



Procedures for managing historic cultural heritage when preparing forest practices plans



Forest Practices Authority

Tasmania

September 2017

The Forest Practices Authority

The Forest Practices Authority is an independent statutory body that administers the Tasmanian forest practices system on both public and private land. Its primary responsibility is regulating forest practices in forests and threatened non-forest vegetation.

The *Forest Practices Act 1985* provides that the *Forest Practices Code* shall prescribe the manner in which forest practices are to be conducted so as to provide reasonable protection to the environment. The 'environment' includes historic cultural heritage* values. These values must be protected during all forest operations regardless of land tenure.

The standards for appropriate management have been devised by the FPA using the results of many studies and the experience of foresters and FPA staff over more than 25 years.

Significant heritage sites and places are protected through identification, recording and assessment during planning, prescriptions in forest practices plans, and implementation during operations.

* The term 'historic cultural heritage' is used to describe all physical heritage remaining from colonial and post-colonial activity in forests, up to about 1950. Aboriginal cultural heritage is considered in a separate FPA guide.

Foreword

The *Forest Practices Code* recognises the importance of protecting culture and heritage in wood production forests. The Forest Practices Authority acknowledges that heritage places have significance to the community and that these sites form an important part of the Tasmanian identity.

We recognise the need to have a system that delivers the best outcomes for the protection of heritage in the forest that will ensure that these values are maintained and passed on to future generations.

The Forest Practices Authority plays a central role in all aspects of heritage management from data coordination, provision of advice and instruction to regulation and implementation.

This guide provides advice on all aspects of historic cultural heritage management and presents a practical guide for forest operations. It covers all phases of forest operations from planning through to harvest and post-harvest and is written mainly for forest employees, planners and all staff working on cultural heritage issues. It describes how historic cultural heritage is managed in the forest practices system and provides practical guidance on how to:

- record the sites located
- assess potential impacts
- apply planning tools for management options
- incorporate heritage management into forest practices plans (FPPs)
- ensure forest operators understand their responsibility in individual coupes
- monitor, evaluate and assess compliance with stated management prescriptions.

This guide replaces the *Resource Guide for Managing Cultural Heritage in Wood Production Forests* (2012), the *Forest Archaeology Manual* (2000), and all previous instructions from the Chief Forest Practices Officer. The guide should be reviewed at five year intervals.

Peter Volker

Chief Forest Practices Officer

Forest Practices Authority

Abbreviations and acronyms

FPA	Forest Practices Authority
FPP	Forest Practices Plan
FT	Forestry Tasmania
MEZ	Machinery Exclusion Zone
MRT	Mineral Resources Tasmania
SSR	streamside reserve

Acknowledgements

The procedures outlined in this document are an abbreviated and edited version of the historic cultural heritage provisions contained in the *Resource Guide for Managing Cultural Heritage in Wood Production Forests* prepared by Denise Gaughwin in 2012 in collaboration with a number of Forest Practices Officers, external experts and FPA staff.

Glossary

Buffer	'Buffer' in this document means a special management zone designed to protect heritage sites from impact by forestry activities. The management of buffers will be prescribed in forest practices plans. Individual buffers may be designated as informal or formal reserves by the responsible land manager.
Coupe	An operational area for forestry activities.

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1 What is historic cultural heritage?

Cultural heritage is a term used to cover those places and sites that have been passed down to us from the actions of people in the past. This guide describes the forest practices system used to protect historic cultural heritage, a term used to describe all physical heritage remaining from colonial and post-colonial activity in forests, up to about 1950. Aboriginal cultural heritage is considered in a separate FPA document.

Before any decisions on heritage can be made, sites should be identified and their location recorded. There are over 2500 recorded historic sites in wood production forests. Since settlement of Tasmania by the British, new immigrants have attempted to make a living from the forests themselves or from the underlying rocks bearing valuable minerals, or by cultivating the land. Some of the forests we see today are regrowth forests resulting from early timber harvesting, alluvial and hard rock mining or failed agriculture. Sites resulting from earlier land use are sometimes impressive while others are barely visible in the undergrowth.

1.1 Timber industry sites

Tasmania's forests attracted attention even before the British settlement in 1803 when passing ships stopped to replenish their supplies of cord wood and charcoal. Upon settlement it was urgent to clear the forest and to use the produce to build the new colony. Convicts were sent to cut the trees and saw timber in nearby sawpits.

All timber harvesting sites have features in common, despite technology changing over time. These are:

- a stand of harvestable trees
- a structure for moving logs to a sawmill (usually a tramway)
- a sawmill with workers' accommodation
- a means of transporting timber to the market.



Tramways were essential to cart logs to a mill and sawn timber to market and were in common use across the state until motorised trucks became common after World War II. This tramway dates from 1890.



Sawmills were common in all Tasmania's wood production forests but fires have often destroyed the mill buildings. Sawdust heaps often remain long after the mill has disappeared.



While the earliest sawmills used convict labour and water technology, steam engines were the major power source in the historic industry. Steam engines were used at the mill itself, to haul the timber to the mill and drive the mill machinery. This traction engine is located near an old sawmill where it hauled the heavy loads.

1.2 Mining sites

Much of Tasmania is heavily mineralised. The first miners were interested in coal for the growing colony. After the discovery of gold in Victoria in 1850, Tasmanian forests were scoured for their mineral resources. While there was some winnable gold, it was tin mining that became the major industry. Large tracts of forests were burnt to open up the land. Early miners used alluvial techniques, sluicing the ground with water, separating the tin using sluice boxes, and piling up waste rock in spoil heaps. Later miners constructed underground mines to extract minerals. Historic mining sites have common characteristics, including:

- the mine area itself including the mine and the associated machinery for processing
- water races
- tracks and roads
- domestic settlements for the miners and their families.



Bull wheel from a haulage system that moved raw material by an aerial tramway to the mine to be processed.



Water is an essential part of the extraction of minerals especially in alluvial mining. If water was not available nearby, water races were constructed to divert water from a stream and direct it to the mine. This small water race was found in a pine plantation.



Minerals were not always on the surface and horizontal drives (adits) or shafts were dug deep into the ground to extract the ores. Mine adits such as this one are common in wood production forests.

1.3 Huts and dwellings

The forest has grown up around hundreds of clearings with hut remains that were made by people following agricultural pursuits, hunting and trapping for the fur trade, and for workers in the mines and sawmills. These range from well built structures to rudimentary shelters.



A trapper's hut in the Nicholas forests, northeast Tasmania.



More people lived in the forests in the past with shepherds, trappers, and evidence of dwellings associated with agricultural pastoral attempts often found in remote areas. This substantial chimney is thought to be part of an inn on a stock route that is now unused.



Smaller stone structures were associated with temporary accommodation for shepherds and snarers.

2 Preparing and implementing FPPs

2.1 Preparation

During planning for a forest operation the Forest Practices Officer (FPO) follows a process to ensure that historic cultural heritage values are identified.

1. Previously known sites are identified using the Conserve database of historic sites, managed by Forestry Tasmania (FT). Access to the historic sites can be requested from FT.
2. There are over 2500 historic sites listed on Conserve. The exact location of many of these is approximate as many have been listed from desktop studies or their position estimated using paper maps. The more recent the site record the more accurate it will be. Electronic or hard copies of site records are held by the FPA and may be requested if additional site information is required.
3. Field inspection will be undertaken during coupe planning to detect unknown sites and to relocate known sites recorded on Conserve. Any sites located in the operation area will have their values assessed to determine appropriate management.
4. Assessment will be done following the Earth Sciences and Cultural Heritage Evaluation form available on the FPA website (http://www.fpa.tas.gov.au/fpa_services/planning_assistance/heritage_and_landscape/cultural_heritage_evaluation_sheet)
5. An historic site recording form available on the FPA website (http://www.fpa.tas.gov.au/fpa_services/planning_assistance/heritage_and_landscape) will be completed for any new sites and forwarded to the Cultural Heritage Manager at the FPA.
6. In the FPP all known cultural heritage sites (including new sites) will be listed by site name and number.
7. Prescriptions to manage the heritage values will follow Table 1 and will be clearly stated in the evaluation. The FPA Cultural Heritage Manager will be consulted if required to do so by the Earth Sciences and Cultural Heritage Evaluation Form.
8. If there are historic heritage values within the operational area the FPP will clearly state this and provide clear management prescriptions including an indication of the relevant reserves on the FPP map, and how reserves are to be marked.

2.2 Implementation

1. Any required reserve areas or areas requiring special management will be marked in the field.
2. The implementation of the management prescriptions within the FPP for heritage values will be discussed with the forest contractor before the operation begins to ensure that contractors are aware of any known or

potential sites within the operational area, and the management prescriptions that apply.

3. As some sites may not be located until actual on-ground operations begin, the FPO will advise contractors that if evidence of historic sites is located during operations it will be reported to the supervising FPO before work continues at that location. This prescription should be a standard cultural heritage prescription in FPPs.
4. The FPO will monitor operations to ensure that heritage values are not adversely impacted.

2.3 Post operation

1. In the interest of continual improvement of the forest practices system an assessment of the outcomes of any historic heritage management should be undertaken and results noted.
2. Any non-compliance with FPP prescriptions will be reported in accordance with FPA procedures.

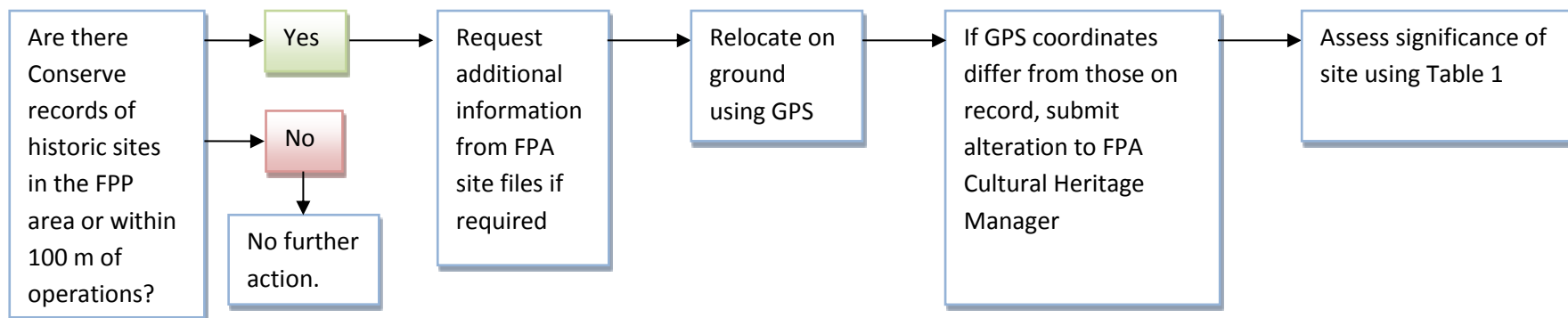
2.4 Compliance

The FPA is responsible for monitoring forest practices standards through compliance reports in which heritage operational outcomes are assessed against the provisions for heritage management in the FPP. This process is reported by an FPO on behalf of the FPP applicant. The FPA's Compliance Program undertakes an annual independent assessment (audits) of a sample of operation areas which rigorously examines the outcomes of the planning and operations. The outcomes of these assessments are reported in the FPA's annual report.

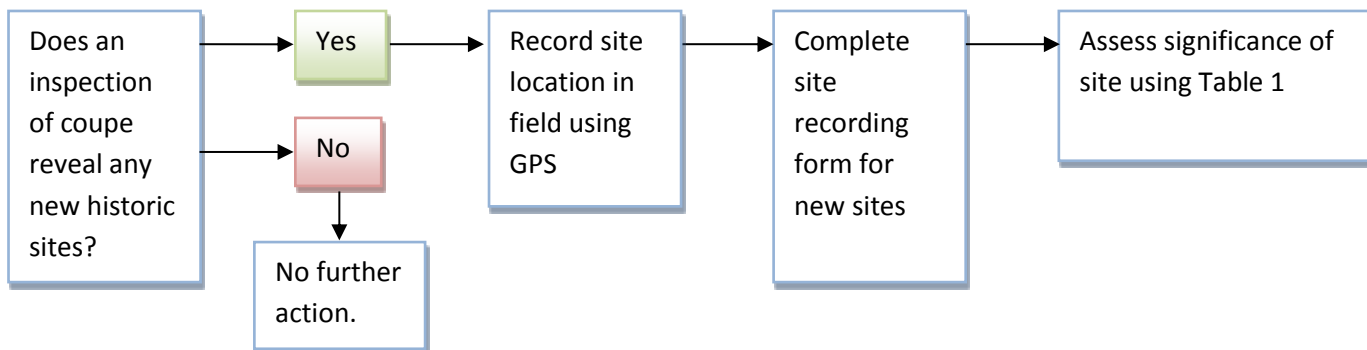
2.5 Summary

Step 1. Identification/acquiring knowledge

Historic sites on Conserve

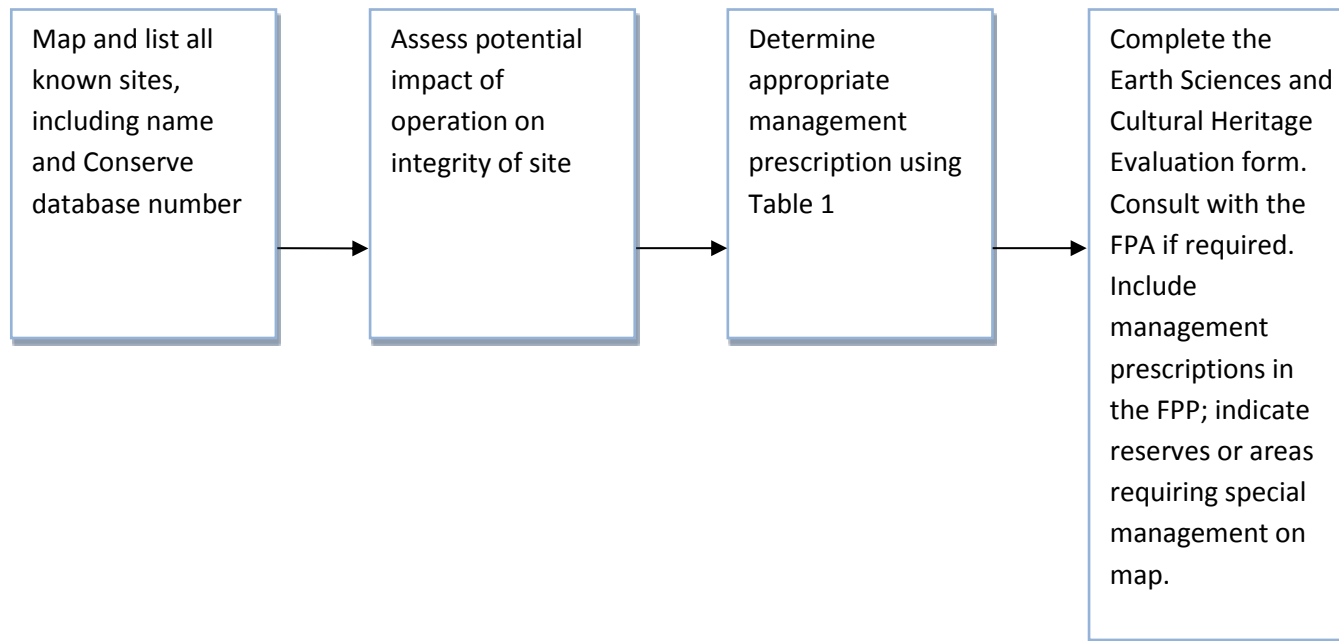


Newly discovered historic sites

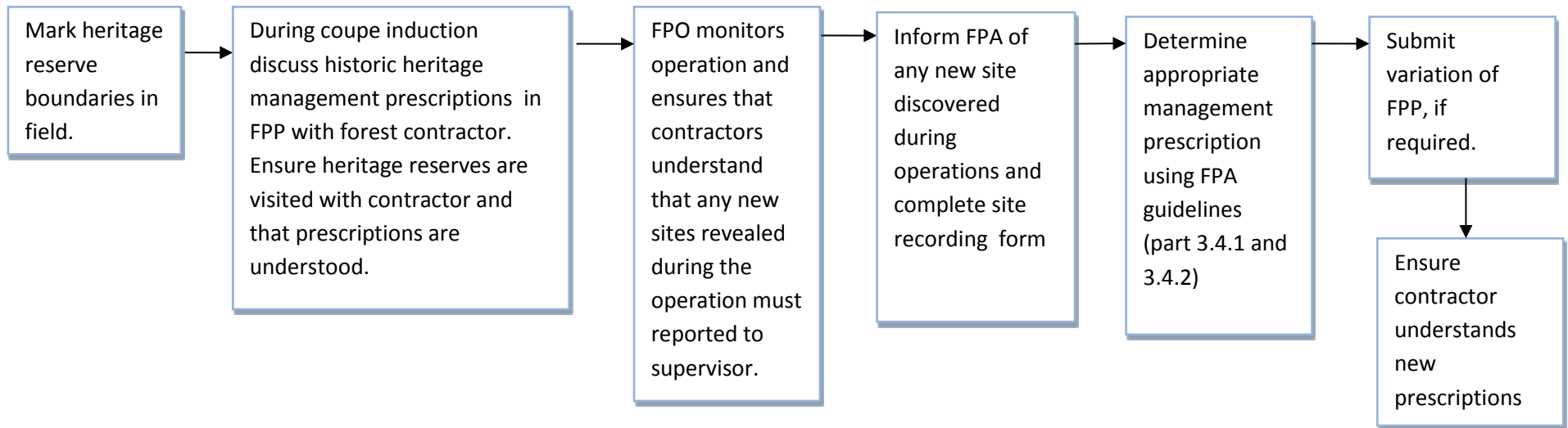


Step 2. The FPP

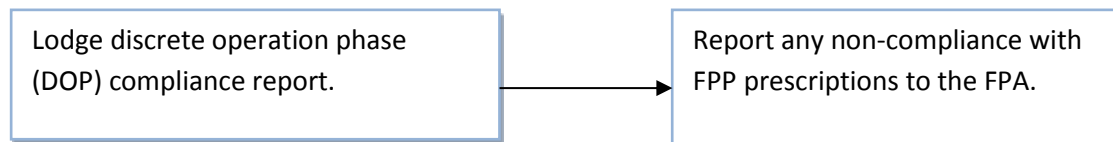
Historic sites



Step 3. Implementation



Step 4. Post operation



3 Recording new sites

3.1 The site recording form

New sites are frequently encountered in the field, either during planning or during operations. The *Forest Practices Code* (2015) requires that these new sites will be recorded (section D5.1).

It is important that the site record is as detailed as possible as physical remains at most sites will decay over time. In the future this record may be the only record of the historic activity in the coupe for future generations.

Use the historic site recording form available on the FPA website (http://www.fpa.tas.gov.au/fpa_services/planning_assistance/heritage_and_landscape). Provide as much information as possible on how to re-locate the site (e.g. 'take Boggy Road to the end; walk up the creek to the bridge; site is 20 m north of bridge') as well as a good sketch of the site itself and its main features. Take as many photographs as needed. Label these with the site location and the direction in which the photograph was taken. Send photographs to the FPA as separate jpg or tif files. If possible record statements, anecdotes and recollections of local people about the site – these often bring a site 'alive'. Forward the completed form and photographs to the Cultural Heritage Manager at the FPA. Keep a copy of the form and photographs on the coupe file or relevant company file.

3.2 Assessing site significance

Cultural significance is the term used to include the values that a place has for past and present generations and its likely value to future generations and this will assist in determining its required management. The more significant the values, the more protection the site will need.

Although the principles outlined in the *Historic Cultural Heritage Act 1995* outline how significance may be assessed, from local to state, national and world heritage rankings, few sites in Tasmania's wood production forests will meet the thresholds for higher levels of significance described in these documents. Accordingly, this guide is concerned with assigning a level of significance more appropriate to the Tasmanian context.

As a general rule all historic sites that pre-date 1950, when modern technology came into use, are significant as they demonstrate a way of life that is no longer practised. Highest values are assigned to sites that are well preserved and demonstrate historic land use in the forests (e.g. mining and timber processing sites), demonstrate a level of technical development (e.g. Mt Paris dam, Warrentina IXL kiln drying) or have historic social values (e.g. Chinese mining settlements).



Georges Bay water race for alluvial tin mining



Double drum winder used for log hauling



Only known coal-powered power station, Catamaran



Mt Paris tin mine dam – early concrete construction



Chinese miners pig oven at Garibaldi



Survey cairn from 19th Century at Mt Stronach

Significance can be further examined by asking the following questions:-

- Is the site well preserved?
- Does the site indicate how it functioned when in use?
- Is the site rare, distinctive or unique?
- Is the site associated with an historic event, person or cultural group?
- Is the site an example of unusual human endeavour?
- Does the site date to the early history of the colony?
- Is the site a good example of its type?
- Is the site part of a larger cultural landscape and /or aesthetically pleasing?
- Would Tasmania lose part of its heritage if the site was lost?

If the answer to any of these questions is yes, management prescriptions will be required to protect the heritage values (see Table 1).

A site is assessed as having **low significance** if it is:

- poorly preserved, and
- has very few remains, and
- is post-1950.

A site is assessed as having **medium significance** if it has one or more of the following qualities:

- moderately well preserved
- able to tell the story of its use
- unusual
- of technological interest
- of moderate interest to the community.

A site is assessed as having **high significance** if it has one or more of the following qualities:

- is a very well preserved example of its type
- reveals the story of the use of the site and has research potential
- is a rare or old example
- of high interest to the community.

3.3 Site-specific prescriptions

The management prescriptions for the following categories are set out in Table 1:

- column 1 identifies the type of site or feature
- column 2 identifies the likelihood of this site type being located
- column 3 indicates the general significance of the site type
- column 4 lists the prescriptions needed to retain the heritage values
- column 5 outlines any constraints to be considered.

Sites will be managed within buffers at the coupe level. These buffers will be identified on the FPP map and prescriptions included in the FPP and managed throughout the operation. All buffers should all be designed to ensure that there is no significant impact on the site during the operation. The recommendations in Table 1 are minimum recommendations and greater protection may be required, depending on the FPO's assessment of risk of damage occurring. The size and shape of these buffers will depend upon the nature of the heritage physical remains in conjunction with its 'significance' and the type of operation planned. In order to determine the appropriate management boundaries the site record form will be consulted, and a field inspection undertaken. In second and subsequent rotation the same management regime prescriptions should be applied (i.e. buffer areas will be retained).

If sites are found which do not fit categories in Table 1, the advice of an archaeologist may be required. Consult the Cultural Heritage Manager at the FPA in the first instance.

3.3.1.1 Table 1. Site significance and management prescriptions

Feature type	Likelihood	Significance	Management prescription	Constraints
Historic sawmills				
Stumps and snig tracks	High	Low	Retain if possible	
Stumps with shoe-boards or stamps/stones	Rare	Medium	Retain	Plan burns to minimise damage
Landings and winches	Medium	Medium	Manage within a buffer	Plan burns to minimise damage
Rolling stock	Medium–low	High	Manage within a buffer	
Haulage machinery	Medium–low	High	Manage within a buffer	Plan burns to minimise damage
Mill site	High	High	Manage within a buffer	Plan burns to minimise damage
Dams	Low	Medium	5–10m MEZ	
Mill settlement	Low	High	Manage within a buffer	Plan burns to minimise damage
Port facilities	Rare	High	Manage within a buffer	
Tramways				
Cuttings	Medium	High	5 m MEZ	
Wooden rail alignments	Medium	High	10 m MEZ	
Sleeper impressions	Rare	High	5 m MEZ	
Iron rails and fastenings	Rare	High	5 m MEZ	

Feature type	Likelihood	Significance	Management prescription	Constraints
Spur intersections	Rare	High	10 m MEZ	
Low trestle bridges	Medium	High	Manage within a buffer	Plan burns to minimise damage
Pigsty/trestle bridges	Rare	High	10 m buffer (20 m if coupe is to be burnt)	Plan burns to minimise damage
Earthen causeways	Rare	High	Manage with a 5 m MEZ	May be reused if no alteration
Mineral extraction sites				
Alluvial mine landscape	High	Medium	Manage all features within a buffer	
Shafts and mullock heaps	High	High	Manage all features within a buffer	Consider safety issues – discuss options with MRT
Adits/ drives	High	High	Manage all features within a buffer	Consider safety issues – discuss options with MRT
Open cut mines	High	High	Manage all features within a buffer	Consider safety issues – discuss options with MRT
Costeans, stopes and exploration trenches	Low	Low	Manage all features within a buffer	Consider safety issues – discuss options with MRT
Processing sites				
Batteries, stampers, crushers, ore bins	Medium	High	Manage within a buffer	Should be retained <i>in situ</i> – deny salvage requests. Plan burns to minimise damage
Puddling circles	Low	High	Manage within a buffer	Consider nominating to Tasmanian Heritage Register
Machinery sites and footings	High	High	Manage within a buffer	Plan burns to minimise damage
Tailings dumps	High	High	Manage within a buffer	Requests for salvage/reworking should require heritage assessments

Feature type	Likelihood	Significance	Management prescription	Constraints
Infrastructure sites				
Access tracks/trams	Medium	Medium	Manage within a buffer	Retain integrity if to be used for access
Dwellings	Low	High	Manage within a buffer	Avoid damage
Chinese dwellings and pig ovens	Low	High	Manage within a buffer	Keep new finds confidential due to fossickers. Avoid fire.
Water management				
Dams	Medium	High	Manage within a buffer	
Intake	Low	High	Manage within a SSR	
Water races including <ul style="list-style-type: none"> Hand dug sections Walled sections Side cut sections Aqueducts Syphons 	Very high	High	10 m MEZ. Minimise crossings; clear debris from crossings; use temporary piping/slash and remove after operation	Note: Mt Cameron water race is on Tasmanian Heritage Register and requires works approval for any activity that may impact it.
Tailing dams	Low	Medium	Manage within a buffer	May have pollution issues
Historic agricultural and pastoral features				
Homes	High	High	Manage within a buffer	Protect from fire
Bush huts/chimneys	High	High	Manage within a buffer	Protect from fire
Dry-stone walls	High	High	Manage within a buffer	
Fences – living	Low	High	Retain	Protect from fire
Fences – wire	High	Low	Retain if possible	Protect from fire
Outbuildings including barns, dairies, sheds, shearing sheds	Low	Medium	Manage within a buffer	Protect from fire
Machinery	Low	Low	Retain <i>in-situ</i> if possible	
Exotic plantings	High	Medium	Retain if possible	
Ring barked trees	Low	High	Retain	
Farm infrastructure including dams roads drainage	High	Medium	Retain if possible	

systems

Feature type	Likelihood	Significance	Management prescription	Constraints
Transport infrastructure				
Road formations	Low	Medium	Avoid damage	Convict road formations have high significance: avoid damage
Railway formations	Low	Medium	Manage within a buffer	
Railway stations	Very low	High	Manage within a buffer	
Bridges	Low	High	Will be in a streamside reserve	Make detailed records of bridges needing replacement
Pack tracks	Low	High	Manage within a buffer	
Flying foxes	Low	High	Will be in streamside reserve	
Quarries	Medium	Medium	Manage within a buffer	
Road building equipment rollers etc	Low	High	Manage within a buffer	

Water management – hydro

Dams	Low	High		
Canals, channels flumes	Low	High	Manage as a SSR	Canals located in the Central Highlands are generally managed as SSRs
Construction sites	Low	Medium	Manage within a buffer	

Miscellaneous

Forest research trial species plots and arboretum pre 1950	Medium	High	Manage within a buffer	
Snaring and trapping	Low	High	Manage within a buffer	
Surveyors marks	Low	High	Retain	
Survey cairns	Low	High	Retain	
Charcoal burners	Low	High	Manage within a reserve	
Cemeteries and grave sites	Low	High	Manage within a buffer	
Stock routes	Low	High	Manage within a buffer	
Transmission towers	Low	High	Manage within a buffer	
Occupied trees	Low	High	Manage within a	Consider health

4 Training

Training is provided by cultural heritage staff and practitioners to assist forest planners. As part of the Forest Practices Officer (FPO) training course, the responsibilities with regard to heritage management are presented and assessed. Course participants are trained to:

- understand historic cultural heritage values, and the importance of managing them in forests
- manage the cultural heritage in line with the forest practices system
- understand the legislation that protects heritage in Tasmania
- determine the significance of cultural heritage values and
- complete the FPA site recording form for heritage sites.

5 Tasmanian historic timber industry sites – a brief history

Tasmania's wood production forests are littered with the remains of previous timber harvesting activities with over 1000 individual heritage sites on the Conserve database. The forests have been exploited by European explorers and settlers from the earliest times through to today. When ships from Cook's expedition anchored in Adventure Bay in 1773 and again in 1777, the crew felled trees to be used on the ships. Similarly, the French expedition in 1792 felled large numbers of trees in Recherche Bay, turning them into charcoal for the galley fires and, very importantly, the smith's forge. One of the first tasks of the convicts at Risdon Cove in 1803 was to clear the area for settlement and to provide timber for construction, fires and fencing.

In each period of Tasmanian history, and in each region, forests were logged using different methods but the general principles of timber harvesting remain the same: (1) a good timber resource, accessible and suitable for the proposed use; (2) access to a market; (3) water nearby; (4) labour is affordable and can be accommodated; (5) flat land for the sawmill is available; (6) expenses are covered by returns.

5.1 Early timber extraction

The earliest period of Van Diemen's Land was a time of clearing land and constructing settlements. Industrialisation was at a very early stage and hard labour was the order of the day for the convicts. Timber harvest was restricted to the coastal margins that could be accessed by boats. North West Bay, Birches Bay and

the foothills of Mt Wellington had timber sawing facilities. The method of extraction was to select the forest to be felled, construct pits for between two and four pairs of sawyers near the selected trees and transport the sawn logs to jetties on the coast. As the trees closest to the shore were harvested, the sawyers had to move further inland, making the construction of roads necessary. The enterprise would be shut down if infrastructure costs increased and outweighed prices obtained for the timber.

Port Arthur was the largest of all convict sawing establishments and indeed was initially placed on the peninsula because of the timber resource as well as the sheltered deep water harbour. All other stations were closed when this station was developed. This move was very unpopular with the convicts as in the remote stations they had been allowed to saw on Saturdays and sell the timber to the government. Port Arthur removed this incentive for private work and in its place introduced a punitive system.

Entrepreneurs also saw the opportunity to use the timber resource, and using similar techniques of extraction and sawing as the government's, established saw pits near the settlements to provide timber for the growing colony. Another major timber industry was wattle bark extraction. Both the government and private enterprise were engaged in this industry. The bark of the blue gum and the black wattle were sought after as it proved to be the most useful local resource for tanning hides that were then used in all leather goods (especially shoes, bags, shelters etc.). The bark was a valuable export to England up until about 1830 and was stripped from the trees and often sold unprocessed. As cargo prices increased some processing was undertaken. For example, in the Huon district, a Mr Kent passed the bark through a crushing mill made of two wood cylinders placed horizontally and worked by horses. This was then boiled in copper vessels for an hour and evaporated in pans to the consistency of tar and further reduced to a pitch. This process gave 1 ton of extract to 3 tons of raw bark, reducing its export cost by a third (McPherson 2002:135).

Further afield, the importance of Huon pine for boat building was recognised. The penal settlement at Sarah Island was established to extract this timber, float it to the island where it was broken down and ships were built. Shingle and paling splitting using mostly eucalypt species continued throughout this period. The products were sold to merchants in the towns.

These relatively small scale and localised industries continued through to the mid 18th century and served Van Diemen's Land economy well.

While few sites remain today from this early method of timber sawing, saw pits on the forested hills at Port Arthur and the Cascades are still visible. These sites were recorded by the Port Arthur Site Management Authority in 2002. One of the better preserved was described as a well-defined three-sided trench, open to the southeast, measuring 10 x 2.5 x 2 m deep and trending 310° mag. The remains of the jetty footings and the road from the shore can still be seen at Birches Bay.

Such early sites are considered to be highly significant to the history of Tasmania and are extremely rare and would require careful management in the unlikely scenario that they were to be located in today's wood production forests.



Saw pits on Mt Arthur (photos by Greg Jackman)

5.2 1850 to industrialisation and export

In 1851 the gold discoveries in Victoria changed the face of timber harvesting. Two factors predominated:

- Van Diemen's land now had a large and growing market close to the as yet untapped forests, and
- The exodus of men to the goldfields produced a severe labour shortage within the colony.

The size of the market meant that new and costly technology could be introduced profitably. New players such as Grubb and Tyson on the Pipers River and others on the Hobart Rivulet entered the industry with water powered sawmills. These sawmills meant that a mill well placed in respect to the forest and with access to port facilities could afford to import machinery as well as experienced men to operate the mill from Britain. While tramways had always played a role in hauling timber these now became longer, reaching the forests well away from the ports with the best example being the Grubb and Tyson tramway from Underwood to Mowbray on the Tamar.

The water powered mills were replaced very quickly by steam mills. The steam mill at the government convict site at the Cascades on the Tasman Peninsula was among the earliest. Steam boilers and engines provided the major motive power for the saws at the mills for nearly 100 years. In this early phase of the steam age the logs were hauled from the forests by bullock teams to the mills from which the timber

would be sent to markets. However bullock teams were relatively slow and required the care and feeding of the animals.

Wooden tramways for use by horse teams were soon introduced and even though these were expensive to build, their cost was offset by the speed with which the timber could be transported to the mill. These tramways consisted of decking on which were placed two parallel timber spars. The horses could walk along the decking while the wheels of the bogie which conveyed the log ran along the spar rails. The tramways had to follow a relatively level line so meandered along contours rather than taking a direct route. Bridges were constructed over the creeks and raised trestle sections built to cross wet areas. On steep ground the gradient was maintained by the construction of cuttings and side benching.

Around 1884 mechanised log haulers were introduced. These single drum winches were steam powered and driven by a vertical boiler and had water tanks supported on wooden rails. These machines winched themselves to the log landings and loaded the logs using a smaller winch and cable lengths.

Many of these tramways are still in good condition particularly in wet forests, with evidence of the wooden rails clearly visible. Bridge footings at creek crossings are also common and may be quite spectacular. Other features associated with the tramway may be located in forests including rolling stock, especially bogies, iron fastenings, metal cables and landings. At the sawmill itself the sawdust heap is often found as are the machines that powered the saws.

5.3 Corporate timber concessions 1898

In a move to lure industry into the forests in 1898 the government changed the Act that regulated Crown Lands to allow for leasehold possession of Crown forest. This encouraged well-capitalised companies to enter the timber harvest business and many industrial giants took advantage of the changes and opened up large enterprises such as the Huon Timber Co.

During this period, extensive tramways were built many kilometres into the forests to access the resource and transport logs to large sawmills constructed at a port or rail depot. In the northeast the railway systems became important, allowing distant forests to be harvested successfully. The old tramways in the bush became small railways as steam locomotives replaced horse powered systems. These changes meant that the tramways themselves needed to be more robust to carry the heavy rolling stock and wooden rails were replaced by steel.

The demise of these impressive operations was hastened by the depression of the late 1890s which drastically reduced railway expansion worldwide. Many of the large sawmills specialised in railway sleepers and pier timbers. Hardwood timbers were the preferred material for sleepers or crossies; up to 3000 were used per mile. Perhaps as a result of their own success in efficiently extracting timber, the mills depleted the immediately accessible resource. Many of the big mills closed

because they lacked high-volume forward orders and because of the high costs of extending these tramways. As the leases under the Crown Lands Act required demonstrated activity and the companies were no longer active their leases were extinguished.

The archaeological manifestations of these mills are extensive in wood production forests and are similar to those described above. It is in the scale of the features that the industrialisation is evident. For example it is relatively easy to discriminate between the early mills on the Cluan Tier and the Henry Jones IXL mill which had more robust features including a wider and better formed tramway alignment to carry the rolling stock.

5.4 Spot mills 1900 to 1945

Spot mills were generally set up along existing access points (tramways and roads) to fill specific small orders. Portable machinery was used at the mill and the logs hauled short distances. This was an efficient and cost effective way for small operators to set up business. All they needed was a saw bench and machinery to drive the saw. In the early period a portable steam engine would have been used (these were replaced by diesel motors over time). The timber was hauled from the forest by rough bush tramways or by winches and the milled timber taken out using the existing infrastructure.

These mills often provided cases for the apple industry and were referred to as box mills. They are recognisable in the field by their location, the temporary nature of the machinery operating area, the paucity of sawdust mounds and sometimes by the nature of the regrowth forest. They are most common in the southern forests.

5.5 Concessions and large purchases

The industry changed when large concessions were leased to forestry companies: Australian Newsprint Mills Ltd in the Florentine (1939); the Tasmanian Paper Pty Ltd concession in the southern forests (1932); the APPM concession in the north-west (1936); and APPM's purchase of the Van Diemen's Land Co. land at Surrey Hills and Woolnorth.

These developments were made possible by work at a pilot plant study that aimed to develop a viable method for making pulp from eucalypts. L.R. Benjamin who had been working at CSIRO's pulp and paper section became technical superintendent of the plant, which began operation at Kermadie in 1928, with facilities for sulphite and ground-wood pulping as well as a small paper machine. It operated until 1930, during which time it was established (and confirmed by a trial at APM's Fairfield mill) that newsprint could be produced from mixtures of eucalypt groundwood and sulphite pulp. While the great depression of the 1930s held up the industry until the war years, ANM produced the first newsprint in 1941, ensuring the Australia was self-sufficient in newsprint during war time. This was important in ensuring the Australian

public had access to wartime news. It reduced Australia's dependence on imports at a time when these were restricted.

These developments were to change the landscape of the industry and have continued to the present day. Large industrial forestry had begun at just the time when motor transport meant that logs could be trucked from the forest to the saw mills and pulp mills.

5.6 Case study: archaeology of the Tasmanian timber industry

In the early 1990s it became apparent that there were large numbers of timber history sites in wood production forests but little was known about the sites or their locations. The then Forestry Commission successfully applied to the Tasmanian Research Forest Council to fund a project to fill the knowledge gap and Mr Parry Kostoglou was appointed to undertake the task. He completed field work locating sites as well as interviewing a large number of local people that had worked or were knowledgeable about their industry. Detailed reports with site plans and descriptions were produced for Wielangta, Mt Horror, the Sidling, Cockle Creek to the Lune River, Glendevie to Franklin, Hastings to Dover and Bruny Island between 1991 through to 1995.

The combined reports identified 531 sawmilling sites in the study areas. The most common kind of sites located were spot mills followed by tramways and log landings in the bush. Sawmills, tracks and settlement sites were also recorded along with bush camps and log haulers. Even one paper mill was listed. Not all sites could be relocated on the ground as either the geographic information was poor or there was little surviving physical evidence to indicate their presence.

Many of the sites were located on State forest and Kostoglou worked with the Forestry Commission staff to identify management prescriptions such as changing the location of operations or by reserving an area within the coupe boundary. In highly significant places the sites were classified within Special Management Zones or had physical protection. In the southern forests, FT has placed all known sites onto a GIS layer which is added to when additional sites are located.

Kostoglou concluded that nearly 200 years of European work had left indelible marks in the forest and wrote that '... the patchwork of harvesting has created a modified forest environment and within it lie the abandoned artefacts and technology from logging activities long since ended... which stand as physical monuments to the activities of all those human beings who once worked the forest and the prosperity their labours promised. Research on these remains is therefore homage to our past spent in the forest, and a perpetuation of all the memories made within it.'



Remnants of a timber tramway
in the southern forests

6 Tasmanian historic mining sites – a brief history

6.1 Early Van Diemen's Land

Ever since our very distant ancestors picked up a rock to throw at a predator or a sharp edged stone to cut through the skin of an animal human societies have searched the earth's surface for usable resources to make their life easier and/or more interesting. The oldest mining sites in Tasmania are the ochre mines at Toolumbunna and the Aboriginal quarries for suitable stone sources for the manufacture of stone tools.

With the establishment of the penal colony of Van Diemen's Land in 1803, the search for a different set of minerals began. In 1793 Labillardiere noted coal exposed in the cliffs at South Cape and the surveyor James Meehan again reported it again in the Coal River near Richmond in 1803. Coal was important for cooking and heating and was the focus of most early activity. All of the coal which was mined was used for the local market as it was not of a quality to arouse interest in export.

Sandstone, limestone and slate were also quarried for construction purposes. Many structures were needed by the new colony and the Colonial Office with its ready supply of labour began the task of constructing the necessary store houses for protection of supplies, port facilities, roads and bridges and prisons as well as accommodation for the officers. Wells needed to be sunk and lined with stone to ensure good water quality. Construction quarries are widespread especially in the southern district. Clay for brick construction and wattle and daub huts was also sought.

Iron ore was found near Anderson's Creek near the Tamar River by Collin's party in 1804 and much hope was held for the ore which when assayed 72% iron content. However after several attempts to smelt the ore it was found to be high in chromium which made the cast iron produced from it brittle.

It is not an exaggeration to state that coal and construction quarries dominated the mining for the first 50 years of colonial history.

6.2 Expansion

After the discovery of gold in Victoria there was a great deal of activity to find the Tasmanian equivalent of Ballarat. Gold was finally discovered in 1852 at Mangana and not long after at Back Creek, Nine Mile Springs and Mathinna but these rushes quickly fizzled out and the fields were abandoned except by the hopeful few.

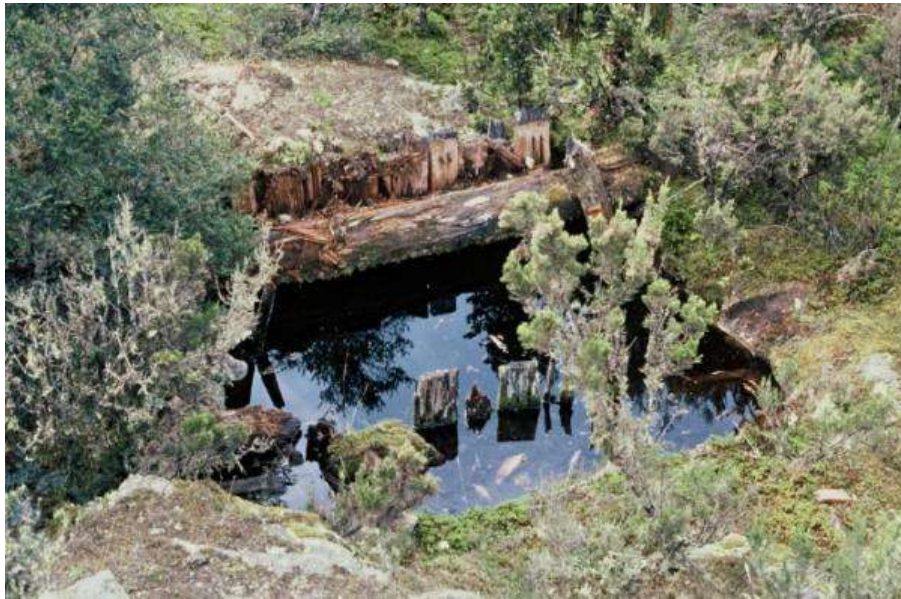
Rather than gold it was the discovery of tin at Mt Bischoff in 1871 that led to successful mining in the state. Tin mining expanded rapidly in the northwest and northeast. Initially most mines were alluvial, using water power to separate the ore from the ground. While some miners became wealthy by finding a rich patch, most were not rewarded. Capital was needed to develop more complicated systems using dams and long water races for alluvial sluicing. Hundreds of kilometres of water races are known, particularly in the northeast.

Even more capital intensive were the batteries, stampers and crushers needed to separate the ore and rock from hard rock mines. Where they had the advantage of steep ground, hard rock mines generally used tunnels to access underground deposits. The adits that provided access to these tunnels in conjunction with the adjacent mullock heaps, tailings dumps and ore stockpiles show the level of underground activity.

Possibly the most common, and certainly for the forest workers the most dangerous, are the vertical shafts that allowed access underground in flat areas. These shafts can be quite difficult to see in scrubby forests until one is right on top of them. It is always a good idea to look up the mining sheet data when working in known mine fields. Depths range from over 100 m to just a few metres. Often they are associated with mullock heaps and tailings but on some fields all the ore was removed from the mine to the crusher by tramways leaving no above ground evidence at the shaft area itself.

While tin was the major focus other metals mined included gold, copper, asbestos, uranium, tungsten, bismuth and silver.

The large west coast mines are generally not on currently forested land and are not discussed in this guide.



A flooded mine shaft.

6.3 Contraction

The heyday of mining was 1890 through to 1910, when mines generally became unprofitable. The fluctuation in the ore prices meant that the ore could be worth little when it arrived at the markets in the U.K. The easy deposits were worked out and smaller and less capitalised companies folded. While some mines were opened during the Great Depression, these tended to be on a small scale to add to subsistence wages. To this day, new mines are opened with great fanfare only to stop production after a short time.

The thousands of mine sites that lie within production forests are a testament to human hope and endeavour for improvement. The work was never easy: most alluvial mining was done in winter and spring when water supplies were most predictable. The miner had to work in wet conditions moving earth (mud) for the hours of daylight often for little return or low wages. It was hard physical work and the miner had to be fit to wield the pick and shovel if working underground. He often lived most of the week in a bush hut with co-workers.

The Chinese miners arrived in the 1880s with a very strong work ethic and a cultural support system. While they endured similar conditions to the Tasmanian miners they did not have immediate family responsibilities. Around 1700 Chinese miners are known to have worked in the northeast every year from 1880 to 1890. They made up a large percentage of the workforce but tended to work the alluvial mines or abandoned gold fields. This type of mining relied on labour rather than capital.

The highly mineralised landscape of Tasmania has been exploited by men in search of economic return since the arrival of the Europeans. The mines have become relics of the actions of these men and have left an imprint on the forests of today. Streams have been diverted, topsoil stripped, rivers clogged with fine tailings and much of the old growth forest was burnt or cleared to allow exploration, ease of access and

materials for mine structures – large amounts of timber were used as mine props, tramway foundations, head frames and buildings.

6.4 Case study: archaeological survey, Blue Tier tin field

In 1997 FT's Forest Practices Unit applied successfully for a grant under the National Estates Grants programme to document the Blue Tier mining heritage, assess its significance as a cultural landscape, and to prepare management guidelines for users and managers. Mr Greg Jackman undertook the study.

In 1874, tin was discovered at the junction of Hope and Moon Creeks and the whole of the Tier was quickly taken up in claims. Tin was found across the whole area in shallow deposits. The rainforest was cut down and every creek tapped for water with which to sluice the ground. Miner's camps were scattered across the claims but as time went by a small township developed at Blue Tier Junction (Poimena). This town had three hotels, a school, shops and a small cluster of cottages. The township area is still cleared to this day and the remains of the structures can be seen in the grass.



The school site at Poimena 1996

Mining continued in the area until 1905, with the latter years dominated by hard rock mining companies such as Full Moon Co and the Anchor Mining Co. Alluvial mining gave way to blasting the rock, separating the ore with batteries and machines, and processing the resulting slurry. However the ore became hard to gain and these enterprises closed. During the Depression, small scale miners re-entered the field and made some money reworking old ground. This continued until the late 1970s when Harry Moses closed his workings.

Jackman identified 176 mining sites on the Blue Tier. Given their greater impact in terms of ground worked and machinery, hard rock workings, quarries, adits, shafts etc were the most numerous archaeological sites. These were closely followed by habitation sites ranging from chimney butts to the hotels in Poimena. As water was often in short supply, the miners had to build dams and water races and 34 sites associated with water management were located. The earliest phase of mining was well represented with 24 ground sluicing and non-hydraulic alluvial workings sites located and recorded. Twenty five tramways, roads and tracks provided access to the mines and distant markets, indicating the intensity of the mining.

In assessing the heritage significance of the Blue Tier, Jackman determined that, rather than assessing each site as a separate entity, the field as a whole was a mining cultural landscape and should be managed as such. The Blue Tier, including the slopes, was designated as a Forest Reserve – a land use classification that allows mining but not forestry. The area continues to be enjoyed by visitors, with FT providing information boards to enhance visitors' experience. This report highlighted the importance of mining in the late 19th century to the early 20th century on the Blue Tier and the site is considered as having state significance.

6.5 Historic land use attempts

When the British arrived to settle Van Diemen's Land from 1803 they had little experience of what the land could provide. As part of a world economy and with a maritime culture they looked for good anchorages where they could continue to keep in contact with New South Wales and London. As time went by it became imperative to attempt to find profitable ways to exploit inland sites as well as continue with the coastal settlements.

The pattern of settlement, particularly by free settlers, was dictated by the terrain, soils, distance from markets, and the vegetation. The open woodland forests of the Midlands, Derwent, Coal and Fingal Valleys and the grassy plains of Surrey Hills provided the perfect combination for early settlers. These regions became even more attractive after it was found that good wool could be grown with little more effort than fencing and stocking. Van Diemen's Land could grow the wool for the ever hungry mills of England and its growers were well compensated especially considering that they had not paid for their land.

In the northwest the Van Diemen's Land Company was granted 350, 000 acres of land in 1824 from Emu Bay (Burnie) to Hampshire Hills and Surrey Hills and at Woolnorth. This company intended to run sheep on the grassy plains dotted across their holdings. The venture was not a success; the shareholders in London did not receive returns commensurate with their financial input. The land was leased for cattle for many years after which it was purchased by APPM with the intention of using the timber resource for a pulp mill, which became operational in 1938. The land and forests later passed to Gunns and then Forico.

Later, the lowland land owners looked to the Central Plateau and discovered that the woodland forests there could be used for summer pasture. Leases and purchases of large tracts of land were made and summer grazing by wethers (accompanied by a shepherd) began. Although the leases have been revoked many properties continue with this arrangement today. The heritage of this can be clearly seen in the numerous shepherds' huts located on the edge of a plain, the drainage systems cut to expand the grassy plains, the fencing, and the stock routes.

Later settlers paid for land and as all the former open woodland forested land had been converted to sheep pasture and wheat production they had to take land in the vast forested areas. Government surveyors like Scott were dispatched to assess

the dense forests around Scottsdale, Forth and Oldina and to survey access. Scott used the same criteria as the earlier settlers with the exception of vegetation type and found the flatter areas with basalt soils had the potential for closer settlement. As the settlers moved in they had to clear the giant trees, a task that was only possible with the introduction of ring barking. Ring barking around the whole trunk killed the trees and within a short time with the leaves fallen, crops could be planted in the spaces. Over time the dead trees were grubbed and agriculture intensified. Very few of these trees were harvested for their wood value and thousands of hectares of forest were destroyed. Tasmania had, however, gained some highly productive land which still produces large amounts of vegetable and dairy products.

At this point most of the productive land had been taken up by settlers. The land use pattern discernible at the end of the 19th century continues to this day.

6.6 Case study: Van Diemen's Land Company sites conservation management plan

In 2002 Gunns Ltd, realising the significance of the VDL sites on their freehold, commissioned a conservation management plan to determine long term strategies to manage them. Austral Archaeology was given the contract. Their report identified twenty places associated with the VDL Co ranging from substantial stations complete with main house and associated farming infrastructure to small huts. Several mines for gold and silver were recorded as well as two sawmills. The roads and tracks that the company pushed through the property were mapped but unfortunately later land use has left only remnants of the original tracks. Many are still in use as roads but have been upgraded many times. These places were documented and definitive statements of significance provided for each individual site as well as a suite of associated sites. After consulting with key people, including company staff, local historians and the FPA heritage staff, a set of practical guidelines for the conservation and management were prepared. These replaced the previous site-by-site approach and provided sound guidelines for planners.

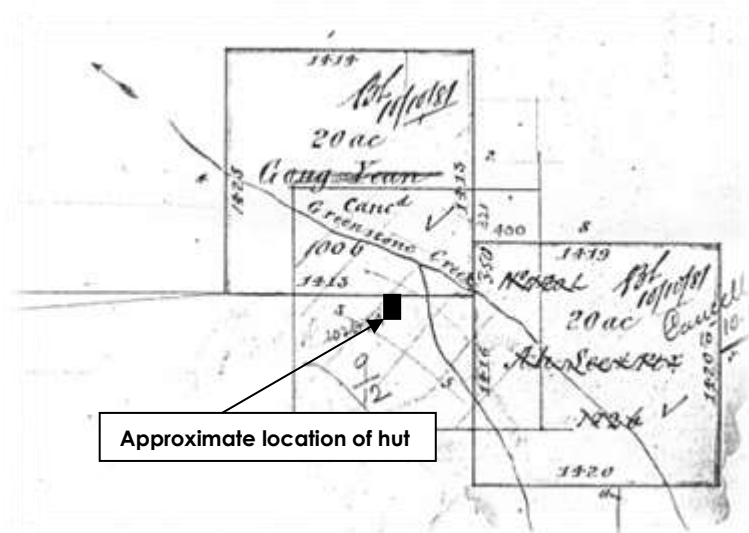
Gunns integrated the recommendations into their planning systems and mapped the sites and their management boundaries as a GIS layer. This important study was a good outcome for the protection of these highly significant sites and simplified forest planning.

A follow up study was commissioned by FT's Mersey District, which managed the land to the east of the VDL holding. An important road called simply the VDL track passed up from Mole Creek to the Middlesex Plains. This track was in use until the 20th century. Dr Forghani and Denise Gaughwin used remote sensing combined with field investigations to locate sections of the road in the bush. In sections where there was no physical evidence FT district staff and Ms Gaughwin used the logic of the requirements of driving cattle to relocate the route. The assumption was made that the track would lead from plain to plain with short cuts through the forest and that

the plains would need to be relatively well drained with drinking water available. The route of the VDL track has been placed on a GIS layer and placed in FT's Management Decision Classification (MDC) for planning purposes.

6.7 Case Study: Chinese miner's hut archaeological excavation

In 2003 FPO Sean Blake, from FT Bass District, was in the field preparing an FPP in the Moorina area of northeast Tasmania. Sean noted that near an old chimney butt near Greenstone Creek there were numerous Chinese artefacts on the surface and that the site did not appear to have been looted by indiscriminate bottle hunters in the more recent past. These findings were confirmed by the FPA Heritage Manager after a field inspection. This was a highly significant find as it was the only known Chinese house site that had not been dug over for artefacts. With this knowledge, the future management of the hut located in a remote part of State forest became a matter for concern. After many discussions it was decided to complete an archaeological excavation funded by FT and assisted by the FPA and the Queen Victoria Museum and Art Gallery, Launceston. Parry Kostoglou led the dig and undertook the subsequent archival research.



Survey dated August 1881 showing lease number 1006 held by Gong Yean

The excavation revealed an extremely large amount of domestic material culture which almost exclusively originated in southern China, which fits with the known pattern of Chinese emigration around the Pacific in the latter years of the 19th century. Kostoglou found that the leaseholder of the site from 1880 to 1883 was Gong Yean who was born in Canton province in 1844 and arrived in Tasmania as a miner, a profession he followed until at least 1884.

Gong Yean's hut was 4.5 m long and 2.5 m wide with a stone chimney situated at the rear end opposite the entrance. It is likely that up to four miners lived in the hut,

which was used for sleeping and food preparation. The hut appears to have had a small verandah across the front with windows at the front and rear. Most of the artefacts inside the hut were associated with its construction and included nails, window glass, floorboards as well as the chimney itself. Other items included a frypan, bowls, jars and pipes as well as glass bottles.



Hut site during excavation

Five separate rubbish dumps were located around the hut; four within an arm pitch from the verandah and one immediately adjacent to the external side of the chimney underneath a presumed window. These dumps provided nearly half the artefacts recovered and provide a valuable record of the items consumed and the containers discarded. The bottles found were commonly local beers or imported Dutch gin. A large number of ceramic containers were found that had held soy sauce, ginger and rice wine while ferric iron glazed ceramic material was associated with food cans, tools and buttons. Opium tins and pipes were found in small numbers.



Three ferric iron glazed ginger jars

The site indicated that these miners were well equipped for both their mining activities and for living for lengthy periods in the bush. They must have had contact with the Chinese merchants in the nearby towns of Moorina and Garibaldi and have had sufficient funds to purchase those imported Chinese goods that they desired.

Kostoglou recommended that the site be retained in a reserve within an area that not only made it more difficult to find but left a screen of 100 year regrowth trees to emphasise the time elapsed since the cessation of the Chinese mining activities. This

action was agreed to by FT and the site was entered in their MDC system. The hut site itself remains within this reserve and all excavated material is curated by the Queen Victoria Museum and Art Gallery.

Another recommendation of Kostoglou was that the information gleaned from the excavation should provide public benefit to enrich those interested in the history of the Chinese in northeast Tasmania. As a result, FT and the Queen Victoria Museum and Art Gallery constructed a set of panels to illustrate the finds and the history behind them. One of these panels is still on display at the St Helen's history room.

6.8 Case study: A coal fired power station at Catamaran

In March 2007 Trevor Seears and Michael Casey of FT Huon District discovered a massive pile of bricks, cast iron chimney stacks and concrete foundations in coupe CM008B at Catamaran in the far south. Impressed by the amount and nature of the remains and unsure of what they had found, Trevor contacted Denise Gaughwin at the FPA. Field inspections involving the FPA and district staff were undertaken and it was agreed that this was a very significant site that deserved further research and detailed site recording. This research indicated that the site was associated with the McKenzie coal mine that operated from 1923 to 1930.

The site consisted of the mine openings, parts of the tramway, domestic structures, mounds of finely crushed coal and what were clearly workshops. The most impressive part of the site was a 20 m x 20 m area containing a massive number of bricks that included many fire bricks and a very large cast iron and riveted circular flue/chimney as well as concrete slabs, machinery mounts and two cast iron pumps.



FT staff examining the furnace and the flue at Catamaran while preparing the FPP.

The survey team was fairly certain that this was the site of a steam-driven power station constructed in 1925. (A coal-fired power station burns coal to produce heat. The heat is used to boil water to produce high pressure steam. The steam drives a turbine which rotates a shaft of an electrical generator from which the electricity is transmitted to where it can be used. At the generation site flues remove heat and smoke.) It became clear that the Catamaran site contained the substantial remains of this power station. The electricity generated was used in the mine, the works area and reticulated to the port. It may also have been used in the cottages built to accommodate workers near the mine.

A detailed site plan of the power station was completed by Huon District staff. The site with its components have been protected and placed in the MDC system for its heritage values.



FT staff preparing the FPP which included protection for the coal fired power station.

For more details see 'A great find by Huon District: the McKenzie coal mine at Catamaran 1923–30', *Forest Practices News* December 2009, vol 10 no 1.

7 Heritage legislation

Table 2. Summary of relevant legislation and policies

Relevant legislation and policy	Administered by	Provisions
Acts		
<i>Historic Cultural Heritage Act 1995</i>	Heritage Tasmania	Provides protection for historic heritage places that meet significance criteria
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Environment Australia	Relevant to places that are of national significance
<i>Forest Practices Act 1985</i>	Forest Practices Authority	Cover all facets of forest practices
<i>Environment and Heritage Legislation Amendment Act (no1) 2003 (Comm.)</i>	Environment Australia	Relevant to national significance
Codes		
<i>Forest Practices Code</i>	Forest Practices Authority	Provides protection in line with the Aboriginal Relics Act and significant historic heritage
Agreements		
Tasmania Regional Forest Agreement	state government	Authorises the <i>Forest Practices Code</i> .
Community Forest Agreement	state government	No direct influence

7.1 State legislation

7.1.1 The Forest Practices Code

D5. Cultural heritage

General principles

The cultural heritage of all ethnic groups (e.g. Aboriginal and other Australians) will be considered in all stages of forest management. The need for consultation with special interest groups is acknowledged.

Protection of cultural heritage should be achieved through identification, recording and assessment, and subsequent management by prescription or reservation.

Assessment of cultural significance and development of management prescriptions should involve cultural heritage expertise.

Relevant legislation and processes, including those required under the Aboriginal Relics Act 1975 and the Historic Cultural Heritage Act 1995, will be delivered through Forest Practices Plans in accordance with procedures agreed by the Forest Practices Authority and other relevant agencies.

Sources of information include the Resource Guide for Managing Cultural Heritage in Wood Production Forests, site records, predictive statements for high sensitivity zones, and specialist advice.

Basic approach

D5.1 planning and assessment

Historic heritage

Relevant information on sites or areas of cultural heritage significance, or potential significance, should be recorded.

Data reliability and site significance should be assessed by an archaeologist.

General

During the preparation of a Forest Practices Plan any known historic heritage sites and any Aboriginal potential zones and known sites will be identified. Specialist advice will be obtained in accordance with agreed procedures.

Protection requirements will be listed in the Forest Practices Plan.

D5.2 Site management

Significant historic heritage sites should be managed in accordance with specialist advice and, where applicable, the Historic Cultural Heritage Act 1995.

In highly sensitive areas with poor ground surface visibility, monitoring during forestry operations should be undertaken.

When any cultural heritage sites or features associated with them (e.g. rock overhangs, sawmill remains) are located during operations, a Forest Practices Officer will be notified. The site will be assessed and recorded prior to further Disturbance.

Protection of significant sites should be achieved by maintaining confidentiality, management prescriptions such as physical protection works, changing the location of operations, reservation, or special management areas.

7.1.2 Historic Cultural Heritage Act 1995

Section 35(4)(a) of the Act provides an exemption from the need to seek works approval from the Tasmanian Heritage Council where a valid Forest Practices Plan is in place. Where a place is registered on the Tasmanian Heritage Register, Heritage Tasmania may be contacted for advice in relation to the conservation and management of historic heritage values.

16. Required criteria for entry in register

(1) The Heritage Council may enter a place in the Heritage Register if it is satisfied that the place has historic cultural heritage significance.

(2) For the purposes of subsection (1), the Heritage Council may determine that a place has historic cultural heritage significance if it is satisfied that the place meets one or more of the following criteria:

- (a) the place is important to the course or pattern of Tasmania's history;*
- (b) the place possesses uncommon or rare aspects of Tasmania's history;*
- (c) the place has the potential to yield information that will contribute to an understanding of Tasmania's history;*
- (d) the place is important in demonstrating the principal characteristics of a class of place in Tasmania's history;*
- (e) the place is important in demonstrating a high degree of creative or technical achievement;*
- (f) the place has a strong or special association with a particular community or cultural group for social or spiritual reasons;*
- (g) the place has a special association with the life or works of a person, or group of persons, of importance in Tasmania's history;*
- (h) the place is important in exhibiting particular aesthetic characteristics.*

This definition implies that if a valid forest practice plan is in place, a works application is not required for a listed place on the Tasmanian Heritage Register. This has been the case in almost all instances with the exception of a site in the north east peninsula where Heritage Tasmania took a leading role in heritage assessment while an FPP was valid.

7.2 Commonwealth legislation

There are also a number of federal legislative Acts that pertain to historic cultural heritage. The main Acts being:

The Australian Heritage Council Act 2003,

Environment Protection and Biodiversity Conservation Act 1999

7.2.1 Australian Heritage Council Act 2003

The *Australian Heritage Council Act 2003* defines the heritage advisory boards and relevant lists, with the act's consequential and transitional provisions repealing the *Australian Heritage Commission Act 1975*. The Australian Heritage Council Act, like the Australian Heritage Commission Act, does not provide legislative protection regarding the conservation of heritage items in Australia, but has compiled a list of items recognised as possessing heritage significance to the Australian community.

The register of the national estate, managed by the Australian Heritage Council, applies no legal constraints on heritage items included on this list.

7.2.2 Environment Protection and Biodiversity Conservation Act 1999

This Act was amended, through the *Environment and Heritage Legislation Amendment Act (no 1) 2003* to provide protection for cultural heritage sites, in addition to the existing aim of protecting environmental areas and sites of national significance. The Act also promotes the ecologically sustainable use of natural resources, biodiversity and the incorporation of community consultation and knowledge.

The 2003 amendments to the *Environment Protection and Biodiversity Conservation Act 1999* have resulted in the inclusion of indigenous and non-indigenous heritage sites and areas. These heritage items identified under this legislation are given the same penalty as actions taken against environmentally sensitive sites.

Sections specific to cultural heritage sites are §324a-324zb.

7.2.3 Environment and Heritage Legislation Amendment Act (No1) 2003

In addition to the above amendments to the *Environment Protection and Biodiversity Conservation Act 1999* to include provisions for the protection and conservation of heritage, the Act also enables the identification and subsequent

listing of items for the Commonwealth and National Heritage Lists. The Act establishes the *National Heritage List*, which enables the inclusion of all heritage, natural, indigenous and non-indigenous, and the *Commonwealth Heritage List*, which enables listing of sites nationally and internationally that are significant and governed by Australia.

In addition to the *Aboriginal and Torres Strait Islander Heritage Protection Act 1987*, amendments made to the *Environment Protection and Biodiversity Conservation Act 1999 (Comm.)* enables the identification and subsequent listing of indigenous heritage values on the commonwealth and/or national heritage lists (ss. 341d & 324d respectively).

While rarely used in wood production forests, this Act was activated in the proposed harvest of North East Peninsula in 2006.

8. Research publications

The FPA has undertaken research that supports the development of planning tools including this guide, and underpins decision making and management prescriptions. Reports provide recommendations on the heritage values and their management from experts in their fields. A large number of small studies and surveys have been completed at specific sites.

Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Coroneos, C	1992	A poor Man's Diggings: an archaeological survey of the Lisle-Denison goldfields Vol 1 & The Management Plan Vol.2	Unpublished report	Forestry Commission, Tasmania, Queen Victoria Museum and Art Gallery	FPA/LINC	H	NEGP
Annear, R	1989	We find a way or make it; a cultural heritage survey of the Lower King River Valley	Queenstown District Unpublished report	Department Parks, Wildlife and Heritage and Forestry Commission, Tasmania	FPA	H	FC
Austral Archaeology	2001	Van Diemen's Land Company Historic Sites (2 Vols.)	Unpublished report	Gunns Ltd	FPA	H	Gunns Ltd
Austral Archaeology	2002	Van Diemen's Land Company site conservation management plan Vol.1.	Unpublished report	Gunns Ltd	FPA	H	Gunns Ltd
Bannear, D	1989	King River Valley to Kelly Basin Archaeological Survey: A survey of the history and prehistory of Macquarie Harbour's northern shore	Unpublished report	Department Parks, Wildlife and Heritage and Forestry Commission,	FPA/LINC	H	FC/PW H

Procedures for managing historic cultural heritage when preparing forest practices plans

Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Becker, J	2002	Historic heritage at Armitstead	Unpublished report	Tasmania Gunns Ltd	FPA	H	Gunns Ltd
Becker, J	2003	Armitstead cultural heritage survey	Unpublished report	Gunns Ltd	FPA	H	Gunns Ltd
Bell, P	1993	Management recommendations for the Chintock (or Kent) battery in the Blue Tier; and Supplement – Options for the Kent Battery	Unpublished report	Forestry Commission, Tasmania /FPU	FPA	H	FC
Bird, C	1996	Places of the pioneers: life and work in Tasmania's forests	Published	Forestry , Tasmania /FPU	FPA	H	NEGP
Clarke, J & A McConnell	1992	The archaeology of Tasmania's forests	Pamphlet	Forestry Commission, Tasmania	FPA	H	FC
Coroneos, C	1995	Why is that hole so big?	Published	<i>Australasian Historical Archaeology</i> 13:24-31			
Du Cros and Assoc.	1994	An experimental investigation of logging disturbance in Tasmanian forests	Unpublished report	Australian Heritage Commission	FPA	A	NEGP
Evans, K	1992	The Kent/Chintok Battery and waterwheel: Conservation Assessment Part 1 – Historical Research Project	Unpublished report	Forestry Commission, Tasmania /FPU	FPA	H	FC
Ferguson, WC	1986	Results of an archaeological survey of the Douglas-Apsley, Bicheno, Tasmania	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Fish, P	1995	A short history of the timber industry in the Mount Horror and Sidling state forests	Pamphlet Forestry Tasmania	North East Advertiser Press	FPA	H	FC
Forghani, A	1998	Van Diemen's Land Company road location	Unpublished	Forestry	FPA	H	FT

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
		and management	report	Commission, Tasmania /FPU			
Forghani, A & D Gaughwin	2000	Identification of a road network in an archaeological site using an integrated GIS and RS technique	Published	<i>Proceedings of the second International conference on Geospatial Information, Agriculture and Forestry</i> . Lake Buena Vista, FL, USA	FPA	H	FT
Gaughwin, D	1991	North East Tasmania Historic Sites Inventory Project	Unpublished report	Forestry Commission, Tasmania	FPA/LINC LINC	H	NEGP
Gaughwin, D. & B. Brown	1991	Archaeological survey of recently burnt forested areas	Unpublished report	Forestry commission	FPA		FT
Gaughwin, D	1995	Chinese settlement sites in north-eastern Tasmania	Published In P Macgregor (ed) <i>Histories of the Chinese in Australasia and the South Pacific</i> 230–245	Museum of Chinese History, Melbourne	FPA	H	FPB
Gaughwin, D	1995	Trade, Capital and the development of the extractive industries of North East Tasmania.	Published	<i>Australian Journal of Historical Archaeology</i> 10:55–64	FPA	H	FPB
Gaughwin, D	1999	Species trial and arboreta in Tasmania	Published in J Dargavel & B Libbis (eds.)	Centre for Resource and Environmental	FPA	H	FPA

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
			<i>Australia's Ever changing Forests: Proceedings of the Fourth National Conference on Australian Forest History</i>	Studies, ANU and the Australian Forest History Society, Canberra			
Gaughwin, D	2006	Natural vs. Cultural the D'Entrecasteaux expedition, Tasmania 1792	published	http://www.ncl.ac.uk/unescolandscapes/abstracts/	FPA/web	H	FPA
Gaughwin, D	2012	An assessment of the heritage values of the Wyniford River diversion weir, north east Tasmania	Unpublished report	Tasmanian Irrigation	FPA	H	Tasmanian Irrigation
Gaughwin, D & A Forghani	2000	Finding historic roads in an archaeological setting using GIS/RS	<i>Proceedings of the 10th Australasian Remote Sensing and Photogrammetry Conference</i>	Adelaide	FPA	H	FT/FPA
Gaughwin, D & B Brown	1991	Archaeological survey of recently burnt forested areas	Unpublished report	Forestry Commission, Tasmania/FPU	FPA	A	FC
Howroyd & Forward	1980	A study of the historic structures at the Perth nursery, Perth	Unpublished report	Forestry Commission	FPA	H	FC
Jackman, G	1995	No good is to found in the granite: Aspects of the social maintenance of mining concepts on the Blue Tier tin-field		Australian Historical Archaeology 13: 49–58	FPA	H	NEGP

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Jackman, G	1997	An archaeological survey of the Blue Tier tin-field. (2 vols.)	unpublished	Forestry Tasmania	FPA	H	NEGP
Kee, S	1987	An archaeological reconnaissance of the Wielangta Forest Block	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Kee, S	1987	Report of the archaeological investigation of Planning Units ECU 03 and BDU 05, Central Highlands, Tasmania	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Ketelaar, A. & P. Kostoglou	1993	A short history of the timber industry in the Wielangta state forest	Pamphlet	Forestry Commission, Tasmania	FPA	H	FC
Kostoglou, P	1992	Mt Horror state forest: an archaeological survey of the historic timber industry	Archaeology of the Tasmanian Timber Industry Report No. 2	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1991	Wielangta state Forest: An archaeological survey of the historic timber industry.	Archaeology of the Tasmanian Timber Industry Report No.1	Forestry Commission, Tasmania/FPU	FPA	H	TFRC
Kostoglou, P	1991	Wielangta state forest: oral histories related to Report No. 1	Supplementary Papers Report No. 1	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1992	An Archaeological survey of the Winterbrook (Black Bluff) sawmill and timber tramway	Unpublished report to Forest Practices Unit	Forestry Commission, Tasmania /FPU	FPA LINC	H	FC
Kostoglou, P	1992	Mt Horror state forest: an archaeological survey of the historic timber industry	Archaeology of the Tasmanian	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
			Timber Industry Report No. 2 Supplementary Papers				
Kostoglou, P	1993	Sidling Range state forest; an archaeological survey of the historic timber industry	Archaeology of the Tasmanian Timber Industry Report No. 3	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1993	The Southern forests; an archaeological survey of the historic timber industry. Block 1. Historic Cockle Creek and Lune River	Archaeology of the Tasmanian Timber Industry Report No. 4	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1994	The Southern forests; an archaeological survey of the historic timber industry. Block 2. Historic timber getting between Hastings and Dover	Archaeology of the Tasmanian Timber Industry Report No. 5	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1995	The Southern Forests: Block 3. An archaeological survey of the historic timber getting between Glendevie and Franklin	Archaeology of the Tasmanian Timber Industry Report No. 6	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1995	The Southern Forests: an archaeological survey of the historic timber. Block 4. Historic timber getting on Bruny Island	Archaeology of the Tasmanian	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
			Timber Industry Report No. 7				
Kostoglou, P	1996	The southern forests: industry overview and assessment of technology.	Archaeology of the Tasmanian Timber Industry Report No. 8	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1996	An archaeological survey of the Fortescue Bay timber tramway	Derwent District	Forestry Tasmania	FPA	H	FT
Kostoglou, P	1996	Historic timber getting in the southern forests statements of site significance and management recommendation	Archaeology of the Tasmanian Timber Industry Report No. 9	Forestry Commission, Tasmania /FPU	FPA LINC	H	TFRC
Kostoglou, P	1996	Dawson's Road: the first road to nowhere – an archaeological survey of the road and its features	Unpublished	Forestry Tasmania	FPA	H	FT
Kostoglou, P	1997	Cultural heritage identification and assessment: Stage 2&3 Study 1. Historic timber getting Circular Head District	Unpublished report	RFA. Tasmanian Regional Forest Agreement Environment and Heritage Technical Committee	FPA	H	RFA
Kostoglou, P	1998	Historic Heritage of the southern Central Plateau	Unpublished	Forestry Commission, Tasmania /FPU	FPA	H	NEGP
Kostoglou, P	1999	An archaeological survey of Clennett's tramline	Derwent District	Forestry Tasmania	FPA	H	FT

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Kostoglou, P	1999	Reconstruction of an historic log haulage facility, Arve Road	Huon District	Forestry Tasmania	FPA	H	FT
Kostoglou, P	1999	Archaeological assessment of the historic alluvial tinfields of north eastern Tasmania	Unpublished	Forestry Tasmania	FPA	H	FT
Kostoglou, P	1999	Archaeological assessment of historic Churchill's hut	Unpublished	Forestry Tasmania	FPA	H	FT
Kostoglou, P	2000	An archaeological survey of historic timber getting sites in the Tyenna Valley	Derwent District	Forestry Tasmania	FPA	H	FT
Kostoglou, P	2000	An archaeological survey of historic timber getting sites in the Tyenna Valley vicinity	Unpublished	Forestry Tasmania	FPA	H	FT
Kostoglou, P	2003	Archaeological excavation: Greenstone Creek historic Chinese tin miner's camp	Unpublished report	Forestry Tasmania	FPA	H	FT
Kostoglou, P	2004	Archaeological excavation: historic Chinese tin miner's camp, Sir Garnet Creek	Unpublished report	Forestry Tasmania	FPA	H	FT
Marshall, D, & M Pearson	1997	Cultural heritage identification and assessment: Stage 2&3 Study 2. Sample place types in forests. (3 vols.)	Unpublished report	RFA. Tasmanian Regional Forest Agreement Environment and Heritage Technical Committee	FPA	H	RFA
McConnell, A	1993	How many ships sail in the forest? Inventory of historic places in Tasmania's forests	Dargavel & S. Feary (eds) <i>Australia's Ever Changing Forests II Proceedings of the Second National Conference on Australian Forest History</i>	Australian Forest History Society in association with the Centre for Resource and Environmental Studies, ANU, Canberra	FPA	H	FC

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Murray, T, R Cosgrove & A Warner	1990	The management of archaeological resources in forested areas: A research project funded by the Tasmanian Forest Research Council Inc	pp 261–272 Published	Australian Archaeology Vol 30: 81-83	FPA	A	TFRC
Painter, R	1996	Burnt area archaeological survey, Temma state forest	Unpublished report	Forestry Tasmania/FPU	FPA	A	FT
Parham, D	1992	South East Region, Historic sites Inventory Project	Unpublished report	Forestry Commission, Tasmania /FPU	FPA/LINC	H	NEGP
Parham, D	1992	Archaeological survey of recently burnt areas	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Parham, D	1992	Silver Plains archaeological survey (Lake Sorell)	Unpublished report	APPM Forest Products, Tasmania	FPA	A	APPM
Parham, D	1995	Archaeological survey of Boral Timber's property at Silver Plains, Lake Sorell	Unpublished report	Boral Timber Tasmania	FPA	A	Boral
Pearson, M & Campion, S	1996	Cultural heritage data audit and analysis Stage 1.	Unpublished report	RFA. Tasmanian Regional Forest Agreement Environment and Heritage Technical Committee	FPA	H	RFA
Pearson, M & D Marshall	1996	Cultural heritage identification and assessment: Stage 4. Conservation principles and advice for Historic National Estate Values	Unpublished report	RFA. Tasmanian Regional Forest Agreement Environment and Heritage Technical Committee	FPA	H	RFA
Pearson, M &	1997	Cultural heritage identification and assessment:	Unpublished	RFA. Tasmanian	FPA	H	RFA

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
D Young		Stage 2&3. Study 4. Transportation routes	report	Regional Forest Agreement Environment and Heritage Technical Committee			
Pearson, M & S Campion	1997	Cultural heritage identification and assessment: Stage 2&3. Study 3: Mining sites	Unpublished report	RFA. Tasmanian Regional Forest Agreement Environment and Heritage Technical Committee	FPA	H	RFA
Pickering, M	1991	Report on the archaeological site survey of the Surrey Hills region, North west Tasmania	Unpublished report The management of archaeological resources in forested areas	La Trobe University, Forestry Commission. AFH	FPA	A	TFRC
Prince, GB	1984	An archaeological survey of the Wedge Forest Block, south-west Tasmania	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Prince, GB	1986	An archaeological survey of proposed road and logging coupes, Lemonhyme Forest	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Scripps, L	1990	North West Historic Site Inventory Project	Unpublished report	Forestry Commission, Tasmania /FPU	FPA/LINC	H	NEGP
Smith, A	1995	The assessment of archaeological survey methods for forested environments	Unpublished report	Forestry Tasmania/FPB	FPA/LINC	A	NEGP

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Author	Year	Title	Series	Publisher	Location 2015	Report type	Funding
Smith, A	1995	The assessment of archaeological survey methods for forested environments supplementary study: the post operational survey	Unpublished report	Forestry Tasmania/FPB	FPA/LINC	A	NEGP
Snelgrove, C	1991	Corinna Track Survey Report	Unpublished report	Forestry Commission and Parks, Wildlife and Heritage, Tasmania	FPA	H	FC/PW H
Snelgrove, C	1992	Results of an archaeological survey and management plan for Teepookana on the King River	Unpublished report	Forestry Commission, Tasmania	FPA	H	FC
Tassell, M	1996	Hollybank Forest Reserve: historical significance of the farming phase	Unpublished report	Forestry Tasmania	FPA	H	FT
Thomas, I	1992	An archaeological survey of recently burnt forest areas in eastern Tasmania	Unpublished report	Forestry Commission, Tasmania	FPA	A	FC
Wilson, A. E.M.Christiens	2001	Forest Exploration, assessment and mapping in the Weld Valley, Tasmania 1925	Tasforests 13(1)	Forestry Tasmania	FT	H	FT

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Document summary information

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Version control

Version	Date	Author(s)	Summary of changes
0.1	Feb 2012	Denise Gaughwin	Original document, most recently revised December 2013 (version 2.1 of original document – TRIM 2012/49421)
1.0	6 Jul 2015	Peter McIntosh	Major revision of text and title (but not recommendations), and separation of Historic Cultural Heritage from Aboriginal Cultural Heritage. Text abbreviated and edited.
1.1	30 Jul 2015	Peter McIntosh	Title revised following Board suggestion
1.2	10 Sep 2015	Peter McIntosh	Minor layout changes
1.3	Oct 2015	Chris Grove	Style edit
2.0	May 2017	Peter Volker	Final document
2.1	1 Sep 2017	Peter McIntosh	As recommended by the Secretary, DPIPWE, changes made to Table 1 (water races); Table 2 (full title of the Historic Cultural Heritage Act 1995); and section 7.1.2. (1 st Paragraph) to reflect recent changes to legislation.

Stages required for release outside FPA

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CFPO	Required	6 July 2015
FPAC	Required	24 August 2015
Board	Required	18 September 2015
Secretary DPIPWE	Required	1 September 2017