van Dissel, Dirk, ‘Hughes, Sir Walter Watson (1803-1887)’, Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.

- 63 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 64 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 65 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p11.
- 66 "Sir Walter Watson Hughes, 1803-1887", Moonta on site heritage signage.
- 67 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 68 Sumerling, P., Adelaideia "Sir Walter Watson Hughes" website, <http://adelaideia.sa.gov.au/people/sir-walter-watson-hughes>, accessed 27 February 2020.
- 69 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 70 Sumerling, P., Adelaideia "Sir Walter Watson Hughes" website, <http://adelaideia.sa.gov.au/people/sir-walter-watson-hughes>, accessed 27 February 2020.
- 71 Van Dissel, Dirk, 'Hughes, Sir Walter Watson (1803–1887)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hughes-sir-walter-watson-3813/text6051>, published first in hardcopy 1972, accessed online 28 October 2019.
- 72 Drew, Greg J., *Discovering Historic Moonta: South Australia*, (Adelaide: District Council of the Copper Coast, 2019), p4.
Drew, Greg J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012). This Historical Outline is based on the above reference unless otherwise noted.
- 73 *South Australian Weekly Chronicle*, 29 June 1861, p2.
- 74 Sumerling, P., Adelaideia "Sir Walter Watson Hughes" website, <http://adelaideia.sa.gov.au/people/sir-walter-watson-hughes>, accessed 27 February 2020.
Sumerling, P., "Fraud- Walter Watson Hughes & the Moonta and Wallaroo Mines", 18th State History Conference, 31 July – 2 August 2009.
- 75 Drew, G.J., *Discovering Historic Moonta: South Australia*, p4.
- 76 Drew, G.J., *Discovering Historic Moonta: South Australia*, p4.
- 77 Sumerling, P., Adelaideia "Sir Walter Watson Hughes" website, <http://adelaideia.sa.gov.au/people/sir-walter-watson-hughes>, accessed 27 February 2020.
- 78 Drew, G.J., *Discovering Historic Moonta: South Australia*, p4.
- 79 State Library of South Australia, "Place names of South Australia", <https://published.collections.slsa.sa.gov.au/placenamesofsouthaustralia/T.pdf> accessed online 16 December 2019.
- 80 "Mining Intelligence", *South Australian Weekly Chronicle*, 29 June 1861, p2.
- 81 Drew, G.J., *Discovering Historic Moonta: South Australia*, p4.
- 82 Drew, Greg J., *Discovering Historic Moonta: South Australia*, (Adelaide: District Council of the Copper Coast, 2019)
- 83 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 84 Krichauff, Skye, "Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism", in Brock, Peggy, and Gara, Tom, *Colonialism and its aftermath: A history of Aboriginal South Australia*, (Adelaide: Wakefield Press, 2017), p172.
- 85 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 86 Kadina Correspondent 1866 cited in Krichauff, S., *Nharangga Wargunni Bugi-Buggillu: A Journey through Narungga History*, (Adelaide: Wakefield Press, 2011), p.136.
- 87 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 88 Krichauff, Skye, "Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism", in Brock, Peggy, and Gara, Tom, *Colonialism and its aftermath: A history of Aboriginal South Australia*, (Adelaide: Wakefield Press, 2017), p184.
- 89 Interview with J.J. Duncan 1907 cited in Krichauff, S., *Nharangga Wargunni Bugi-Buggillu: A Journey through Narungga History*, (Adelaide: Wakefield Press, 2011), p.136.
- 90 "Moonta", *Wallaroo Times and Mining Journal*, 6 February 1869, p5.
- 91 "Aboriginal Miners", *South Australian Register*, 20 May 1869, p3.
- 92 "Mining", *Wallaroo Times and Mining Journal*, 21 May 1870, p4.

- 93 “The Mining District of Yorkes’ Peninsula”, South Australian Register, 17 June 1873, p6.
- 94 “Early Moonta, Native Miners: Mr. S. Paynter Looks Back”, Mail, 10 September 1927 p15.
- 95 “The Yorke’s Peninsula Mission”, Wallaroo Times and Mining Journal, 22 March 1871, p3.
- 96 “Events of the Month”, Wallaroo Times and Mining Journal, 26 March 1870, p4.
- 97 “Events of the Month”, Wallaroo Times and Mining Journal, 26 March 1870, p4.
- 98 Krichauff, S., Nharangga Wargunni Bugi-Buggillu: A Journey through Narungga History, (Adelaide: Wakefield Press, 2011), p.130.
- “Events of the Month [Corroboree]”, Wallaroo Times and Mining Journal, 27 February 1869, p3.
- 99 “Events of the Month”, Wallaroo Times and Mining Journal, 27 February 1869, p3.
- 100 “Events of the Month”, Wallaroo Times and Mining Journal, 27 February 1869, p3.
- 101 “Events of the Month”, Wallaroo Times and Mining Journal, 27 February 1869, p3.
- 102 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p184.
- 103 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), pp184-185.
- 104 Register, 10 January 1866, p2, cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p185.
- 105 Register, 27 February 1866, p2 cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), pp185-186.
- 106 Kuhn 1866, and Gillen, undated, cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p186.
- 107 Krichauff, S., Nharangga Wargunni Bugi-Buggillu: A Journey through Narungga History, (Adelaide: Wakefield Press, 2011), p.130.
- 108 The Aborigines and the Chinese in Australia, (Sydney: Joseph Cook and Co., Printers, 1868), p18.
- 109 Yorke Peninsula Council website, <https://yorke.sa.gov.au/discover/local-history-and-heritage/indigenous-culture/the-move-to-point-pearce/>, accessed 27 February 2020.
- 110 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p187.
- 111 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p190.
- 112 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p190.
- 113 Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p186.
- 114 South Australia Land Grant dated 26 September 1968.
- 115 I. Anderson as told by Mr Uren cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), pp190-191.
- 116 Register of Indigenous Land Use Agreements Details, and Register of Native Title Claims, cited in Krichauff, Skye, “Yorke Peninsula: Rethinking Narungga responses to Europeans and colonialism”, in Brock, Peggy, and Gara, Tom, Colonialism and its aftermath: A history of Aboriginal South Australia, (Adelaide: Wakefield Press, 2017), p189.
- 117 Pryor, Oswald, ‘Hancock, Henry Richard (1836–1919)’, Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 118 Payton, P., Making Moonta: The invention of Australia’s Little Cornwall, p69.
- 119 Payton, P., Making Moonta: The invention of Australia’s Little Cornwall, p71.
- 120 Drew, G.J., Discovering Historic Moonta: South Australia, p5.
- 121 Drew, G.J., Discovering Historic Moonta: South Australia, p5.
- 122 Bell, P. and McCarthy, J. et al, “Walleroo Smelters Site: Heritage Assessment”, January 2008, p1.

- 123 Payton cited in Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 124 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 125 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 126 Drew, G.J., "Notes on the Moonta-Wallaroo Mining District", 2014, p8.
- 127 Hancock designed a pneumatic drill. Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p82. Oswald Pryor though notes that "just before 1890, he designed and patented one that was driven by compressed air". Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), p53.
- 128 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 129 Drew, G.J., Discovering Historic Moonta: South Australia, p5.
- 130 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p 67.
- 131 The Wallaroo and Moonta Mines pamphlet cited in Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p86.
- 132 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 133 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 134 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 135 "Yorke Peninsula Aboriginal Mission", Wallaroo Times and Mining Journal, 25 November 1871, p2.
- 136 Australian Government, Australian Heritage Database website, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106304, accessed 1 October 2019.
- 137 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p32.
- 138 Blainey cited in Australian Heritage Database website, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106304, accessed online 1 October 2019.
- 139 Drew, Greg, and Connell, J.E., Cornish Beam Engines in South Australian Mines, p18.
- 140 Australian Heritage Database website, http://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106304, accessed online 1 October 2019.
- 141 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p74.
- 142 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p74.
- 143 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p74.
- 144 Payton, Philip, "1848 and all that", Journal of the Historical Society of South Australia, No 42, 2014, p18.
- 145 Payton, Philip, "1848 and all that", Journal of the Historical Society of South Australia, No 42, 2014, p18.
- 146 BBC Legacies, Cornwall: Immigration and Emigration, http://www.bbc.co.uk/legacies/immig_emig/england/cornwall/article_1.shtml, accessed online 15 November 2019.
- 147 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p96.
- 148 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p52.
- 149 Kernewek Lowender Festival, <https://www.kernewek.org/index.php/2-uncategorised>, accessed online 14 November 2019.
- 150 Drew, Greg, "The Significance of the Australian Cornish Mining Heritage Site", 2014 South Australian Engineering Heritage Conference: Transactions, p2.
- 151 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 152 Drew, Greg, "The Significance of the Australian Cornish Mining Heritage Site", 2014 South Australian Engineering Heritage Conference: Transactions, p5.
- 153 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 154 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, pp124-125.
- 155 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p126.
- 156 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p128.
- 157 Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), p58.

- 158 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p145.
- 159 Australian Government, *Inclusion of Two Places in the National Heritage List, Australian Cornish Mining Sites: Burra and Moonta*, Government Gazette, 4 May 2017, <https://www.legislation.gov.au/Details/C2017G00516>, accessed online 29 October 2019.
- 160 Moonta on site heritage signage.
- 161 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p18. Flightpath claim Elder's Shaft was the first to be sunk. Pryor, Oswald, *Australia's Little Cornwall*, (Adelaide: Rigby Limited, 1962), p32.
- 162 Drew, G.J., *Discovering Historic Moonta: South Australia*, p31.
- 163 "Ryans Shaft and Enginehouse", Moonta on site heritage signage.
- 164 Drew, G.J., *Discovering Historic Moonta: South Australia*, p31.
- 165 Drew, G.J., *Discovering Historic Moonta: South Australia*, p24.
- 166 Drew, G.J., *Discovering Historic Moonta: South Australia*, p31.
- 167 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p18.
- 168 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p15.
- 169 "Elders Enginehouse", Moonta on site heritage signage.
- 170 "Elders Enginehouse", Moonta on site heritage signage.
- 171 "Elders Enginehouse", Moonta on site heritage signage.
- 172 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p42.
- 173 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p42.
- 174 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p43.
- 175 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012), p67.
- 176 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012), pp66-67.
- 177 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012),
- 178 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, (Adelaide: Government of South Australia, 2012), p145.
- 179 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p147.
- 180 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p46.
- 181 *Adelaide Observer*, 9 September 1865, cited in Drew, G.J., *Cornish Beam Engines in South Australian Mines*, p147.
- 182 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, pp20,23.
- 183 Drew, G.J., *Discovering Historic Moonta: South Australia*, p38.
- 184 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p145.
- 185 Drew, G.J., *Discovering Historic Moonta: South Australia*, p5.
- 186 Payton, P., *Making Moonta: The invention of Australia's Little Cornwall*, p12.
- 187 "The Copper Metropolis", *Chronicle*, 3 June 1899, p19.
- 188 Drew, G.J., *Discovering Historic Moonta: South Australia*, p26.
- 189 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p155.
- 190 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p155.
- 191 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p155.
- 192 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p157.
- 193 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p157.
- 194 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p162.
- 195 Moonta on site heritage signage.
- 196 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p163.
- 197 Drew, G.J., *Discovering Historic Moonta: South Australia*, p26.
- 198 Drew, G.J., *Discovering Historic Moonta: South Australia*, p32.
- 199 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p29.
- 200 Drew, G.J., *Discovering Historic Moonta: South Australia*, p32.
- 201 Drew, G.J., *Discovering Historic Moonta: South Australia*, p38.
- 202 "Mechanical Workshop Site" on site heritage signage.
- 203 Moonta on site heritage signage.
- 204 Drew, G.J., *Discovering Historic Moonta: South Australia*, p33.
- 205 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', *Australian Dictionary of Biography*, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 206 "Assay Office", Moonta on site heritage signage.
- 207 Notes by Oswald Pryor on photograph SLSA B 12604.
- 208 SLSA B 12604.

- 209 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 210 Pryor, 1962, cited in Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 211 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p134.
- 212 Drew, G.J., Discovering Historic Moonta: South Australia, pp12-13.
- 213 "Mining Intelligence", Evening Journal, 23 March 1874, p3.
- 214 "VII – Mining Affairs", The South Australian Advertiser, 23 May 1870, p4.
- 215 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, pp89–90.
- 216 Drew, G.J., Discovering Historic Moonta: South Australia, p12.
- 217 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p4.
- 218 Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), p71.
- 219 Trollope cited in Payton, Philip, Making Moonta: The invention of Australia's Little Cornwall, (Exeter: University of Exeter Press, 2007), p135.
- 220 Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), p65.
- 221 Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), pp65–66.
- 222 Payton, Philip, Making Moonta: The invention of Australia's Little Cornwall, (Exeter: University of Exeter Press, 2007), pp134-135.
- 223 Donald Dunstan cited in Payton, Philip, Making Moonta: The invention of Australia's Little Cornwall, (Exeter: University of Exeter Press, 2007), p202.
- 224 Wallaroo Times and Mining Journal, 2 March 1870, p2.
- 225 Wallaroo Times and Mining Journal, 2 March 1870, p2.
- 226 "His Excellency's Visit to Yorke's Peninsula", Evening Journal, 11 July 1870, p2.
- 227 "His Excellency's Visit to Yorke's Peninsula", Evening Journal, 11 July 1870, p2.
- 228 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p4.
- 229 Heritage SA, Research Packet 10135R.
- 230 Heritage SA, Research Packet 10135R.
- 231 Drew, G.J., Discovering Historic Moonta: South Australia, p24.
- 232 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p3.
- 233 Pryor cited in Payton, Philip, Making Moonta: The invention of Australia's Little Cornwall, (Exeter: University of Exeter Press, 2007), p10.
- 234 Drew, G.J., Discovering Historic Moonta: South Australia, p13.
- 235 Payton, Philip, Making Moonta: The invention of Australia's Little Cornwall, (Exeter: University of Exeter Press, 2007), pp155-156.
- 236 Luker cited in Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p155.
- 237 Hunt cited in Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p157.
- 238 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 239 Drew, G.J., Discovering Historic Moonta: South Australia, pp12-13.
- 240 "New Wesleyan Chapel, Moonta Mines", South Australian Chronicle, 19 August 1865, p1.
- 241 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p63.
- 242 "New Wesleyan Chapel Moonta Mines", The Wallaroo Times and Mining Journal, 9 December 1865, p5.
- 243 "Moonta", The Wallaroo Times and Mining Journal, 26 August 1865, p3.
- 244 Weidenhofer et al, "Yorke Peninsula Heritage Survey", 1997, p32.
- 245 Parkes and McCarthy cited in Heritage SA, Research Packet 13110.
- 246 "Sunday School", Moonta on site heritage signage.
- 247 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p156.
- 248 Heritage SA, Research Packet 10187R.
- 249 Heritage SA, Research Packet 10187R.
- 250 Payton, P., The Cornish Farmer in Australia, (Great Britain: Dyllansow Truran, 1987), p66.
- 251 Payton, P., The Cornish Farmer in Australia, (Great Britain: Dyllansow Truran, 1987), p69.
- 252 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p4.
- 253 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 254 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 255 Drew, G.J., "Notes on the Moonta-Wallaroo District", 2014, p23.
- 256 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 257 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 258 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p149.
- 259 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p157.
- 260 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p163.

- 261 Drew, G.J., Discovering Historic Moonta: South Australia, p12.
- 262 Drew, G.J., Discovering Historic Moonta: South Australia, p13.
- 263 "Moonta Mines", 1899 cited in Drew, G.J., Discovering Historic Moonta: South Australia, p69.
- 264 Drew, G.J., Discovering Historic Moonta: South Australia, p5.
- 265 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p27.
- 266 Drew, G.J., Discovering Historic Moonta: South Australia, p5.
- 267 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p5.
- 268 Drew, G.J., Discovering Historic Moonta: South Australia, p6.
- 269 "Moonta's Himalayas", Moonta on site heritage signage.
- 270 "Walleroo and Moonta Mines", Chronicle, 26 July 1902, p33.
- 271 "Moonta's Himalayas", Moonta on site heritage signage.
- 272 Drew, G.J., Discovering Historic Moonta: South Australia, p44.
- 273 Pryor, Oswald, "History of Moonta Cementation", The People's Weekly, 1943.
- 274 "Slimes", Moonta on site heritage signage.
- 275 Drew, G.J., Discovering Historic Moonta: South Australia, p44.
- 276 Drew, G.J., Discovering Historic Moonta: South Australia, p6.
- 277 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p145.
- 278 Drew, G.J., Discovering Historic Moonta: South Australia, p6.
- 279 Drew, G.J., Discovering Historic Moonta: South Australia, p6.
- 280 Graham Jenkin 1989 cited in Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p205.
- 281 "Moonta and Its Activities", The Register, 10 August 1926, p7.
- 282 "Demolition at Wallaroo Mines", Observer, 12 November 1927, p31.
- 283 "Earth Tremors at Moonta", The Advertiser, 21 June 1952, p9.
- 284 "Historic Engine", Recorder, 27 March 1953, p4.
- 285 Faulk, Jim, 'Pryor, Oswald (1881-1971)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/pryor-oswald-8127/text14197>, published first in hardcopy 1988, accessed online 14 November 2019.
- 286 Pryor, Oswald, Australia's Little Cornwall, (Adelaide: Rigby Limited, 1962), p190.
- 287 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p225.
- 288 "Moonta Mines State Heritage Area Draft Management Plan", State Heritage Branch, Department of Environment and Planning, 1985, p5.
- 289 Heritage SA, Moonta Mines State Heritage Area, https://www.environment.sa.gov.au/topics/heritage/state-heritage-areas/Moonta_Mines, accessed online 14 November 2019.
- 290 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 291 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p227.
- 292 Goyder's Line is a line that runs roughly east-west across South Australia demarks those areas north of the line usually too low to support cropping, with the land being only suitable for grazing.
- 293 <https://www.soilscienceaustralia.org.au/branches/south-australia/>
- 294 Department of Lands Moonta Wallaroo Mines planning study management plan. Department of Lands South Australia, 1988
- 295 Department of Lands Moonta Wallaroo Mines planning study management plan. Department of Lands South Australia, 1988
- 296 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p4.
- 297 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, pp4-5.
- 298 "Opening of the Moonta Railway", South Australian Register, 12 July 1866, p2.
- 299 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, pp4-5.
- 300 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p5.
- 301 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p5.
- 302 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p6.
- 303 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p6.
- 304 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p6.
- 305 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p6.
- 306 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p8.
- 307 "Goods Shed", Moonta on site heritage signage.
- 308 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p8.
- 309 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p8.

- 310 "Ryans Walk", Moonta on site heritage signage.
- 311 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p8.
- 312 Heritage SA Research packet no:10187.
- 313 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p12.
- 314 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p9.
- 315 "A Model Railway Station", Yorke's Peninsula Advertiser, 9 April 1909, p3.
- 316 Heritage SA, Research Packet 10187R.
- 317 "A Model Railway Station", Yorke's Peninsula Advertiser, 9 April 1909, p3.
- 318 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p12.
- 319 "Moonta's Himalayas", Moonta on site heritage signage.
- 320 "Moonta's Himalayas", Moonta on site heritage signage.
- 321 Pryor, Oswald, "History of Moonta Cementation", The People's Weekly, 1943.
- 322 "Precipitation Tanks", Moonta on site heritage signage.
- 323 "Tailings Heaps", Moonta on site heritage signage.
- 324 Pryor, Oswald, "History of Moonta Cementation", The People's Weekly, 1943.
- 325 "Slimes", Moonta on site heritage signage.
- 326 "Slimes", Moonta on site heritage signage.
- 327 "Slimes", Moonta on site heritage signage.
- 328 Drew, G.J., Discovering Historic Moonta: South Australia, p44.
- 329 "Cementation works", Moonta on site heritage signage.
- 330 "Moonta's Himalayas", Moonta on site heritage signage.
- 331 Pryor, Oswald, "History of Moonta Cementation", The People's Weekly, 1943.
- 332 Drew, G.J., Discovering Historic Moonta: South Australia, p44.
- 333 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p145.
- 334 Australian Government, Inclusion of Two Places in the National Heritage List, Australian Cornish Mining Sites: Burra and Moonta, Government Gazette, 4 May 2017, <https://www.legislation.gov.au/Details/C2017G00516>, accessed online 29 October 2019.
- 335 "Ryans Walk", Moonta on site heritage signage.
- 336 "Ryans Shaft and Enginehouse", Moonta on site heritage signage.
- 337 Drew, G.J., Discovering Historic Moonta: South Australia, p31.
- 338 "Ryans Shaft and Enginehouse", Moonta on site heritage signage.
- 339 "Ryans Shaft and Enginehouse", Moonta on site heritage signage.
- 340 Drew, G.J., Discovering Historic Moonta: South Australia, p24.
- 341 "Ryans Tailings Heap", Moonta on site heritage signage.
- 342 "Ryans Tailings Heap", Moonta on site heritage signage.
- 343 Drew, G.J., Discovering Historic Moonta: South Australia, p31.
- 344 "Assay Office", Moonta on site heritage signage.
- 345 "Assay Office", Moonta on site heritage signage.
- 346 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p162.
- 347 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p 162.
- 348 "The Hancock Engine, Moonta Mines", The Wallaroo Times & Mining Journal, 2 December 1874, p3
- 349 Moonta on site heritage signage.
- 350 Adelaide Observer, 5 December 1874.
- 351 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p163.
- 352 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 353 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p156.
- 354 "THE COPPER METROPOLIS" Chronicle (Adelaide, SA : 1895 - 1954) 3 June 1899: 19.
- 355 Payton, P., Making Moonta: The invention of Australia's Little Cornwall, p63.
- 356 "New Wesleyan Chapel, Moonta Mines", South Australian Weekly Chronicle, 19 August 1865, p1.
- 357 Australian Government, Australian Heritage Database, Australian Cornish Mining Sites: Moonta, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096, accessed online 28 October 2019.
- 358 Drew, G.J., Discovering Historic Moonta: South Australia, pp12-13.
- 359 "New Wesleyan Chapel Moonta Mines", The Wallaroo Times and Mining Journal, 9 December 1865, p5.
- 360 "Re-opening of the Moonta Mines Wesleyan Chapel", The Wallaroo Times and Mining Journal, 24 December 1872, p3.
- 361 Drew, G.J., Discovering Historic Moonta: South Australia, p27.
- 362 'About Pork', Yorke's Peninsula Advertiser and Miners' and Farmers' Journal, 16 May 1876, p2
- 363 'No Title', Yorke's Peninsula Advertiser, 21 December 1888, p3
- 364 "Moonta Mines Wesleyan Church", Yorke's Peninsula Advertiser, 17 December 1897, p2.
- 365 'Home and Inland Missions' Australian Christian Commonwealth, 23 June 1939, p9
- 366 "Moonta", The Wallaroo Times and Mining Journal, 26 August 1865, p3.
- 367 "Events of the Month", The Wallaroo Times and Mining Journal, 23 August 1865, p6.
- 368 "Moonta", The Wallaroo Times and Mining Journal, 26 August 1865, p3.

- 369 "Moonta", The Wallaroo Times and Mining Journal, 26 August 1865, p3.
- 370 "Advertising", The Wallaroo Times and Mining Journal, 10 January 1866, p1.
- 371 Flightpath Architects, "District Council of the Copper Coast Heritage Survey", 2010, p38.
- 372 Flightpath Architects, "District Council of the Copper Coast Heritage Survey", 2010, p38.
- 373 "Sunday School", Moonta on site heritage signage.
- 374 Heritage SA, Research Packet 13110.
- 375 Parkes and McCarthy cited in Heritage SA, Research Packet 13110.
- 376 "Sunday School", Moonta on site heritage signage.
- 377 "Moonta", South Australian Weekly Chronicle, 3 March 1866, p1.
- 378 'Rechabite Social' The Kadina and Wallaroo Times, 7 September 1932, p3.
- 379 Heritage SA, Research Packet 10135R.
- 380 Heritage SA, Research Packet 10135R.
- 381 Drew, G.J., Discovering Historic Moonta: South Australia, p24.
- 382 SLSA BRG40/16/21.
- 383 Flightpath Architects, "District Council of the Copper Coast Heritage Survey", 2010, p46.
- 384 "Tramway to Hamley Flat", Moonta on site heritage signage.
- 385 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 386 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p9.
- 387 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p12.
- 388 "The Horse Tramways of the Moonta District", Trolleywire: Journal of Australian Tramway Museums, October 1980, p12.
- 389 Notes by Oswald Pryor on photograph SLSA B 12604.
- 390 SLSA B 12604.
- 391 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 392 Drew, G.J., Discovering Historic Moonta: South Australia, p33.
- 393 Pryor, Oswald, 'Hancock, Henry Richard (1836–1919)', Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 394 "Moonta Mines Reservoir", Yorke's Peninsula Advertiser and Miners' News, 11 July 1873, p2.
- 395 Drew, G.J., Discovering Historic Moonta: South Australia, p32.
- 396 "Moonta Mines Reservoir", Moonta on site heritage signage.
- 397 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p29.
- 398 'The Mining District of Yorkes Peninsula', Evening Journal, 19 June 1873, p3.
- 399 "Explosives Magazine", Moonta on site heritage signage.
- 400 Drew, G.J., Discovering Historic Moonta: South Australia, p32.
- 401 "Explosives Magazine", Moonta on site heritage signage.
- 402 Drew, G.J., Discovering Historic Moonta: South Australia, p25, 'Starting of Taylor's Engine, Hamley Mine', Yorke's Peninsula Advertiser & Miners News, 27 March 1874, p2.
- 403 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 404 Drew, G.J., "Notes on the Moonta-Wallaroo District", 2014, p23.
- 405 Drew, G.J., Discovering Historic Moonta: South Australia, p25.
- 406 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p145.
- 407 Australian Government, Inclusion of Two Places in the National Heritage List, Australian Cornish Mining Sites: Burra and Moonta, Government Gazette, 4 May 2017, <https://www.legislation.gov.au/Details/C2017G00516>, accessed online 29 October 2019.
- 408 Moonta on site heritage signage.
- 409 Drew, G.J., "Notes on the Moonta-Wallaroo District", 2014, p18.
- 410 Drew, G.J., Discovering Historic Moonta: South Australia, p26.
- 411 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p18.
- 412 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p15.
- 413 "Elders Enginehouse", Moonta on site heritage signage.
- 414 'The Copper Metropolis: The Wallaroo Mines, Their Discovery and Growth', The Advertiser, 16 May 1899, p6.
- 415 "Elders Enginehouse", Moonta on site heritage signage.
- 416 "Elders Enginehouse", Moonta on site heritage signage.
- 417 "Elders Enginehouse", Moonta on site heritage signage.
- 418 "Hughes Walk" on site heritage signage.
- 419 Drew, G.J. and Connell, J.E., Cornish Beam Engines in South Australian Mines, p147.
- 420 "Hughes Engine" on site heritage signage.
- 421 "Hughes Engine" on site heritage signage.
- 422 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, p46.
- 423 Adelaide Observer, 9 September 1865, cited in Drew, G.J., Cornish Beam Engines in South Australian Mines, p147.

- 424 Flightpath Architects, "District Council of the Copper Coast Heritage Survey", 2010, p254.
- 425 Flightpath Architects, "Conservation Management Plan for Moonta Mines Hughes' Pump House Precinct", June 2012, pp20,23.
- 426 "Hughes Engine" on site heritage signage.
- 427 "Hughes Engine" on site heritage signage.
- 428 "Hughes Engine" on site heritage signage.
- 429 Drew, G.J., *Discovering Historic Moonta: South Australia*, p38.
- 430 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p145.
- 431 "Hughes Pump Engine and Chimney", Moonta on site heritage signage.
- 432 Drew, G.J., *Discovering Historic Moonta: South Australia*, p5.
- 433 Payton, P., *Making Moonta: The invention of Australia's Little Cornwall*, p12.
- 434 "Hughes Engine" on site heritage signage.
- 435 'The Yorke's Peninsula Mines', *South Australian Weekly Chronicle*, 26 April 1862, p5
- 436 'No Title', *Yorke's Peninsula Advertiser and Miners' News*, 18 November 1873, p2
- 437 'Telegraphic News', *Yorke's Peninsula Advertiser and Miners' News*, 6 November 1874, p2
- 438 'Mining', *The Wallaroo Times & Mining Journal*, 28 September 1872, p2
- 439 "Hughes Enginehouse" on site heritage plaque.
- 440 Drew, G.J., *Discovering Historic Moonta: South Australia*, p26.
- 441 Drew, G.J., *Discovering Historic Moonta: South Australia*, p38.
- 442 "Mechanical Workshop Site" on site heritage signage.
- 443 Moonta on site heritage signage.
- 444 "Taylors Shaft", Moonta on site heritage signage.
- 445 "Taylors Shaft", Moonta on site heritage signage.
- 446 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p157.
- 447 Drew, G.J. and Connell, J.E., *Cornish Beam Engines in South Australian Mines*, p157.
- 448 "Richmans Walk", Moonta on site heritage signage.
- 449 "Richmans Walk", Moonta on site heritage signage.
- 450 Department of the Environment, Water, Heritage and the Arts, "Working Together: Managing National Heritage Places", "Applying the Principles", 2008, <https://www.environment.gov.au/resource/working-together-managing-national-heritage-places> accessed 6 February 2020.
- 451 Inclusion of two places in the National Heritage List – Australian Cornish Mining Sites: Burra and Moonta, <https://www.legislation.gov.au/Details/C2017G00516> accessed online 3 February 2020.
- 452 Australian Heritage Database, https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place_detail;place_id=106096 accessed online 3 February 2020.
- 453 Protected Matters Search tool, <http://www.environment.gov.au/epbc/protected-matters-search-tool> accessed online 4 February 2020.
- 454 SA Heritage Places Database, <http://maps.sa.gov.au/heritagesearch/HeritageSearchLocation.aspx> accessed 4 February 2020.
- 455 SA Heritage Places Database, <http://maps.sa.gov.au/heritagesearch/HeritageSearchLocation.aspx> accessed 4 February 2020.
- 456 Correspondence from Aboriginal Affairs and Reconciliation to Swanbury Penglase dated 24 December 2019.
- 457 Flightpath Architects, "District Council of the Copper Coast Heritage Survey", August 2010.
- 458 Copper Coast council Development Plan, https://www.dpti.sa.gov.au/_data/assets/pdf_file/0010/249967/Copper_Coast_Council_Development_Plan.pdf accessed online 4 February 2020.
- 459 "South Australian – Legislation, Education Act 1875 (1875-1916)", <https://www.findandconnect.gov.au/ref/sa/biogs/SE01438b.htm>, accessed 2 April 2020.
- 460 Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p6.
- 461 Thiele cited in Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p6.
- 462 Register, 26 January 1874, cited in Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p9.
- 463 Wigg & Parkes, and Minutes of Central Board of Education 5 October 1874, cited in Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p10.
- 464 Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p13.
- 465 Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p45.
- 466 GRG 38/22/1 cited in Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p13.
- 467 Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p45.
- 468 "Council of Education", *Adelaide Observer*, 19 May 1877, p10.
- 469 "Provincial Telegrams", *South Australian Register*, 10 July 1878, p5.
- 470 Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p18.
- 471 Drawing HD1409 cited in Klenke, A., "Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia", March 1994, p15.
- 472 Klenke, A., "Former Moonta Mines Public School:

- Conservation & Management Plan for the National Trust of South Australia”, March 1994, p37.
- 473 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p45.
- 474 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p19.
- 475 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p45.
- 476 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p26.
- 477 GRG 18/2 cited in Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p27.
- 478 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p28.
- 479 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p20.
- 480 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p23.
- 481 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p36.
- 482 Klenke, A., “Former Moonta Mines Public School: Conservation & Management Plan for the National Trust of South Australia”, March 1994, p46.
- 483 “Mine Officer’s House”, Moonta on site heritage signage.
- 484 Pryor, Oswald, ‘Hancock, Henry Richard (1836–1919)’, Australian Dictionary of Biography, National Centre of Biography, Australian National University, <http://adb.anu.edu.au/biography/hancock-henry-richard-3706/text5813>, published first in hardcopy 1972, accessed online 29 October 2019.
- 485 Payton, Phillip, Making Moonta: The Invention of Australia’s Little Cornwall, University of Exeter Press, Exeter, p91.
- 486 Significant Impact Guidelines 1.1 Matters of National Environmental Significance
- 487 Reference Kernewek Lowender Official Program 2019

Adelaide

214 Gilbert Street
Adelaide SA 5000
Australia

T + 61 8 8212 2679

Email

space@
swanburypenglase.com

ABN: 36 008 202 775