

ARTHUR-PIEMAN CONSERVATION AREA



Tracks 501, 601, 503 Review of Aboriginal Heritage



DPIPWE



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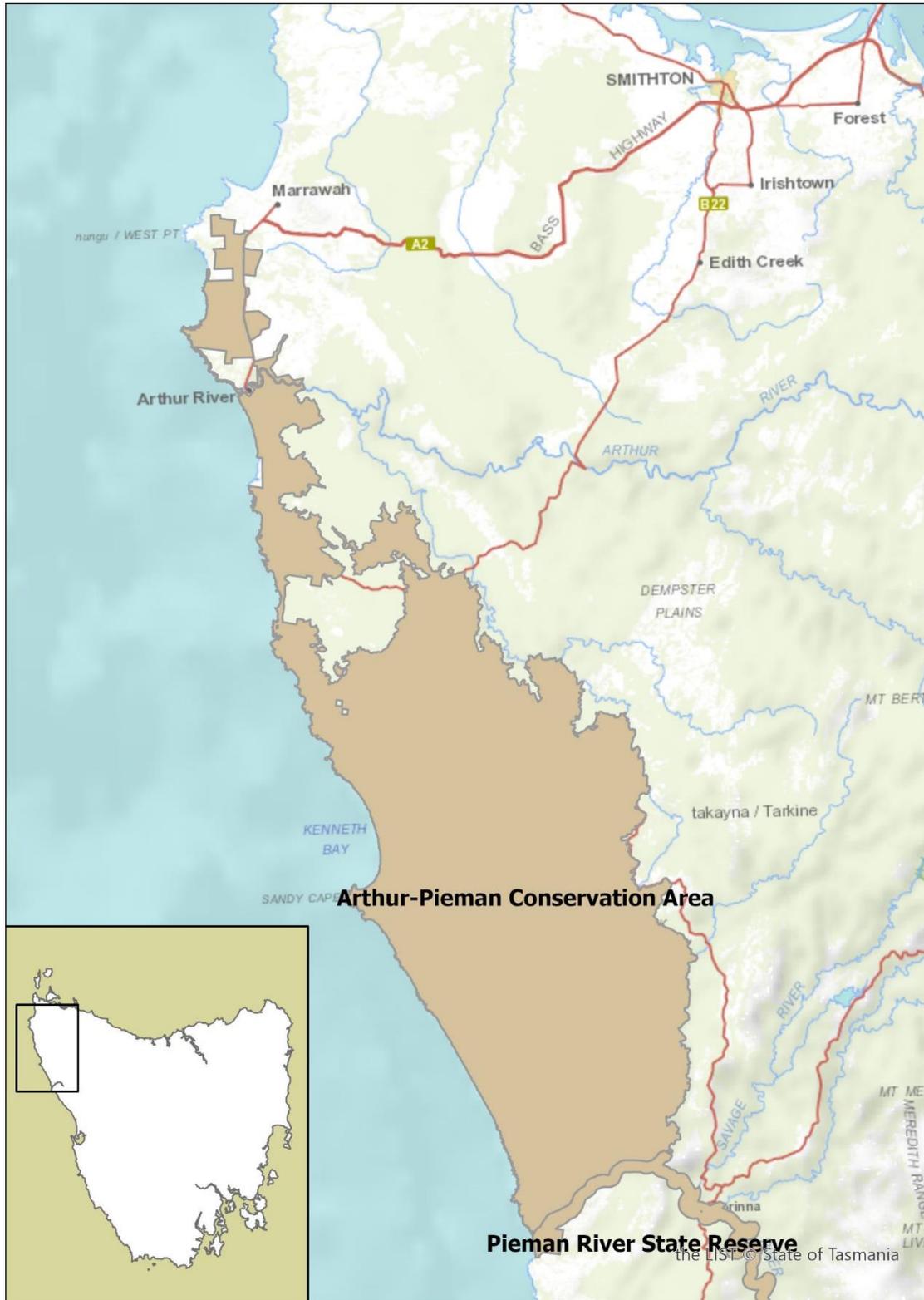
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Contents

Map of Arthur-Pieman Conservation Area.....	3
Executive summary.....	4
Introduction.....	11
Project background.....	11
Study process.....	12
Constraints and limitations.....	13
Environmental setting.....	14
Palaeoenvironment.....	14
Geology.....	15
Physiography and land systems.....	16
Climate and rainfall.....	18
Vegetation.....	19
Aboriginal food resources.....	19
Aboriginal history.....	21
Ethnohistorical outline.....	21
Historical descriptions of local country and culture.....	22
European land-use.....	27
Aboriginal heritage desktop review.....	33
Previous heritage studies.....	33
Aboriginal heritage field survey.....	39
Survey method.....	39
Survey results.....	39
Cultural significance assessment.....	45
Assessment frameworks.....	45
Previous assessments.....	46
Current assessment.....	47
Impact assessment.....	53
Proposed activity.....	53
Forms of potential impact.....	57
Assessment of potential impacts on identified values.....	58
Legal requirements.....	61

Statutory context.....	61
Summary of key findings	67
Survey results.....	67
Potential impacts	67
Further investigations	68
Management planning	69
Aboriginal community engagement.....	70
Public Environment Report Advice	71
2.1 Feasible alternatives.....	71
2.2 Description of the environment	73
2.3 Relevant impacts.....	74
2.4 Proposed avoidance and mitigation measures.....	78
2.5 Residual impacts/proposed offsets	81
2.6 Conclusion	82
References	83
Appendices	88
Appendix A - Glossary	88

Map of Arthur-Pieman Conservation Area



Executive summary

The Tasmanian Government is investigating options for re-instigating access by off-road vehicles (ORVs) to three currently closed tracks (501, 503 and 601) between Sandy Cape and Pieman Heads within the Arthur-Pieman Conservation Area (APCA). The southern portion of Track 601 extends into the adjoining Pieman River State Reserve. Tracks 501, 601 and the western 2km of 503 are situated within the boundary of the Western Tasmania Aboriginal Cultural Landscape (WTACL), which was entered on the Commonwealth Government's National Heritage List (NHL) in 2013 on account of its high Aboriginal heritage values.

A referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBCA) regarding the proposed action to re-open the affected tracks and undertake allied mitigation works was submitted in 2017. A response was received that the proposed activity was a controlled action requiring assessment and approval through the preparation of a Public Environment Report (PER), the content of which was set out in guidelines issued by the (then) Commonwealth Department of Environment and Energy (DOEE).

The Department of Primary Industries, Parks, Water and Environment (DPIPWE) commissioned an Aboriginal Heritage Assessment of the proposal to re-open and undertake selected mitigation works on Tracks 501, 503 and 601. Aboriginal community consultation was not part of the study brief, but is proposed to be undertaken separately if the proposal proceeds.

DPIPWE Statement of Intent

Due to the significance and complexity of the cultural values, their spatial extent and the dynamic landforms of the area, determining how to allow for ORV access while ensuring protection of the values of the WTACL is challenging and complex.

To assist in understanding how best to address the PER guidelines, the Parks and Wildlife Service (PWS) commissioned an independent cultural heritage assessment of the immediate area traversed by Tracks 501, 503 and 601. That work was described in a background report provided to the PWS that contains the results of a desktop analysis and on-ground field survey of the Aboriginal cultural heritage values of Tracks 501, 503 and 601, an assessment of the potential impacts to those values of the proposed activity, and findings with respect to the proposed mitigation measures and the PER guidelines.

This report is derived from the background report. The findings contained in the background report have not been altered in this report. The key difference is that sensitive cultural heritage information from the background report has been removed in line with standard practice.

This report is intended to support a better public and stakeholder understanding of the Aboriginal cultural values of the WTACL and the wider area, and specifically the area of the tracks, and the key issues that must be addressed and detailed in the PER to demonstrate that ORV access can be provided for without resulting in an unacceptable impact on those values.

Desktop review

A search of the Aboriginal Heritage Register (AHR) in January 2020, based on a 1km wide corridor centred on the Tracks 501, 503 and 601, returned 102 records for the study area between Johnsons Head and Pieman Heads. These records reflect the results of studies by numerous researchers since the early 1980s using a range of methodologies, with many sites evidently having been re-recorded and re-registered over the years, either singly or as part of larger complexes without updating or retiring the original site registrations.

The previously registered sites predominantly comprise shell middens (with or without visible stone artefacts and animal bone - food remains), stone artefact scatters or isolated stone artefacts. A single rock marking site has been recorded within close proximity to one of the tracks.

The previously registered sites group into two main clusters; a northern cluster of 50 site entries between Johnsons Head and Lagoon River (Track 501), and a southern cluster of 51 site entries between the Interview River and the Pieman River mouth (Track 501). Only one site is recorded along the 9.5km long sandy beach extending between Lagoon River and Interview River (Track 501).

Survey results

A total of sixty-one (61) sites or precincts were able to be re-located or otherwise defined during survey from the 102 desktop survey records.

Track 501

Of the fifty-one (51) previously recorded sites in the vicinity of Track 501, twenty-four (24) sites were able to be re-located in some fashion, although there can be no guarantee that the same artefacts or features were still present or visible. Six sites were searched for but not able to be found, while a further twenty-one (21) sites were not searched for, being considered insufficiently close to the proposed track to warrant re-assessment. Nineteen (19) previously recorded sites were ultimately grouped into six combined sites or precincts, four re-located single sites retained their legacy AHR number, while one site previously recorded as a rock engraving was upgraded to a precinct to encompass local midden deposits, but retained its original AHR number. Fifteen (15) previously unrecorded sites or precincts were delineated, arriving at a total of twenty-six (26) separate site or precinct entities being designated along Track 501.

Track 503

This track had been subject to previous survey. Two new sites were recorded along this track.

Track 601

Of the fifty-one (51) previously recorded sites in the vicinity of Track 601, traces were observed corresponding to forty-two (42) legacy record locations. Eight sites were searched for but not able to be found, while one was not searched for. Twenty-one (21) legacy sites were grouped into eight combined sites or precincts, twenty-two (22) re-located single sites retained their legacy AHR number, and three previously unrecorded sites were delineated. This equates to thirty-three (33) separate site or precinct entities being designated along Track 601.

The bulk of previously recorded sites along Track 501 and Track 601 that were targets for re-assessment were able to be found in some form, confirming the patterning of previous

results, although in many cases, particularly along Track 601, the surface expressions of the re-located sites was smaller than the originally recorded extents. This is considered to reflect the extent of site erosion and vegetation growth since the original records were made; 30 years in some cases.

The most significant empirical finding of the present study in relation to understanding site patterning is the identification of ten previously unrecorded midden sites in the large dune field complex between Lagoon River and Interview River. While the sites were typically low density and/or heavily eroded, they demonstrate firstly that the apparent absence of sites within this landscape unit suggested by previous work is not correct and that Aboriginal people were content to carry food for over a kilometre rather than being tethered to shore resources. Secondly, the findings demonstrate that sites are constantly being exposed and concealed in the dynamic dunefield environment and highlight the risk of making management decisions based on fugitive site presentations.

The other key knowledge gain is that many of the sites are in poor condition and rapidly deteriorating. While many midden sites displayed intact deposits, these are actively eroding, and the geomorphological indications are that these are small vestiges of their original extents.

All observed site presentations are primarily a function of erosion, which is particularly noticeable along Track 501. The sites formed in a dynamic sand-budget environment where winnowing, dispersal and redistribution of material is part of a seasonal cycle of sand sequestration and release. Evidence suggests that for most of the period of site formation, thought to correspond to the last 2 000-3 000 years, the net sand budget was cumulative, trapping small camp sites soon after they were formed and protecting them.

Post contact land use, including cattle agistment, indiscriminate burning and ORV use has reversed the sediment equation, leading to erosion of previously stable landforms and exposing cultural material to dispersal by wind and water.

Cultural significance

Contemporary heritage management principles hold that Aboriginal communities are the primary sources of information about Aboriginal heritage, and that aesthetic, social and spiritual (i.e. Aboriginal cultural) significance of Aboriginal heritage objects and places can only be determined by those communities. Aboriginal community consultation is required to understand these forms of cultural significance.

Scientific significance is commonly considered to refer to the potential of a place to yield information, generally through a process of archaeological investigation in response to timely and specific research questions. It is not possible to meaningfully assess the scientific value of a place in the absence of these questions, so as a workaround, archaeologists commonly refer to such things as uniqueness or representativeness in terms of location, form and content that may be mined for data suitable for answering a range of potential future questions.

The current study area contains a variety of Aboriginal living places and cultural deposits that are able to support a wide range of potential scientific research interests. Small sites may provide a snapshot of a moment in time, for example a family gathering for a single meal - potentially revealing aspects of group size and gender. Large compound sites have the potential to demonstrate changing patterns in food production, land use and social behaviour. Small sites and large sites within the WTACL each tell different parts of the story of Tasmania's first peoples and together comprise one of the richest and most intact Aboriginal cultural landscapes remaining in Tasmania.

National Heritage List values

The NHL values statement focuses on the idea that during the late Holocene in northwest Tasmania, people practiced a semi-sedentary way of living, supported by rich marine resources including shellfish, birds and seals. Two site types, depressions relating to former huts that were sometimes grouped in villages, and cobble beach depressions thought to be used for hunting seal, reflect aspects of this semi-sedentary lifestyle and are very important to protect. Other site types, such as shell middens and stone artefact scatters located between the hut villages, are also evidence of this mixed sessile and mobile way of life; they are all part of the one economic strategy. No hut depressions or potential 'seal hides' were identified during the present survey; however, this does not diminish the capacity for the area to demonstrate the National Heritage values relating to semi-sedentism.

Proposed activity and potential impacts

The proposed works along Tracks 501 and 601, and to a lesser degree Track 503, involve a combination of track surface protection, drainage works, fencing, track markers, signage and, in some cases, track realignment aimed to reduce the direct vehicular impacts on Aboriginal heritage.

Aboriginal heritage sites within the WTACL are continually being exposed as a result of natural and anthropogenic factors. The patterning of visible cultural material will change as the disturbance and erosion progresses, exposing and destroying sites and with it evidence of Aboriginal life on the coast over the last 2 000-3 000 years. There is clear evidence that ORV use has directly impacted sites within the study area, and also contributed to general entropy by suppressing vegetation, disrupting palaeosols, and otherwise nucleating de-stabilising erosion.

Tracks 501, 503 and 601 directly intersect thirty-five (35) confirmed sites/precincts over a cumulative linear distance of c2.3km on a range of substrates and terrain. A further twenty-six (26) confirmed sites are potentially at risk from activity away from the proposed tracks, while eight (8) previously recorded sites that could not be re-located have legacy coordinates that plot within 30m of the proposed track alignment and may be potentially impacted. Due to their currently buried status, an unknown number of heritage sites that do not present at surface may be potentially impacted over time.

In addition to potential impacts associated with implementing the proposed mitigation works and proposed compliant use, over the long-term the most significant risk to Aboriginal heritage is associated with unauthorised vehicular access to sensitive environments, as many of the more fragile midden sites are located in dune sands where user activity is difficult to regulate.

Impact assessment

Tracks 501, 503 and 601 directly intersect thirty-five (35) confirmed Aboriginal heritage sites/precincts over a cumulative linear distance of c2.3km on a range of substrates and terrain. A further twenty-six (26) confirmed heritage sites are potentially at risk from activity away from the proposed tracks, while eight (8) previously recorded sites that could not be re-located have legacy coordinates that plot within 30m of the proposed track alignment and may be potentially impacted. Due to their currently buried status, an unknown number of heritage sites that do not present at surface may be potentially impacted over time.

It was observed in many instances that heritage sites extend beyond the extent of the proposed mitigation works, rendering large areas vulnerable to damage.

A high level risk analysis suggests that implementing the proposed controls along Track 501 may result in a theoretical reduction from a very high level uncontrolled risk to high risk (or

lower) at one location, a high level uncontrolled risk will be reduced to medium risk (or lower) at one location, and a medium level risk will be reduced to low risk at one location. This equates to a material reduction in risk of direct and indirect impacts by at least one risk level at three out of a total of 32 sites.

The proposed works will not result in any reduction in risk to the two sites identified along Track 503.

For Track 601, implementing the proposed controls may result in a theoretical reduction from a very high level uncontrolled risk to high risk (or lower) at eight locations, a high level uncontrolled risk will be reduced to medium risk (or lower) at four locations, and a medium level risk will be reduced to low risk at seven locations. This equates to a material reduction in risk of direct and indirect impacts by at least one risk level at nineteen out of a total of 40 sites.

These results may be improved if the proposed mitigation actions are extended to the re-mapped heritage site/track intersection extents, but are unlikely to reduce the potential impacts to acceptable levels, particularly along Track 501 where large expanses of highly fragile heritage will remain accessible to users not complying with proposed controls.

Knowledge gaps

The proposed mitigation works, which include track surface protection, track markers, fencing, drainage works, signage and local re-routing, aim to address selected track condition problems and known environmental risks, however significant gaps remain in understanding the full range of heritage values and proving that the track engineering concept, the current scale of proposed deployment, and the likely level of user compliance will not result in cumulative impacts to Aboriginal heritage values. These knowledge gaps must be adequately addressed in the PER.

Expanding deployment to cover the additional physical heritage intersections identified by survey may appear a simple exercise, however the complex geomorphology and potential for currently concealed sites to be exposed or impacted in future means that a high level of residual risk will remain. Even if the spatial coverage of mitigation works proved adequate, the lack of data attesting to the effectiveness of the proposed track surfacing, fencing and signage etc on preserving Aboriginal heritage is unlikely to meet statutory duty of care obligations. Trials of the proposed hardening/matting medium have not yet been undertaken elsewhere within the APCA in relation to managing heritage impacts, and no data is available regarding the degree to which users might comply with the proposed mitigations. To the contrary, evidence was observed during field work of unauthorised vehicle access along the currently closed tracks.

Further evidence demonstrating the efficacy of the proposed mitigations is required before they can be considered to support the proposed action. In addition to proving the track hardening concept, demonstrating user compliance and expanding the deployment to cover known heritage risks, a range of additional mitigation actions would likely be necessary to reduce potential heritage risks below statutory thresholds and comply with the principles of Ecologically Sustainable Development.

These additional actions may include subsurface archaeological investigation, archaeological salvage, limiting vehicle types and numbers, real-time vehicle tracking and policing, regular impact monitoring, ongoing asset maintenance and environmental rehabilitation.

Determining which of the currently proposed and potential additional mitigation measures should be used in which location will require expertise in a range of heritage and technical fields, and input from the Aboriginal community; consequently, no site-specific commentary on proposed or potential mitigations is able to be presented in this report.

Due largely to the absence of demonstrated evidence for the efficacy of the proposed mitigation measures, the current assessment concludes that a PER assessment is unlikely to be successful based on current technical information alone.

The costs associated with implementing and maintaining the necessary engineering and administrative controls for re-opening Tracks 501, Track 601, and to a lesser degree Track 503, have not been estimated but are likely to be considerable, and given the competing imperatives of capping vehicle numbers to limit impacts and reliance on vehicle permit fees for cost recovery, effective and ongoing impact mitigation may not be economically viable.

Significant knowledge gaps exist with regard to understanding:

- the risk of buried cultural deposits in areas where there is no current surface presentation;
- the performance characteristics of the proposed track surfacing material;
- site-specific geotechnical settings and installation requirements;
- maintenance requirements, including ongoing heritage site condition monitoring;
- the likely degree of vehicle use and user compliance;
- how to limit, track and police vehicle numbers/sizes/weights;
- the effectiveness of the proposed mitigations in reducing user impacts to heritage in analogous settings; and

- how the proposed actions are supported by the Tasmanian Aboriginal community.

Management Planning

Filling the knowledge gaps, and potentially undertaking other actions, will be required to adequately acquit the broader aims of the reserve classification, vision and process that are articulated in the 2002 APCA Management Plan (APCA MP) to ensure that “*the natural and cultural values of the area are well conserved, managed and presented*”.

At a fundamental level, it is evident that the APCA MP requires urgent review to take into account the WTACL NHL listing and the additional statutory obligations and imperatives for Aboriginal community consultation, and to provide the most equitable forum for broader community input into the future management and uses of the place.

Aboriginal community engagement

The APCA MP stresses the importance of involving the Aboriginal community in activities that have the potential to impact cultural heritage within the reserve. This requirement is made even more potent by the 2013 listing of the WTACL on the NHL. It is essential that any actions undertaken regarding Tracks 501, 503 and 601 are consistent with the requirements of the APCA MP, including the requirement for Aboriginal community consultation, and that works are based upon appropriate evidence, knowledge and disciplines.

Engaging with the Tasmanian Aboriginal community is essential for understanding the Aboriginal heritage values of the WTACL and broader APCA, for developing effective, equitable and sustainable values management, and demonstrating compliance with reserve and statutory guidelines and policies.

While Aboriginal community consultation on the proposed mitigation works and tracks re-opening is envisaged if the PER proceeds, delaying consultation until the concept is at an advanced stage is not in the spirit of State and Commonwealth guidelines on indigenous engagement and may be considered a weakness in any PER assessment.

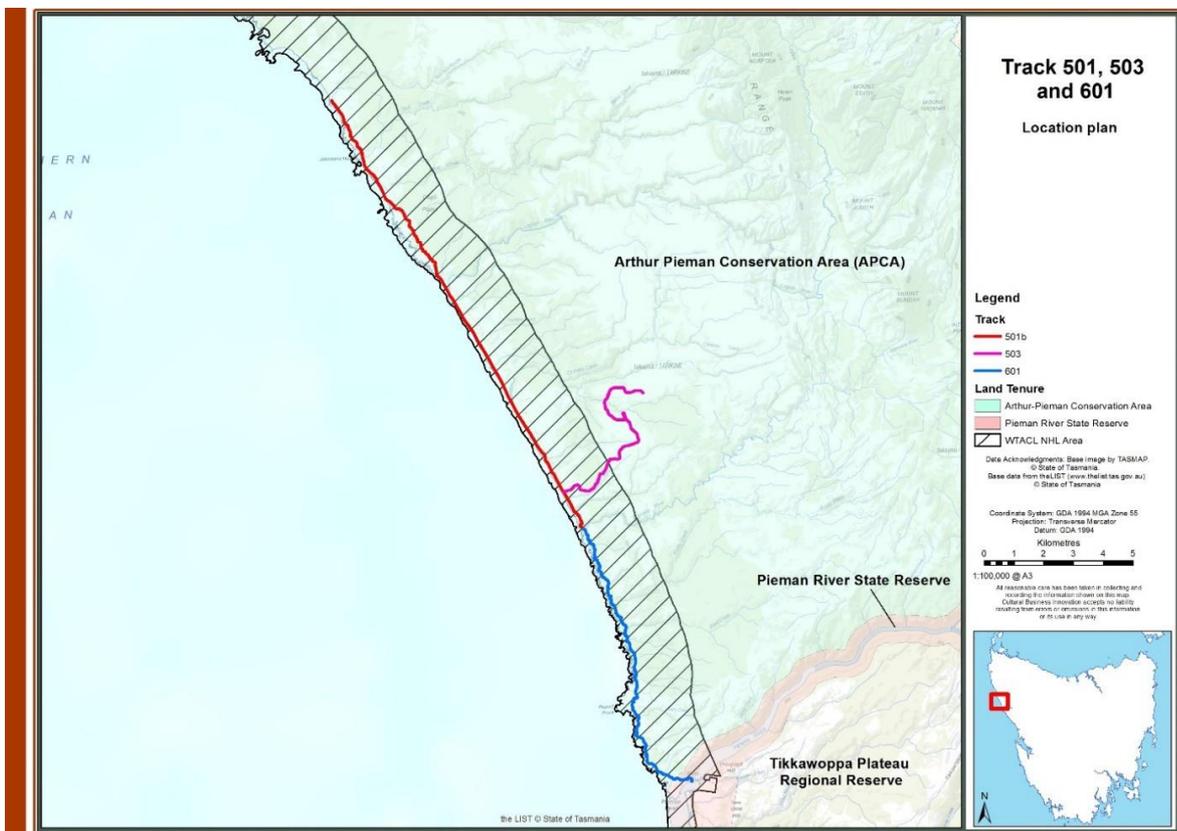
Introduction

Project background

The Tasmanian Government is investigating options for allowing access by ORV to three tracks (501, 503 and 601) between Sandy Cape and Pieman Heads within the Arthur-Pieman Conservation Area (APCA). Track 501 extends for c17.5km from Sea Devil Rivulet to the Interview River, Track 601 runs for 11.9km from the Interview River to the Pieman River, and Track 503 runs inland from Track 501 to the Interview River Mine. The southern portion of Track 601 extends into the adjoining Pieman River State Reserve. Tracks 501, 601 and the western 2km of 503 are situated within the boundary of the Western Tasmania Aboriginal Cultural Landscape (WTACL), which was entered on the Commonwealth Government's National Heritage List (NHL) in 2013 on account of its high Aboriginal heritage values (Figure 1).

A referral under the EPBCA regarding the proposed action to re-open the affected tracks and undertake allied mitigation works was submitted in 2017. A determination was made that the proposed activity was a controlled action requiring assessment and approval through the preparation of a (PER, the content of which was set out in guidelines issued by the (then) Commonwealth Department of Environment and Energy (DOEE).

Figure 1: Location plan



This report contains the results of a desktop analysis and on-ground field survey of the Aboriginal cultural heritage values of Tracks 501, 503 and 601, including an assessment of the potential impacts to those values of the proposed activity, including, if necessary, recommendations for alternate access and mitigation measures.

The assessment report is designed to be consistent with the technical requirements of Aboriginal Heritage Tasmania's (AHT) *Standards and Procedures*, with the exclusion of the requirement for Aboriginal community consultation which the Department proposes to undertake through a separate process at a later date. While not a PER, this report addresses relevant questions outlined in the PER guidelines as advice to the Department, with the Department being responsible for completing and submitting the PER as required.

Study process

The technical component of this Aboriginal heritage assessment has been undertaken in accordance with AHT's *Standards and Procedures* (June 2018). The methodology for the study is reproduced in Appendix B and briefly outlined below:

Desktop review

The process involved review of the AHR for a 1km area centred on the proposed track alignment supplied by DPIPW. The extent the search area was agreed by AHT staff. Previous heritage assessments and site records relating to the study area were also reviewed.

Field survey

Field survey focused on a 15m-wide corridor centred on the proposed 4m-wide alignment of Tracks 501, 503 and 601, which feature a combination of existing track segments and proposed realignments. Surveys were also conducted along adjacent tracks to confirm and update previous site recordings. Intersections and sites in close proximity to the proposed track route were delineated by hand-held GPS and documented by written description and digital photography in accordance with AHT standards. Completion of Site Recording forms is currently in progress.

Aboriginal community consultation

The current assessment is a technical report to the Department on PER matters. Aboriginal community consultation was therefore outside the scope; however, the Department intends to undertake consultation should the PER be progressed. Informal communications received from members of the Aboriginal community during the course of the study indicate that the APCA is considered extremely significant, and it is evident there is considerable knowledge of heritage values in the area that have not been officially documented. It is vital to understand that making management decisions, including designing park infrastructure, based only on official records without Aboriginal community input, carries very high risks of impacting heritage that is both legally protected and belongs to Aboriginal people.

"The Arthur-Pieman Conservation Area is not a "Park" to Tasmanian Aboriginal people. It is our country, one of the last places we can take our families and surround ourselves absolutely with the places and culture of our old people, who lived there for so many thousands of years. We connect there; it's place of our memory and of our continuance.

We feel our old people around us there." (Brendan "Buck" Brown AHO 2020)

Constraints and limitations

This is a focused, use-specific, technical study, in an area with multiple values and uses by various communities. The lack of broader context is a fairly normal constraint for such studies; however, in the present case, the values that are the subject of the assessment are primarily owned by the Aboriginal community and require a process of engagement to begin to understand. While managing external communications is understandable from the perspective of confidentially assessing approaches to the PER assessment, the absence of consultation with the Aboriginal community does not allow for full documentation and appreciation of Aboriginal cultural heritage values. Importantly, the absence of Aboriginal community input prevents the formulation of definitive management recommendations. These limitations are inherent in this report, given it was commissioned as a preliminary body of work that would be the basis of consultation with the Tasmanian Aboriginal community should the PER be progressed.

Fieldwork was constrained in various ways, including the need to operate in a remote field setting, the regular inclement weather which reduced the visibility of statutory relics and hampered recording effectiveness, and other practical risks including quicksand. The programming of other reserve activities, including unanticipated fire management operations, impacted on the programming of fieldwork.

Environmental setting

Palaeoenvironment

It is important to view the archaeological record of Tasmania's Aboriginal occupation and land use over the past 40,000-plus years within the context of an environment that changed dramatically during that time. When the first people arrived is unknown, however land bridges associated with glacial cycles connecting Tasmania to mainland Australia occurred from 12-29, 31-37, 43-44 and 50-56 thousand years before present (ka BP) (Blom 1988). At other times, and for extended periods, the islands of Bass Strait, particularly around the east side, formed an archipelago that could have been crossed with only short maritime journeys between visible land masses (Cosgrove 1995:95, Jones 1995:439).

While the west coast peaks were not glaciated during this time, periglacial effects such as solifluction on higher ground and formation of scree and colluvial deposits may have occurred down to present sea level, with the local coastline being up to 25km further west than at present at various periods (Colhoun 1989).

With a decrease in temperature ranging from 5-11°, and precipitation up to 50% during glacial maxima which depressed the treeline to within 100m elevation, eucalypt woodlands moved coastwards, being replaced at higher altitudes by sub-alpine or alpine small trees and shrubs or grassland/herbfields (Macphail 1979, Colhoun *et al* 2014: 527). With reduced vegetation cover, and extensive areas of former seabed exposed, aeolian sedimentation increased during colder periods, with active periods of dune building on the east and west coasts.

As the central highlands glaciers finally retreated following the last glacial maximum (LGM) around 18ka and climate became warmer and more humid, *Nothofagus* rainforest expanded extensively into the west coast region, reaching its zenith between 10-6ka (Colhoun and Shimeld 2012: 313- 314, Colhoun *et al* 2014: 528). From the mid-Holocene (c. 5ka) onwards, much of Tasmania became cooler and drier, reversing the advance of west coast rainforest with a concomitant increase in eucalypt forest and shrubs.

The drying became more pronounced in the eastern half of the State, although alpine heath and scrub remained widespread above 1000m (Colhoun and Shimeld 2012: 316). The increased aridity during the late-Holocene may have facilitated dune formation on the west coast, which initially grew as the sea-level rose, but remained active until c. 3,500ka.

The role of Aboriginal burning and vegetation structure and evolution in Tasmania has been debated widely since the 1980s. Evidence for the development of disclimax communities in eastern pollen records after 35ka has been attributed to possible Aboriginal burning associated with terrestrial hunting (Fletcher & Thomas 2010, Colhoun & Shimeld 2012: 317, 320). Following the last deglaciation, the maintenance of heath-scrub vegetation over *Nothofagus* rainforest on the west coast, and widespread Buttongrass moorland in the south-west, is generally attributed to Aboriginal occupation and burning (Colhoun and Shimeld 2012: 321, Colhoun *et al* 2014: 527).

Sediment cores from Sundown Point suggest that fire frequency increased after 4ka, with sustained moderate levels of burning until c. 2000ka, which then increased until European contact and the suppression of Aboriginal mosaic burning practices (Hope 1999).

European land management practices over the past 150 years has had a marked effect on the coastal ecology. The introduction of cattle and indiscriminate burning to create rough pasture has

resulted in the replacement of coastal forest by heath and scrubland and the destabilisation of large areas of formerly vegetated dunes, creating extensive areas of wind deflation and inland dune migration (Macfarlane 2001: 9).

Geology

The local geology comprises part of the Northwest terrain of Proterozoic rocks dominated by the Rocky Cape Group, a thick sedimentary sequence deposited in a marine shelf environment around 1000 Ma which were subsequently folded as a result of a collision between the leading edge of the Tasmanian continent and an island arc during the Tyennan Orogeny c. 500 Ma (Calver *et al* 2014: 33).

Rocks outcropping along the coast from Johnsons Head to Lagoon River comprise units of the Rocky Cape Group's Pedder Siltstone, a laminated dark grey siltstone interbedded with quartz sandstone that extends up to 3km inland. Further onshore to the Norfolk Range, and extending south to Chimney Creek, the Pedder Siltstone is conformably overlain by micaceous quartzarenite of the Lagoon River Quartzite formation. Between Chimney Creek and Pieman River, interbedded slaty siltstone and sandstone of Balfour Subgroup occur, of later age than the Lagoon River quartzite, but here largely structurally superimposed by a series of north-west trending faults.

The Rocky Cape Group rocks are unconformably overlain by conglomerate, quartzwacke and pelitic siltstone of the Donaldson Formation of the Precambrian Ahrberg Group and outcrop along the coast south of Rupert Point.

These rocks are intruded by the Upper Devonian Interview Granite which extends to within 100m of the coast but does not outcrop along the shoreline, being separated from it by a narrow band of Rocky Cape Group rocks and/or Quaternary sediments. Granite emplacement has regionally metamorphosed the Balfour Subgroup siltstone to spotted and banded hornfels along the coast roughly between Interview River and Rocky Creek, and in a band approximately 150m wide continuing inland to Hardwicke Point on the north shore of the Pieman River. Quartz veins within the granite containing wolframite and scheelite in the Interview River area were prospected from the 1890s-1980s (Bacon 1992).

The sedimentary rocks and Devonian granite along the coast are covered by extensive Pleistocene sand sheets and Holocene dune complexes. These deposits overlie an earlier erosional surface at 10-20m AHD that occupies a coastal strip 2km wide at Johnsons Head and narrowing to 400m at the Interview River, the inland margin of which terminates at a distinct break of slope and possible former sea cliff (DPIW 2007: 25). Radiometric dating of a sand blow at Italian Creek indicates periods of sedimentation at 21.0 +/- 2.6ka when the coastline was some 20km further west and 9.8 +/- 1.3ka (McIntosh *et al* 2009).

The Pleistocene sand sheets are mantled by an extensive Holocene transgressive dune complex extending from Johnson Head to the Interview River and up to 2km inland behind sandy beaches. Paleosols developed on the Pleistocene sand sheets are exposed in deflated areas between Italian Creek and Lagoon River, near the mouth of the Interview River, and in other areas. The complex comprises mobile sands and vegetated dunes, most of which are believed to have formed after 6,000 years ago when the present sea level was reached (Colhoun 1989). The complex has listed geoconservation significance (NVA 2517).

The erodibility of aeolian sediments and landforms makes the area highly susceptible to disturbance, including from human causes. According to a 2007 report, areas of mobile sand south of Sandy Cape have expanded 26% since the 1950s (DPIW 2007: 29).

Blanket bogs have formed behind the sand sheets and closer to shore on the rocky headlands between Italian Creek and Lagoon River, and south of Interview River in areas of occluded drainage. These form part of the Western Tasmania Blanket Bogs complex, which is the most extensive organosol in Australia and the Southern Hemisphere (NVA 2527).

Physiography and land systems

The land between Sandy Cape and Pieman Heads rises in a series of steps ascending from the coastal plain, which is backed by a steep scarp up to 25m high delineating the higher erosional surface coastline. This undulating erosional surface rises gently from of 60-280m and, in the area north of Lagoon River, is broken sharply by the Norfolk Range (Lagoon River Quartzite) 10km inland, which reaches 520m.

The upper erosion surface extends further inland between Lagoon River and Pieman River along a downthrown graben drained by the Donaldson River.

The coastline essentially comprises two landform types; high energy mixed shores consisting of rocky headlands developed on Neo-Proterozoic and Precambrian sedimentary rocks with intervening sandy bays, and long sections of sandy beach with patches of onshore rock exposed in deflation hollows. Mixed rocky shores predominate south of the Interview River and occur at Johnsons Head and Dago Plains to the north, while sandy beaches occur between Johnsons Head and Dago Plains, and between Lagoon River and Interview River. The coastal plain is dissected by numerous south-west trending drainage lines in a rectangular system that reflect primary geological foliations with no evident change between rocky and soft shores. Outcropping coastal rock is strongly foliated, reflecting regional fold orientation, forming channels or gutters with a north-northeast orientation.

DPIW (2007) identifies five distinct land systems defining areas of similar geology, climate, landforms, soils and vegetation within the APCA. Land systems are useful in assessing susceptibility to soil erosion and other forms of degradation.

Three of these - Temma, Neasey Plains and Granite Creek systems - occur within the current study area.

The Temma land system encompasses an area of vegetated and mobile sands within a strip up to 4km wide along the coastline north of the Interview River. Formations within this system are highly susceptible to wind erosion as demonstrated by large transgressive sand sheets between Sandy Cape and the Interview River (Figure 2).

The Neasey Plains and Granite Creek land systems occupy elevated flat-lying country between the coast and Norfolk Range, and generally support heathy vegetation and extensive blanket bogs.

Within the study area, the Neasey Plains system is confined to Proterozoic siliceous rocks along the coast, while the Granite Creek system occurs on the Interview River Granite upslope. Soils in both systems range from clays to gravels with low fertility, and are often overlain by thin peaty soils with little pedologic structure, which are prone to bogginess and damage by physical disturbance (Figure3).

Figure 2: View of study area from north end of Track 501



Figure 3: View of study area from south end of Track 601



Climate and rainfall

The Northwest region has a temperate maritime climate, with rainfall and temperature varying with altitude and distance inland. Rainfall increases inland, and temperatures decrease away from the moderating effect of the ocean. There are no rainfall or temperature records available for the area between Sandy Cape and Pieman River, however figures for Marrawah (60km to the north) and Strahan aerodrome (75km to the south) are reproduced in Table 1.¹

The predominant wind directions range from north-westerly to south-westerly, with a strong westerly preference due to the Roaring Forties, with a slight increase in wind-speed in late winter and spring. Frosts along the coast are scarce and limited to winter months.

Tidal range along the west coast is 0.4-0.5m, with winter storm surge heights around 0.3m (McInnes *et al* 2012: 32).

Table 1: BoM Climate and rainfall data November 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Marrawah													
Mean max temp (°C)	20.2	20.9	19.4	16.9	14.7	12.9	12.4	12.7	13.7	15.0	16.7	18.4	16.2
Mean min temp (°C)	12.0	12.5	11.7	10.3	9.1	7.5	6.8	7.0	7.5	8.2	9.3	10.7	9.4
Mean rainfall (mm)	47.2	44.4	67.8	84.4	110.0	118.8	141.5	134.4	103.9	85.8	69.6	63.3	1075
Mean No clear days	3.8	4.3	3.8	2.8	2.5	2.3	2.2	2.0	2.1	2.1	2.9	2.8	33.6
Mean No cloudy days	13.7	12.1	14.1	15.4	18.3	17.0	17.3	18.2	17.2	16.2	15.5	16.7	191.7
Mean 9am wind speed (km/h)	25.9	25.0	23.6	23.7	23.3	22.9	23.6	25.1	27.0	26.4	26.1	27.0	25.0
Strahan													
Mean max temp (°C)	20.9	21.2	19.6	16.8	14.3	12.7	12.3	13.0	14.4	16.2	18.0	19.8	16.6
Mean min temp (°C)	10.9	10.8	9.9	8.6	7.5	5.6	5.3	5.6	6.3	7.3	8.4	9.8	8.0
Mean rainfall (mm)	82.9	69.4	107.2	116.5	159.8	154.7	178.8	179.4	149.7	118.8	96.8	95.4	1562.7
Mean No clear days	2.7	2.0	1.9	1.2	1.3	1.1	1.1	0.2	0.8	0.9	1.4	1.1	15.7
Mean No cloudy days	10.5	8.9	10.6	12.5	14.9	13.8	14.9	16.2	16.2	12.1	10.3	11.6	152.5
Mean 9am wind speed (km/h)	15.6	14.3	13.5	16.3	15.4	14.7	15.3	18.1	20.6	19.1	17.8	17.9	16.6

¹ http://www.bom.gov.au/climate/averages/tables/cw_091223.shtml accessed 15 November 2020

Vegetation

Vegetation along the coastal plain reflects a range of factors including soil type and the extent of dune formation, salt exposure, waterlogging and grazing pressure. TasVeg 4.0 mapping indicates the presence of GTL lowland *Themidia triandra* grassland at Johnsons Head, but the majority of the study area onshore of the active dune fronts and blowouts as far south as Lagoon River is mapped as SCH Coastal heathland extending for up to 1km from the shoreline. This community typically contains low shrubs of silver banksia (*banksia marginata*) and tea tree (*Leptospermum scoparium*). A range of communities have been mapped on the rocky headlands closer to shore, including GSL Lowland sedgy grassland, SCC Coastal scrub and GHC Coastal grass, and herbfield with pockets of *Themidia triandra* grassland, ASS Succulent saline herbland and AHL Lacustrine herbland.

Between Lagoon River and Monster Creek, 6.5km to the south, the coastal geology changes to Devonian granite, and vegetation onshore of the dune field changes to DNI *Eucalyptus nitida* dry forest and woodland with SCC Coastal scrub along creek lines, before a return to coastal heathland interspersed with SWW Western wet scrub to the Interview River. Vegetation in the dune area is sparse and includes introduced marram grass.

South of the Interview River, where the coastal geology is primarily quartz sandstone and dunes give way to rocky hard shores, the coastal vegetation is dominated by coastal heathland with pockets of Succulent saline herbland backed by MBS Buttongrass moorland on elevated granite terrain, with Western wet scrub along creek-lines.

Continuing south, between Ford Creek and Rupert Point a band of Coastal grass and herbfield, SDU Dry scrub and Coastal Scrub has been mapped around the shoreward 100m or so, which may reflect historic-period land-use, including cattle grazing. Coastal heathland and Coastal scrub predominate in the track corridor study area inland to within 400m of Hardwicke Point on the North shore of the Pieman River, where WNR *Eucalyptus nitida* forest over rainforest / WNU *Eucalyptus nitida* west forest communities begin to appear.

The heathland and grassland communities, locally developed on sand-sheets, deep leached acid soils and skeletal soils developed on Proterozoic siltstone and sandstone, are highly pyrogenic and the combination of low nutrient soils, salt and wind exposure and fire frequency retards succession to coastal scrub or woodland (Kirkpatrick and Harris 2005: 330). Coastal heathland within the APCA is also highly susceptible to the fungus *Phytophthora cinnamomi*, which results in conversion into sedgeland that survives infestation more successfully than sclerophyll shrubs (Kirkpatrick and Harris 2005: 332).

Aboriginal food resources

Food resources commonly utilised by Aboriginal people in the north-west are summarised by Macfarlane (2001: 8) and include rocky shore gastropods: turbans (*Lunella undulata*), black-lip abalone (*Haliotis ruber*), topshells (i.e. *Austrocochlea sp.*), limpets (*Cellana solida*) and beaked mussel (*Austromytilus rostratus*), while crustaceans including southern rock lobster (*Jasus novaehollandiae*) occur in offshore reefs within swimming distance.

Marine mammals exploited by Aboriginal people include the Southern Elephant Seal (*Mirounga leonina*), Australian Fur Seal (*Arctocephalus pusillus doriferus*) and New Zealand Fur seal (*Arctocephalus forsteri*), although no breeding colonies are known for the present study area. A discussion of "Seal Hide" sites is included later. Strandings of whale species, including long-finned pilot whales (*Globicephala melas*), Common and Bottle-nosed dolphins (*Delphinus delphis* and

Tursiops truncatus) are common on the west coast and may have formed occasional protein sources.

The west coast is rich in seabirds, with Little penguin (*Eudyptula minor*) and Short-tailed shearwater (*Ardenna tenuirostris*) establishing rookeries on sandy headlands², while albatross, gulls and other shorebirds including the Hooded Plover (*Thinornis rubricollis*) are present and breed along the coast. Inland, back-dune lagoons and rivers provided habitat for Pacific black ducks (*Anas superciliosa*) and Black swan (*Cygnus atratus*), while forest raven (*Corvus tasmanicus*) were ubiquitous scavengers. Eggs of all birds were popular foods. Short-finned eels (*Anguilla australis*) are common in the Arthur and Pieman River systems.

Common terrestrial animal resources within the heathland coastal strip include Red neck wallaby (*Macropus rufogriseus*), pademelon (*Thylogale billardieri*) and wombat (*Vombatus ursinus*). Robinson also reports quolls (*Dasyurus maculatus* and *Dasyurus viverrinus*) and Thylacine (*Thylacinus cynocephalus*) being hunted in the area around Sandy Cape (Plomley 2008: 201). The coastal dunes and inland creek lines are a haven for tiger snakes (*Notechis scutatus*) which are reported as being eaten by at least one of the local clans. Arboreal marsupials, including brushtail and ringtail possum (*Trichosurus vulpecula*, *Pseudocheirus peregrinus*) may be found in the scrub and forested land upslope.

Local carbohydrate sources include coastal heath shrubs, such as native currant (*Leucopogon parviflorus*), saline-tolerant succulents including pigface (*Carpobrotus rossii*), bower spinach (*Tetragonia implexicoma*) and seaberry saltbush (*Rhagodia candolleana*), while bull kelp (*Durvillaeapotatorum*) provided both food and a valuable resource for fashioning objects, such as baskets, water carriers and other items. Other edible sea vegetation and grasses are available in the APCA.

² NVA contains records of Little Penguin at Pieman Heads and Short-tailed Shearwater at Sandy Cape.

Aboriginal history

Ethnohistorical outline

A detailed summary of ethnographic accounts for the North-west region is given by Macfarlane (2001). Only a brief summary is presented below.

European accounts of Aboriginal life in north-west Tasmania date back to 1798 when George Bass and Matthew Flinders documented abandoned camp sites on Three Hummock Island during their circumnavigation of Tasmania. First contact came with the arrival of sealers during the early 1800s, with the industry peaking in 1810. With the sealers came disease, kidnapping, dogs and a host of other introductions which were to severely affect the local peoples, although the effects were not documented for another decade or more. Apart from brief sojourns by explorers including James Kelly (1814), Philip King (1819) and Charles Hardwicke (1823), there was no substantive recorded engagement with Europeans on the Tasmanian mainland until the establishment of the Van Diemen's Land (VDL) Company in 1825. Given a Royal Charter to occupy 250,000 acres in the State's far north-west, the company engaged surveyors to identify the pastoral land and employed land agents/stock keepers to manage their flocks, bringing two culture and methods of land management into direct and dire conflict. By the time of Government agent and self-styled missionary George Augustus Robinson's first west coast expedition of 1830, much damage to traditional culture had taken place; the increasing impact of that damage was documented in his subsequent expeditions of 1832, 1833 and 1834, which resulted in the effective removal of the remaining of the north-east clans to the government establishment at Wybalenna on Flinders Island.

What was historically observed of north-west Aboriginal lifeways is therefore heavily influenced by the distrust and fear Aboriginal people held for the European invaders and the structural impacts of European inflicted disease, dislocation, appropriation, harassment, attempted genocide and adaptive cultural practice.

Most of what is currently believed about pre-contact Aboriginal social and political organisation (i.e. Ryan 2012) is based on Rhys Jones' 1974 analysis of historical sources; in particular Nigel Plomley's transcriptions of Robinson's journals. Jones identified eight Aboriginal kinship groups/clans occupying the north-west at the time of first white contact totalling 400-600 people, each clan group comprising several families which collectively owned, and traded from and into, a core territory (Jones 1974). A family typically comprised a husband, wives, children and close relatives who shared the same hut where these were constructed, and otherwise camped and cooked around a common fire and shared and traded communal resources

The clan territories (with reconstructed clan names) were centred on Table Cape (*Tommeginer*), Robbins Island (*Parperloihener*), Cape Grim (*Penemukeer*), Studland Bay (*Pendoutee*), West Point (*Peerapper*), Arthur River mouth (*Manegin*), Sandy Cape (*Tarkinener*) and Pieman River (*Loomindewitherroke/Peternidic*). Evidence suggests that each clan spoke a local dialect that was intelligible within a north-western Tasmanian language family, one of four that have been proposed for pre-contact Tasmania based on analysis of surviving word lists (i.e. Bown 2012). This linguistic affiliation largely forms the basis for considering that the west coast clans shared a distinct regional or national identity, although no traditional word for this identity is known. Boundaries between north-west clan territories were porous, with groups ranging over the land of adjoining clans, and even other language groups/nations in accordance with principles of

reciprocity and ceremony, although relations were not always amicable and conflict between clans was common.³ As a result, the full range of the northwest-based peoples is believed to have extended from Circular Head as far south as Port Davey and extending inland to the Surrey Hills (Ryan 2012: 36).

For the most part, the north-west clans were maritime peoples, congregating at the river mouths and lagoons during spring to collect swan and duck eggs, and moving north during the summer months to the mutton-bird rookeries on the north-west islands, and elephant seal hauls between Sandy Cape and *preminghana*/Mt Cameron West. Robinson's party, which included several west coast people, were reported spearing seals on the beach as they came ashore (i.e. Plomley 2008: 704, 800), however there is a belief among members of the Aboriginal community that seals were ambushed or trapped in specially constructed pits made in cobble beaches. The western people were adept navigators, using canoes made from paperbark and reeds for open water crossings in excess of 6km to visit offshore islands to gather resources.

Travel along the coast tended to be via established and maintained footpaths, providing access through the scrubby and often swampy country. Families constructed substantial bee-hive shaped huts with sunken floors in familiar stopping places and other strategic locations that were maintained or replaced as required. Fresh water, if somewhat tannin stained, was readily available from the numerous coastal creeks and rivers, however springs and wells were also maintained, with abalone shell drinking vessels placed near them for convenience. Kelp water carriers were also used for the transport of water over distance.

While the northern clans continued north during the summer, the southern clans, including the *Tarkinener* and *Peternidic*, but sometimes also the *Parperloihener* and *Peerapper*, journeyed south crossing Macquarie Harbour by canoe to forage as far south as Port Davey.

The clans from Circular Head to Sandy Cape travelled regularly inland to the north to obtain ochre in the territory of the neighbouring North people, always by agreement with the local owners to avoid hostility (Ryan 2012: 36). Ochre was a highly valued commodity used in ceremony and was traded widely, the owners of good ochre sources holding considerable power and esteem. The northernmost route ran along the north coast from Rocky Cape past Table Cape to Emu Bay and then inland "...through a series of small fire-managed plains" (Jones 1974: 334). Another important inland route used to access the ochre mines ran from Sandy Cape to the south-western corner of the Surrey Hills via the Norfolk Range, again consisting of a chain of open plains kept clear by firing (Ryan 2012: 24).

In return for access to southern and northern resources, the north-west clans hosted visiting clans from those regions seeking access to mutton-birds, seals and shells for necklace making (Ryan 2012: 36).

Historical descriptions of local country and culture

By the time of Robinson's west coast missions of the early 1830s, years of conflict with sealers and VDL Company agents had done much damage to local populations and social structures. Earlier accounts are scant, however, but important in illustrating, at least in a small degree, aspects of culture and land use before the main onslaught of colonisation and dispossession.

The first historical accounts of the region come from the records of George Bass and Matthew Flinders who circumnavigated the island in 1798 searching for passage between Tasmania and the

³ At the time of Robinson's mission in 1832 the *Tarkinener* were in conflict with the *Parperloihene* and *Peerapper* (Plomley 2008: 651-652)

Australian mainland. Flinders noted evidence of Aboriginal camps on Three Hummock Island in the Hunter Group, 26km off Cape Grim, but made no further reports of seeing people as they sailed down the west coast, although their reports of seal and mutton-birds signaled the presence of resources that were subsequently exploited by sealers to near destruction in the years to follow (McFarlane: 2008: 43)

Five years after Bass and Flinders' voyage, and following the taking of 2,500 seal skins from King Island, a sealing party under the command of Captain J. Chase "overhauled Hunters Islands, in search of seals, and found these islands, 12 or 13 in number, well populated with natives...They appeared much terrified at our approach." (McFarlane 2008: 49). After a lengthy hiatus, in 1815 mariner Captain James Kelly undertook a private circumnavigation of Tasmania, partly to explore the unmapped west coast. Landing at West Point in January 1816, the party of five were met by six men "each of them six feet high and very stout made, their faces greased and blackened, they had a spear in each of their right hands and two in their left, they were quite naked." (Plomley 1991: 11). After the mariners traded some swans and a wombat for several spears, the parties broke peaceably, Kelly opining that the appearance of a great number of smokes (fires) along the coast that evening may have been signals to other groups.

Their next meeting with a local group on Hunter island was not so amicable, where at least 50 men appeared, the women remaining concealed in the bush. While an elderly very tall man diverted the mariners' attention with singing and dancing at the behest of the chief, other men gathered "pebble stones about the size of hens eggs and put them between their legs where they sat for the purpose as we supposed of making an attack". A clash did subsequently ensue, with the Aboriginal men issuing a volley of stones that was met with musket fire, wounding several according to Kelly's account (Plomley 1991: 11).⁴

The next recorded encounters between whites and Aborigines on the west coast took place in January 1819 when a surveying mission under the command of Captain Phillip King accompanied by botanist Allan Cunningham observed huts at Macquarie Harbour and met with a part of local people in the vicinity of Pilot Bay at Macquarie Heads. The local groups comprised 25-30 individuals, with the men and older women only coming forward and younger women and children remaining at a safe distance. The meeting was evidently friendly, although spears were in ready evidence, possibly as a natural precaution although it has been suggested that it may have reflected suspicion following the Kelly incident further north. Countering this possibility however, King and Cunningham made presents to the locals of empty glass bottles, having been advised to do so by Kelly - who happened to have been in the area on a pining expedition, after Kelly himself had done so shortly before King and Cunningham had arrived, suggesting that Kelly was on amicable terms at least with the local Clans. The account is also interesting in that it is the first to document trade of material cultural both ways.

Another early account, occurring around 1820 but not reported until recorded by Robinson some 10 years later, involved an attack by sealers on a group of Aboriginal women, children and older men who were gathering mutton-birds at Cape Grim; the younger men evidently being away hunting. Many were killed and at least seven women were kidnapped to serve as sealers' slaves and as sexual hostages (Plomley 2008: 216, 239). Aside from the cruelty of the invaders, the account serves to illustrate the gendered division of labour in food procurement; with women

⁴ Macfarlane offers a different explanation for the flashpoint, suggesting it was the presence in Kelly's party of sealer George Briggs, who had a reputation for kidnapping and abusing Aboriginal women in the northeast, that triggered the confrontation. This seems a little implausible as the surreptitious gathering of throw-stones during a diverting entertainment suggests planning rather than an act of opportunistic pay-back, and no explanation is offered as to how Brigg's northeast crimes would have been known to Northwest groups that had no known contact with them.

typically, being responsible for harvesting marine resources while able-bodied men pursued terrestrial game.

Apart from regularly reporting the presence of 'smokes' the purposes of which are unclear, most of the early sporadic accounts are concerned with the nature of the encounters rather than documenting the customs and practices of the local people, with the exception of Cunningham who recorded some particulars about huts and compiled a short vocabulary. The number of encounters increased during the 1820s as the land boom in the midlands accelerated, prompting the government to look to the northeast and northwest for habitable land. Subsequent accounts focus as much on the suitability of land for potential white settlement as they do the character and practices of the local people, which at least is useful from the perspective of illustrating aspects of traditional resource availability and use and landscape management.

During one such expedition to the north west, Captain Charles Hardwicke reported in 1823 that north of West Point to Cape Grim there was rich grass pasture extending inland up to a mile. From West Point south to Sundown Point were extensive well-watered plains covered with low coastal vegetation. South of that other plains began, where "the kangaroos are very plentiful, and unusually fat...The natives are numerous and appear disposed to be friendly with Europeans, as we had communication with them." (Plomley 1991: 12).⁵ Hardwicke's report concluded however that the land in the north west was unsuitable for white settlement. (McFarlane 2008: 52), Undeterred, the colonial administration engaged Captain James Hobbs in a further attempt to find suitable lands in the North west. In March 1824 Hobbs party explored the lower reaches of the Pieman River before landing James Carretts and two others on the beach to walk up the coast to Cape Grim. Carretts' party reported that the land along the coast was wholly unfit for agriculture and evidently had no encounters with or made note of any evidence of the Aboriginal occupants (McFarlane 2008: 52).

This occasional and predominantly benign co-existence between Traditional Owners and visiting whites came to an abrupt end following the establishment of the VDL Company in 1825. Given a Royal Charter to occupy 250,000 acres in the State's far north-west, the company engaged surveyors to identify the best potential pastoral land and employed land agents/stock keepers to manage their flocks, bringing two cultures and methods of land management into direct and violent conflict. While looking for an inland route via the Norfolk Range between the company's two main holdings at Cape Grim and Surrey Hills in March 1827, a survey party including Jorgen Jorgenson and Clement Lorymer reported seeing many tracks around Arthur River and Temma, forming the view that these parts of the country were not thinly populated. (Plomley 1991: 9). Near Sandy Cape Lorymer reported meeting up with some people

"who treated him and the party in a most friendly manner. An old woman seemed to have great authority amongst them. They deposited their spears at a distance as our party did their firearms. Four or five young women appeared well pleased and jocular tho' their attitudes might not be considered the most decent to white people. The party of natives consisted of about 20, of whom some children. All parted on the best of terms." (Plomley 1991: 9)

Continuing south, the survey party encountered Native Well Bay, where there was "a remarkable well of fine water...and is a common rendezvous for the native tribes." (Plomley 1991: 9)

Following a sojourn by Lorymer down the coast to the Pieman Heads where he reported seeing several catamarans and brought back samples of iron ore (ochre), the party retraced their steps northwards, crossing Pedder River which Jorgenson referred to as Native Hut River "so called from

⁵ Of the ethnographically described groups most likely that Hardwicke's interactions were with the Manegin people

a peaceable tribe of natives who reside in good huts hereabouts” (Plomley 1991: 9). More huts were reported north of the river, while at Temma Jorgenson described encountering a different style of habitation:

” a very compact native hut far different (as are all huts in this quarter) from those seen to the eastward. It was a complete piece of gothic architecture, in the shape of a dome, and presenting all the rudiments of that science. It was made to contain 12 to 14 people with ease. The entrance was small and not above 2 feet high. The wood used for the principal supports had been steamed and bent by fire. The huts as well as baskets and other things produced by the western natives evince great ingenuity, and the nature of the country compels them to build compact dwellings to shelter them against the bleak winds blowing over a large track of open country, not well supplied with fuel, and of a piercing chilliness” Plomley 1991: 10)⁶

Parties under the control, of George Augustus Robinsons walked the coast between Pieman Heads and Sandy Cape on two occasions between 1830 and 1834. On the first occasion, between 28 May to 1 June 1830, the party walked on “cragged rocks on which the sea was breaking with frightening vehemence. Sojourned for the night in a wood at the foot of some high land, a place resorted to by the natives. The kangaroo apple trees⁷ that I saw there and at GO.NO.VAR are the largest I have seen...being twelve feet in height with very stout trunks.’ Plomley 2008: 197).⁸ The next morning the party followed “the native track over the high land, which was quite heathy and clear of bush as far as the eye could perceive.” After passing over severed streams and gullies, the party walked along a long sandy beach, stopping for the night in the vicinity of Hunters Creek, remarking that “Kangaroo abounds very much in this part of the country, which resembles in appearance a park with extensive grassy hills with honeysuckle trees⁹.” (Plomley 2008: 197).

Continuing north, the party climbed a hill before crossing the Lagoon River and “proceeding over an extensive plain with grassy hills, where there was an abundance of kangaroo” and remaining on the plain that night.¹⁰

The party arrived at Sandy Cape on 1 June, where they espied several people who in turn watched the newcomers from a distance but evaded all attempts at contact. Robinson reported seeing “numerous tracks of women and children, and their fires burning. In a basket was the claws of some animal, which had been made into beads, and some yellow ochre. They had shells which they used for drinking, they were like the ear shells [abalone] and the holes were stopped up.” The place where the party stopped for the night “had the appearance of a park, beautiful grass like a bowling green and honeysuckle trees.” (Plomley 2008: 198).

The following day Robinson reported finding a cremation mound MANNELEAN, while his Aboriginal guides located two huts ‘in a beautiful place near a fine stream of water.¹¹ One of the huts was well built, lined with grass inside and covered with bark outside. A large and excellent basket was suspended from the roof and filled with shellfish and house-leek.^{12”}

After taking an inland detour to Mount Norfolk from where Robinson described the country as “low, with gentle heathy hills and small gullies covered in wood”, the party returned to Sandy Cape,

⁶ The fact of huts of this type were not mentioned by Lorymer who walked between Sandy Cape and Pieman Heads suggests that this dwelling type was not used in this area.

⁷ *Solanum laciniatum*, fruits are poisonous when green but edible when ripe or cooked

⁸ The location appears to correspond to Rocky Creek, approx. 3km south of the Interview River.

⁹ *Banksia marginata* flowers were a source of nectar/carbohydrates

¹⁰ Somewhere south of Sea Devil Rivulet.

¹¹ While at Johnsons Head Robinson reported that the *Tommeginer* buried their dead while the *Tarkinener* cremated theirs

¹² Possibly a reference to *Carpobrotus rossii*

locating a village of four huts thought to house about forty people.¹³ Many tracks were visible, “where they had been in quest of birds, ducks, gulls &c. When in quest of prey they travel in pairs, male and female, and will run like a dog...”¹⁴ (Plomley 2008: 201).

Continuing north of Sandy Cape, Robinson continued to describe the country as “clear of wood, with undulating grassy patches and heathy hills...” (Plomley 2008: 201). Between the Thornton River and Richardsons Point they saw a native well on a natural spring in a valley with steps cut down to it and abalone shell drinking vessels, and passed a heap of large pebbles “in different forms, some resembling rooms, gardens, passages. Probably it was the children of the natives.”¹⁵ (Plomley 2008: 201)

On their next mission to the area in June 1833, Robinson’s party, which included Penderoin - a *Parperloihener*) man from Robbins Island, made haste from the Pieman heads stopping for the first night at Lagoon River. Penderoin related to Robinson that the name of Mt Norfolk was PADE.DE.GILE.LIM.IN.IN.ER.WAD.IC, the country opposite Mt Norfolk was LING.HE.NUER and the sandy beach between the Interview and Lagoon Rivers was PY.EN.DUKE. The following night was spent at Sandy Cape, Robinson describing the intervening country as “a fine belt of grassy hills...well adapted for a sheepwalk”. (Plomley 2008: 824). A cremation mound was observed and “several huts and traces but no recent ones”. Finding no people in residence and assuming that the *Tarkinener* had gone inland to the Hampshire Hills and Surrey Hills, Robinson stopped at Rebecca Creek and turned south and inland towards Mt Balfour, through “clear open forest, which communicates with a large extent of heathy country or plains extending further than the eye can reach in the direction of Circular Head to Mount Norfolk and to the northward of Mount Balfour. This is the native track.” (Plomley 2008: 827). Turning south to Sandy Cape, the party returned to the Pieman along the coast without further reference to the country or its people.

On the final trip to the area in April 1834, Robinson travelled south from Cape Grim, walking inland from the Pedder River to the native road to Surrey Hills over Mt Norfolk. At the river there was a bridge and a large hut made of stringybark in the midst of a wood, which Robinson concluded was built by the *Tommeginer* (Plomley 2008: 902).

Returning to the coast, Robinson headed south to spend the night at the south end of PY.EN.DUKE near the Interview River, continuing to the Pieman [ROY.EN.RIM] the next day to await the return of his Aboriginal guides who had gone on ahead. Hearing by messenger boat that his guides had met the remaining North west people on another road heading inland from Macquarie Harbour and persuaded them to accompany them back to Sandy Cape, Robinson hastily returned north up the coast to meet them.

The people Robinson met comprised nine individuals; four men, two women and three children, including the *Tarkinener* chief LOETH.DID.ER.BOPE, his wife NARRUCKER from Robbins Island (*Parperloihene*), LENERERGWIN a southwest man from Cox Bight and his wife CARE.REEN from Port Davey and HEEDWEEK a *Manegin* man from Sundown Point. The fourth man is not named, however the diverse origins of the others indicate the extent to which the clan system had broken down and remaining groups comprised displaced survivors from a wide geographic area with, in many cases, no direct familial or traditional affiliation with the country where Robinson finally met them.

¹³ Robinson does not record the village location but refers to the lagoons which may refer to the lower portion of the Pedder River

¹⁴ This reference to mixed gender hunting appears to be limited to small prey, such as birds etc, and the reference to moving on all fours is probably to remain concealed within the low heathy vegetation.

¹⁵ Plomley (2008: 266) refers to an account by WB Walker of features in the form of birds’ nests, each containing fourteen stones near a group of native huts which he presumes to also be the work of children.

European land-use

It is clear from historical accounts that the landscape within the study area has undergone significant change since the early 19th century, reflecting both the removal of its traditional owners whose practices had maintained flora, fauna and cultural places for millennia, and the establishment of new uses and activities which in many cases has resulted in environmental degradation. The following summary of European land use within the APCA is intended to outline the main classes of post-contact use and activity that have helped drive this physical transformation, but which have also created new experiences and connections for the local north-west non-Aboriginal community. This section is provided as an aid to understanding the basis for a number of contemporary non-Aboriginal values and claims over the place.

Thematic overview

The discovery of tin at Mount Bischoff prompted prospecting of the west coast. From the mid-1870s, in the wake of Philosopher Smith's success at Mount Bischoff, and Charles Sprent's subsequent discoveries between Bischoff and the Heemskirk Range, parties of prospectors arrived on the west coast via land, or by sea at Macquarie Harbour and the Pieman River Heads, which were already infamous for wrecking pining vessels. Few discoveries of economic significance were found, the main ones being alluvial gold on the Pieman River system (the first rush was at Middleton Creek in 1879), and alluvial tin at Interview River. Speculative copper discoveries were treasured and driven upon at the southern end of the Norfolk Range as part of the Balfour copper boom.

Hunting, timber harvesting, droving and fishing were corollaries of mining. Miners hunted and fished for food, and harvested timber to build huts, horse paddocks and mining props. Miners at the Pieman River, Balfour, and further afield at Zeehan had little grass on which to raise stock, so beef, mutton and dairy products had to be delivered to the mining fields either by track or by ship. Uncontrolled hunting took place on the west coast north of the Pieman River in the late nineteenth and early twentieth centuries. Limited quantities of Huon pine were harvested at the Pieman River until a Huon pine reservation was gazetted in 1881. More widespread timber harvesting developed with the opening of Corinna to vehicular access in the early 1930s. Crayfish and barracouta were the staples of commercial fishing operations off Sandy Cape.

Recreational use of the area grew significantly following WWII, facilitated by the increasing availability of four-wheel drive vehicles and trail bikes, with damage to Aboriginal sites in the area being reported from the 1970s. Canoeing/kayaking also increased in popularity with the advent of fibreglass technology during the 1960s, with several canoe and rafting clubs making regular use of the area's waterways. Bushwalking/hiking remained less popular due to the region's isolation and lack of trail infrastructure. Moves to reserve the area for environmental and recreational values began in the late 1960s, with Protected Area status being declared in 1982, listing on the Commonwealth Register of the National Estate in 1989, and declaration of the APCA in 1999.

Mining

Interest in mining by Premier James Whyte and Treasurer Charles Meredith led to the cutting of the Burgess Track between Knole Plain, south of Mount Bischoff, and the west coast near the Interview River for the aid of prospectors in 1864 (Binks 1980: 194-196). Gold was discovered at the Pieman River by 1870, and an interdependence developed between the timber trade and mining at the Pieman. Huon piners offset some of their costs by ferrying stores to the diggers on

the small alluvial goldfield, but when a West Coast Pine Reserve was gazetted in 1881, the remote field effectively died (Binks 1980: 100). The impetus for the farcical Corinna 'hydraulic boom' on the same goldfield in the years 1894–96 came from the popularity of gold as a safe haven during economic depression, and the success of hydraulic sluicing on rich, gold-bearing terraces across the Tasman Sea. Unfortunately, the gold-bearing gravels around Corinna were not economically viable to attack with the high-pressure hose (Thornley 1897: 55). Some companies attempted no more than ground sluicing, that is, allowing water to flow over the metal-bearing rock, washing the gold into the riffles of sluice-boxes (Thornley 1897: 55). Extensive water races remain from the hydraulic boom.

Mount Lyell General Manager Robert Sticht invested his own money in the Balfour copper field, sparking a speculation boom in that area. The field spanned about 65km of coastline from the Interview River, near where Alfred Foster was granted a reward claim for wolfram in 1891, to the Nelson River iron ore deposit, about 10km north-east of Temma, and reached eastward into the Norfolk Range—about 1000km² in all. Working for Sticht, in the years 1907–10, Thomas Bather (TB) Moore established mining leases and associated camps at the Toner River (Hadmar Camp), a western tributary of the Donaldson, Mount Norfolk and Mount Sunday. Surface and underground work was conducted by small parties.¹⁶ After 1912, extensive development work on this field was confined to the Copper Reward Mine at Balfour.

Interest in the Interview River area was also revived by the discovery of copper by William McArthur and Jimmy Elliot in 1909.¹⁷ Sporadic small-scale mining continued here for decades, with Balfour's Frank Gaffney famously nearly drowning in the Lagoon River while packing out Interview River tin ore to Temma in 1913, being saved only by clutching the tail of Bluey, his favourite horse; hook-handed Portuguese prospector, Jean 'Hooky Jack' Baptiste, spending a night in the lair of a Thylacine family while mining and hunting there in the late 1920s; and Waratah's Basil Murray putting in six months straight at the Interview River tin show, hauling out a ton of tin on his back, bit by bit, to the Pieman River Heads.¹⁸

In addition to the Pieman Heads pack track and coastal route to Temma, a pack track from the Interview River to Balfour was in existence from c. 1910. A rough vehicular track was cut from the Pieman River during the early 1950s, by the short-lived Interview River Wolfram Syndicate to support exploratory work, but was overgrown by the 1970s when prospecting and testing by other parties recommenced. Exploration licences over the area expired in 1989 (Bacon 1992: 1-6).

Hunting

Unfettered hunting was conducted along the coastal strip between Woolnorth and the Pieman River into the twentieth century. An 1870 prospecting party overland to the Pieman River, for example, claimed to have shot sixteen 'hyenas' and 348 'kangaroo' (probably mostly Bennett's wallabies) in the course of a week.¹⁹ A game sanctuary was gazetted in the Arthur-Pieman area in 1920 without appropriate consultation (Guiler 2001: 3). The Animals and Birds Protection Board, appointed in 1929, demonstrated little support for the sanctuary, recognising that it was impossible to police, the nearest guardians being lone troopers at Redpa and Waratah. Distance and the 'bush telegraph' could be relied upon to defeat their efforts to apprehend poachers even when they

¹⁶ See TB Moore diaries, ZM5637 (1907) and ZM5640 (23, 23A and 23B, covering 1908–10) (Tasmanian Museum and Art Gallery, afterwards TMAG).

¹⁷ See TB Moore diary, 21 January 1909, ZM5640 (23A) (TMAG).

¹⁸ Gaffney: 'Balfour', *Circular Head Chronicle*, 28 May 1913, p. 2; Greta Gaffney, transcript of an interview at Balfour, 1990 (held by Martin Laan, Hobart). Baptiste: EJ Bayley, Smithton, an entry in a Tasmanian tiger story competition conducted by the *Tasmanian Mail*, 22 August 1981, NS896/1/18 (TAHO); Murray: Barry Murray, interviewed by Nic Haygarth, 21 November 2008.

¹⁹ 'Exploration on the West Coast', *Launceston Examiner*, 27 September 1870, p.5.

tried.²⁰ The board acceded to pressure to divide the sanctuary up for hunting on a rotational basis, and in 1945 it went further by revoking the sanctuary altogether (Guiler 2001: 28).

Purely scientific hunting for the Thylacine also took place in the subject area. In 1957, a search was conducted near the Whyte River and on the slopes of Mount Donaldson (Guiler & Godard 1998: 192). In 1961, a fisherman and hunter allegedly killed a Thylacine at Sandy Cape, but its corpse disappeared mysteriously after being left under a sheet of galvanised iron.²¹ Snare lines later set by the Animals and Birds Protection Board, in the same area, yielded no results.

Droving and grazing

Historian Tim Jetson identified three phases of west coast grazing history: firstly, the pioneering period from the early 1880s to the rise of Temma and Balfour (1880s to c1910), when cattle were driven down the coastal route to Zeehan; then consolidation of the major features of droving, with a transport link, stores, and a permanent population of stockmen—a period (c1910 to 1970) in which the area between the Arthur and Pieman became important for agistment; and thirdly, a world opened by the Arthur River Bridge in 1970, with increasing government intervention and pressure for self-regulation (Jetson 2004: 113-114).

Aboriginal tracks re-opened by miners provided some infrastructure both north and south of the Pieman River, while the beach was the coastal thoroughfare down and around Sandy Cape to the Interview River. From the Interview, coastal Buttongrass plains were traversed to the Pieman River Heads.²² The placement of punts at the Arthur (1878) and the Pieman (1899) Rivers aided transport. The main reason for the development of the coastal route from Circular Head to Zeehan was the absence of safe west coast harbours at which to land stores, livestock and miners (Jetson 2004: 82).

Three droving huts have existed at Sandy Cape, the original one being near the North Pedder River. Another hut was built just north of Lagoon River. A holding yard reputedly existed at the Interview River, and Job Savage's old Donaldson Inn, at the mouth of the Savage River, was also adopted by drovers (Jetson 2004: 116).

From 1911, government bailiffs (later rangers) managed the agistment runs. Dune regeneration was ensured by establishing beds of Marram grass (now regarded as an exotic weed) at intervals along the coast to serve as nurseries, transplantation being conducted as needed. In 1919, for instance, Marram grass was planted in the dunes at Sandy Cape, where quicksand had been experienced (Jetson 2004: 89-93).

By the 1950s, the coastal plains between the Arthur and Pieman Rivers had been divided into two main runs, with the 230,000-acre Southern Run (from Sundown Creek to the Pieman River) being used only for beef agistment. The run was open from 15 February to 30 October each year (Parliamentary Paper 33/1957, Scott 1955: 167-168).

During the period 1979–2002, grazing the Arthur-Pieman became increasingly contentious, as the area became defined as a 'Conservation Area' rather than a 'Protected Area' (Jetson 2004: 103- 104).

²⁰ Trooper Long, Redpa, to Commissioner of Police, 16 and 30 May 1937, AA612/1/5 (TAHO).

²¹ 'Subject: report on alleged killing of Tasmanian tiger at Sandy Cape some time in August 1961', AA612/1/1 (TAHO). This event was reported in the *Mercury*, 18 August 1961.

²² Austin Allom, 'A trip to the West Coast: no.v', *Daily Telegraph*, 30 September 1893, p.6.

Forestry

Huon pine harvesting at the Pieman was underway by about 1850, some vessels being wrecked in the attempt to cross the Pieman River bar.²³ The sawmill's tramway remained the primary access to Tasmanian forests into the 1930s. Much of the now called "Tarkine forest" had survived until this time because it was inaccessible, unknown, or, by chance, unburnt. Revolution dawned in the wake of the Great Depression, when motor lorries and bulldozers began to replace bullock and horse teams, and the road network expanded, enabling, for example, the establishment of a pine sawmill at Corinna (Kerr & McDermott 2004: 119). WWII prompted a wooden shipbuilding program in Hobart and Launceston to provide small supply ships and minesweepers for the Pacific campaign. The Wright and Lennox sawmill at Corinna may have provided Huon pine decking and outfitting for this purpose. Huon pine and Blackwood continued to be cut on the Pieman River into the 1970s (Kerr & McDermott 2004: 119).

Fishing

The tiny late-nineteenth-century population of the area now known as the "Tarkine", mainly prospectors and miners, took eels, crayfish, blackfish, graylings and, when they could get them, trout, as a staple food. The introduction of trout fry, beginning in 1890, did not prevent blackfish and eels from remaining the dominant catch when the establishment of mining settlements such as Waratah, Corinna and Balfour encouraged fishing for both sustenance and recreation.

Drover Maxwell 'Bricky' Kay recalled living on crayfish claws when rations gave out in the Lagoon River-Sandy Cape region. Crayfish would be caught in shallow water, cooked in salt water in any discarded tin on the beach, and perhaps dressed with powdered gravy.²⁴ In the 1940s and early 1950s, brown trout were released into the Nelson Bay, Dawson, Thornton and Pedder Rivers, plus Big Eel Creek, with trout 'self-seeding' in other coastal creeks (French 2002: 45). Stanley fisherman Max Hardy claimed to be the first to catch crayfish off Sandy Cape and the Temma area during the 1950s. In 1957, he found summer crayfishing at Bluff Point, Temma and Sandy Cape very profitable, building a hut and slipway at Temma as his base.²⁵ Des French eventually took over Hardy's Temma operation, taking fine catches off Sandy Cape and at the edge of the Continental Shelf about 40km west of Temma.²⁶ French also used towing lines and jig sticks—five-to-ten-foot-long poles with a 'whippy' end—to reel in barracouta in the years just before and just after WWII. Sandy Cape was a favourite haunt for this (Des French quoted in McKay 1986: 5-6).

By 1992, about 20 professional fishermen worked out of West Point, Couta Rocks, Sundown, Gannet, Sandy Cape and Temma. Most Tasmanian professional crayfish boats worked the west coast, with the predictable result of diminishing returns.

Canoeing, kayaking and rafting

Boating the Pieman and Arthur Rivers began with European exploration, the Pieman River system being a natural conduit for Huon pine dugout canoes (Haygarth 2012: 55-71). Recreational canoeing possibly began in 1950 when Johnson Dean, Max Wilson, John Hawkins and Jeff Weston tackled the Pieman from the Emu Bay Railway Bridge (Dean 2002: 27-33). The fibreglass technology 'explosion' of the late 1960s prompted the production of home-made canoes, and the establishment of canoe clubs. Bob Brown *et al's Tarkine trails* (c1993) reserved a special place for

²³ See, for example, the wreck of the *Spy* in 1853: 'THP' (Thomas Henry Power), 'A reminiscence of old times', *Tasmanian Mail*, 3 September 1881, p.6.

²⁴ Maxwell 'Bricky' Kay transcript of interview conducted by Pat Brown and Helen Williamson (held by Tim Jetson, Hobart).

²⁵ 'Temma—isolated but popular', *Advocate*, 6 April 1957.

²⁶ Mary Kay, *Lost the spring in my step: Max Hardy's memoirs*, no publication details, pp.62, 65, 83 and 100.

Little Donaldson and Donaldson Rivers (Brown *et al* 1993: 43). The Tasmanian Canoe Club, the Maatsuyker Canoe Club, and the North West Rafting Club and its parent body the Tasmanian University White Water Rafting Club, have all tackled “Tarkine” streams, including the Arthur, Hellyer, Pieman and Donaldson Rivers.²⁷

Off-road driving

By plunging through the scrub west of Waratah on their way to Zeehan in 1924, Indian Scout motorcyclists Will King and Fred Smithies threw out a challenge to enthusiasts and/or nature-lovers alike.²⁸ The enormous technological stimulus of WWII helped develop today’s ORV, but until the 1960s Tasmanian ORV were restricted to four-wheel drives and trail bikes. In 1978, the Mersey-Lyell region accommodated about half of all surveyed Tasmanian ORV trips (Division of Recreation 1978: 11-14). A study of four-wheel driving in the Temma-Sandy Cape region in 1991 found that, even though four-wheel drive usage of the Arthur-Pieman had increased dramatically since the mid-1950s, motorbike usage of the region was three times that of four-wheel drive usage. Most four-wheel drivers favoured the area north of Green Beach over Sandy Cape, because of the latter’s dangerous beach conditions. The survey author noted a general inability amongst these drivers to recognise Aboriginal midden sites, and also that some drivers could not see the importance of midden sites or protecting Aboriginal heritage. He found damage to midden sites by both four-wheel drive vehicles and conventional motorcycles (Good 1991: 21, 25, 34). In 2008, about 10,000 people used a four-wheel drive vehicle in the area known as the “Tarkine” (PWS nd).

Bushwalking and hiking

Hiking (as opposed to foot travel for work purposes) in the coastal region between Sandy Cape and the Pieman River has never been very popular, due to its isolation, being confined to the dedicated few such as the Hobart Walking Club in 1933 and 1936; and ‘Mollison’s mob’ in December 1950–January 1951 (Emmett 1933: 43, Emmett 1936: 23-25, Mollison 1996: 95-114, 125-126, 138-141). These parties hiked the old stock track between Zeehan/the Pieman River and Marrawah. Early in the Lake Pedder debate, a new conservation frontier emerged in the form of a proposed 400km² Norfolk Range National Park, between the Pieman and Arthur Rivers, which was championed by the Circular Head Council and entertained by the Liberal State Government in the late 1960s. The gazettal of the APCA in 1982, the branding of the Arthur-Pieman as the “Tarkine”, the construction of the Western Explorer road in the 1990s, forestry operations in the Arthur-Pieman, and the establishment of the Corinna Wilderness Experience tourist resort have been further milestones in ecological debate. All but the forestry operations encouraged hiking in the region, prompting the establishment of walking tracks near the Pieman and Whyte Rivers, on Mount Donaldson and the Longback.²⁹ The opening of the Western Explorer also exposed the “Tarkine” to the increased possibility of damage by fire, as exemplified by the driver who lit a fire as a distress signal in 2008, burning out at least 18,000 hectares.³⁰

²⁷ See, for example, the Tasmanian University White Water Rafting Club website, <https://rafting.org.au/rivers/river-grades/>, accessed 2 November 2020.

²⁸ ‘Launceston to Zeehan by motor-cycle: Indians stand terrific test: motor cyclists’ big adventure’, *Daily Telegraph*, 8 March 1924, p.11; Fred Smithies, ‘To Zeehan by road’, *Weekly Courier*, 20 March 1924, p.46 and 27 March 1924, p.46.

²⁹ See, for example, the Save the Tarkine (Tarkine National Coalition) website, <http://www.tarkine.org/walks/>, accessed 2 November 2020.

³⁰ See, for example, Siobhan Maiden, ‘Tarkine fire continues to burn’, 20 March 2008, ABC Local website, <http://www.abc.net.au/local/stories/2008/03/19/2194414.htm>, accessed 2 November 2020.

Reservation and conservation

Planning for conservation purposes dates back to 1969, when the Circular Head Council proposed the idea for a Norfolk Range National Park. Initially rejected by the State Government due to concerns about potential impacts on mining activity, by the late 1970s the idea was being given more detailed consideration. A series of draft management plans were prepared by the State Government between 1979 and 1991 for the newly created Arthur-Pieman Protected Area (reserved 25 August 1982), while a large area of the reserve was listed on the Commonwealth Government's Register of the National Estate (RNE) in 1989 in recognition of its biodiversity, wilderness and Aboriginal cultural values (Norfolk Range Area ID 12062). The Arthur-Pieman Protected Area was reclassified as a Conservation Area in 1999 as a result of the *Inquiry into Tasmanian Crown land Classifications* (PLUC) and *Regional Forest Agreement* (RFA) processes.

A draft of the APCA Management Plan was released for public comment in June 2000, with 303 submissions received. The final Management Plan was released in 2002, the same year the larger Tarkine Wilderness Area was listed on the RNE (RNE ID 17747). In 2004, the Tarkine Wilderness Area was nominated for inclusion on the Commonwealth Government's NHL, the successor to the RNE, for natural and Aboriginal cultural values. The subsequent 2012 assessment by the Commonwealth Government determined that the NHL criteria for natural values were not met, but the coastal strip met relevant criteria for Aboriginal heritage values. The resultant WTACL was listed on the NHL in February 2013.

Aboriginal heritage desktop review

Previous heritage studies

While European interest in north-west Tasmanian Aboriginal sites for the purpose of creating collections of artefacts and “rock art” can be traced back to the 1920s, it was not until the 1960s that the area became the focus for systematic archaeological study. In 1963-64, Rhys Jones undertook a reconnaissance survey which culminated in the excavation of caves at Sisters Creek, Rocky Cave north and south, and West Point midden (Jones 1964). The excavations demonstrated continuous occupation of the coastal zone from c8000 years ago (8ka), when the sea level was stabilising following the terminal Pleistocene glaciation, until approximately 400 years ago (Macfarlane 2001, 18). The excavated deposits provided evidence of considerable economic changes over the period of occupation, including the discovery and trading of exotic lithic materials including spongolite and brecciated chert after 3.8ka, a decrease in the use of bone points for clothing manufacture, and the absence of fish remains after c. 3.5ka. The variety of terrestrial fauna consumed increased after 2.5ka, suggesting a change in foraging focus from the shore to the hinterland.

Jones' work was followed by research by Sandra Bowdler between 1973-1984 on the Hunter Island group of islands (Bowdler 1984). Bowdler excavated five sites, including Cave Bay Cave, which ultimately returned a basal date of 22.75ka, then the earliest radiocarbon date for a Tasmanian site, and still the earliest documented date for a north-west coast site. The excavated sequence provided a record of intermittent occupation spanning the peak of the glacial maximum – when the cave was in an inland hillock over 75km from the coast, through to c. 1ka. As at Rocky Cave, Cave Bay Cave captured variations in Aboriginal economy, with shellfish appearing around 6.6ka, and bone tools and fish remains absent after c. 2.5ka, when the site was reoccupied after a 1.5ka hiatus (Bowdler 1984).

Jim Stockton followed Bowdler's work with a series of surveys on Hunter Island and Three Hummock Island, locating 29 middens and 16 middens respectively, finding a preference for sites to be situated on dunes and pebble banks on west-facing coasts, more so than northern exposures. Lithics were primarily local quartzite, or quartz with little introduced material (Stockton 1982).

Back on the Tasmanian mainland, Stockton carried out extensive coastal surveys during 1979-1981, surveying 62 quadrats in a range of coastal and inland environments. Stockton identified approximately 500 sites, 258 of which were middens, with the remainder being artefact scatters (148), isolated artefacts (69), hut depressions (7), and 14 stone features including one engraving site. Radiocarbon dates associated with these sites commence c 4 ka and appear to demonstrate an increase in coastal activity after c.2ka, contrasting with Jones' interpretation of a change to a more terrestrial-based economy; however, as at Rocky Cave, Stockton's observed lithic assemblages were dominated by spongolite, black chert, quartzite and quartz, with minor chert and silcrete.

Stockton observed a strong correlation between coast type, platform structure, and midden volume, with granite hard coasts having low numbers of middens, although artefact scatters were present, while mixed coasts were associated with large midden volumes. Middens were preferentially located on west-facing sections, with an open aspect on level dunes and pebble banks providing drainage, with 50% being within 120m of drinking water (Stockton 1982).

With regards to population density, Stockton estimated there was 74,000m³ of midden material between Woolnorth Point and Macquarie Harbour, ranging in date from 4ka to the historic period with a median age of 750 years. Given an assumed midden generation of 16m³ per year per clan of 40 people, Stockton arrived at an average population of 180-240 people, towards the lower end of Jones' (1974: 327) estimate from historic accounts (Stockton 1983: 70)

Stockton's surveys do not appear to have intersected the current study area, however an earlier study of the Norfolk Range area by Macphail et al (1975) described extensive shell middens in the foredunes beside the small creeks flowing to the coast between Italian Creek and Rupert Point, considering that the visible eroded deposits continued under grassed stabilised dunes. Midden contents included turbans, whelks, abalone and occasionally mussels, as well as mammal bone fragments, with artefacts of black chert, spongolite, quartzite and other metamorphic rock types (Macfarlane 2001: 24).

Continuing the inland theme, Richard Cosgrove undertook seminal studies of forested areas around Rebecca Creek, Wedge Plains, Frankland River, Arthur River, Luncheon River and Rapid River as part of a study on the impacts of logging in Tasmanian forests (Cosgrove 1990). Cosgrove recorded 44 new sites, most of which were associated with the extensive spongolite quarry complex at Rebecca Creek; the source for all the spongolite observed at north-west coast sites.

Of the 16 inland sites not associated with the Rebecca Creek complex, the majority were isolated artefacts, with only six sites containing two to four artefacts, and a single site containing 37 observed artefacts at the eponymously named Blackmans Crossing on the Arthur River. Open sites tended to be located on flat or gently sloping ground, either on crests or ridges, or associated with a watercourse. No preference was shown for site aspect or distance to water. Lithic materials for inland sites were dominated by quartzite (51%), with lesser proportions of quartz, volcanics, silcrete, chert, hornfels, chalcedonic species and spongolite; most of the minor species being associated with the large artefact scatter at Blackmans Crossing. Most inland artefacts were simple flakes, followed by flaked pieces and cores. Retouched artefacts were rare. Cosgrove interpreted the inland archaeological signature as short-term camps connected by ephemeral travel routes, reflecting low density selective use, and rapid travel through the hinterland (Cosgrove 1990).

In 1990-91, Ingereth Macfarlane reviewed previous north-west studies and carried out a large-scale regional project to fill gaps in archaeological understandings of regional site patterning. Nineteen survey blocks were examined, resulting in the identification of 185 additional sites. Most of the new sites were coastal middens (47%), isolated artefacts (25.4%), and small artefact scatters (21.6%) (Macfarlane 2001). Nine rock shelters (one with occupation evidence), a hut depression, and stone quarry were also documented.

Based on this study, Macfarlane produced a revised regional model for north-west Tasmania with the following attributes.

- There is a strong coastal economic focus, but incorporating portions of the inland in specific ways;
- Sites are concentrated on the west coast, with fewer smaller sites on the north coast, with a general trend toward larger middens on west-facing shores;
- A low density of small artefact scatters and isolated artefacts occurs on the northern coastal plain, with an increase in density at the boundaries of poorly drained plains and intervening sets of low hills, and at the southern edge of the coastal plain where it meets the inland hills;
- A low density of artefact scatters, with rare larger scatters, on the band of low hills between 100-300m elevation running from Sandy Cape towards Circular Head - referred to historically

as an important Aboriginal road/track. The sites are typically located on gently sloping, well-drained ground, often below a break in slope, in a river/creek valley, or where hills rise above surrounding plains;

- Archaeological site patterning suggests that Aboriginal people mainly travelled east via the Sandy Cape Track, or south to the Waratah area, but that there was little direct eastwards movement inland from the coast generally;
- On high open plains and forested hills above 300m elevation there will be a dispersed low density of small open sites, particularly on gently sloping areas near the boundary of forest and plains resource zones, indicating regular, repeated, low intensity use of the high plains;
- Boundaries between forest or Buttongrass plains, or between low hills and plains or valley bottoms, are preferred site locations.

With specific reference to the current study area, Macfarlane undertook surveys north and south of Pieman Heads, locating 26 sites between Hardwicke Point and Rupert Point, at a density of 2.4 sites/km. All identified sites were small, with ten isolated artefacts, seven artefact scatters containing fewer than 19 items, six deflated middens, and two middens containing in-situ deposits (Macfarlane 2001: 131). Sites were mostly located on the coastal margin within 40m of the shore, although 22% were situated on level sand sheets 100-200m inland. Middens were dominated by turbans (*Lunella undulata*) and rock whelk, while artefacts comprised flakes and flaked pebbles of black chert (31.5%), quartzite (29.2%), spongolite (13.4%), and quartz (10.1) (Macfarlane 2001: 132-133). Coastal Black chert-hornfels (dolomitic phthanite) sources have been recorded between Mt Cameron West and Nelson Bay 60km to the north, while the main spongolite quarry complex on Rebecca Creek lies 50km to the north (Sutherland 1972, Cosgrove 1990). Only 9% of artefacts demonstrated secondary flaking, and only five cores/flaked cobbles were recorded, suggesting low levels of artefact reduction and curation (Macfarlane 2001: 133).

Macfarlane postulated that the relatively low density of sites, particularly shell middens along the coast north and south of Pieman Heads, may indicate that the river was a social boundary zone at the edge of the ranges of the *Tarkiner* and *Loomindewitherroke/Peternidic* clans (Macfarlane 2001: 135). Archaeological evidence also supported ethnographic accounts of travel along the Sandy Cape-Circular Head track, and from the north coast inland to the Surrey Hills via the Norfolk Range, but there was negligible evidence of direct movement eastwards from the west coast (Macfarlane 2001:v). Macfarlane also observed that many sites at Pieman Heads were impacted by vehicle tracks, and artefact scatters were likely to extend beyond track exposures into the surrounding vegetated areas (Macfarlane 2001: 131).

A research project (Pah Leah Nattie) initiated by the Tasmanian Aboriginal Land Council (TALC), and headed by David Collett, undertook a survey of selected areas of the north-west coast to inform the development of a management plan for Aboriginal heritage (Collett *et al* 1998). Eleven blocks were surveyed, including blocks at Johnsons Head, Lagoon River and Chimney Creek, within the current study area, resulting in the identification of 17, 15 and 10 sites respectively out of a total of 188 sites recorded during the project.

Collet *et al* summarised their findings as follows:

- Most middens are found to occur where there are both rock platforms and sandy shores.
- The proportion of sandy-shore middens on sandy shores increases south of the Thornton River.
- The majority of middens are located within 200m from either a rock platform or a fresh water source, or both.
- Middens located near fresh water tend to contain four or fewer species of shellfish.
- Middens located away from fresh water, but near rock platforms, contain five or more species of shellfish.
- Middens located near rock platforms tend not to contain animal or bird bones, while middens located away from rock platforms tend to contain animal bones.
- Middens that contain abalone are more common away from rock platforms. Abalone proportion tends to be comparatively low.
- Most contain turbans (*Turbo undulatus*), regardless of location. Numbers of turbans in middens distant to fresh water are higher compared with middens close to fresh water.
- Middens located close to rock platforms and fresh water tend to contain a higher proportion of mussel.
- The number of large whelks present in middens is comparatively higher in those sites located away from fresh water.
- The majority of middens located away from fresh water are thick (>10cm), indicating more intensive exploitation.
- Most middens containing animal bones also contain stone artefacts, while middens without bone contain fewer stone artefacts.
- The presence of stone artefacts in middens with bone material suggests they were used for the processing of meat and skins.
- The artefacts in midden deposits that do not contain bone may have been used for the processing of plants or wood materials.
- Middens without stone artefacts may be specialist fishing sites used by women.
- Artefact scatters commonly occur near the coastal foreshore. Numbers of sites decrease with distance inland, but increase again more than 400m inland from the coast.

- All of the identified artefact scatters, but not all isolated artefacts, were located within 200m of fresh water.
- Hut and village sites are located near fresh water and rock platforms and contain shell, bone and stone artefacts.

Collet *et al* identified ORV use and cattle grazing as major contributors to the degradation of Aboriginal sites in the coastal zone. A number of the management recommendations were incorporated in the subsequent APCA MP (PWS 2002), including closing or re-routing tracks impacting Aboriginal heritage and rehabilitating sites subject to ongoing damage.

One of the outcomes of the Management Plan was the engagement of the Tasmanian Aboriginal Land and Sea Council (TALSC) in 2007 to carry out assessments of vehicle tracks between Temma and Greenes Creek, and between Greenes Creek and the Pieman River (Pedder 2007, Pedder *et al* 2007).

The latter study, which overlaps with the current study area, resulted in the identification of 132 heritage sites, comprising 100 midden deposits, 31 artefact scatters, and one isolated artefact. Eighty-six of the sites had not been previously recorded.³¹ Three possible petroglyph sites were recorded but not entered on to the AHR. At least one other highly significant site, the nature of which was not disclosed, was stated to be present.³² Only sites that were visible on, or adjacent to the main vehicle track, or previously used tracks, were recorded. Pedder *et al* made the following recommendations regarding the area between Johnsons Head and the Pieman River.

- 1) That all free-range vehicle access south of Johnsons Head be stopped.
- 2) The only vehicles permitted south of Johnsons Head, for management purposes, are PWS vehicles and, when appropriate, TALSC vehicles.
- 3) Consideration should be given to allowing a tourist operator/s vehicle access south of Johnsons Head after discussion between the PWS, the APCA Management Committee and TALSC over the management of the access issues.
- 4) All vehicles at the shack settlement on the northern side of the Pieman must be removed.
- 5) Rehabilitation of Aboriginal heritage must be factored into the budget for the APCA.
- 6) A more comprehensive survey is required to be undertaken between Greenes Creek and the Pieman that will detail the number and type of Aboriginal heritage in the area.
- 7) Employment of Aboriginal Rangers is required to monitor and manage the Aboriginal heritage in the APCA.
- 8) Permits under section 14 (1) of the *Aboriginal Heritage Act 1975* (AHA) need to be issued for any work undertaken, or if impacts continue on any Aboriginal site.
- 9) There must be a discussion between TALSC and the PWS regarding the issue of burials in the Arthur-Pieman.

³¹ It is unclear how many of these were ultimately registered on the AHR. A complicating factor is that the Pah Leah Nattie sites appear to have been registered around the same time as the Pedder *et al* surveys making attribution difficult.

³² Anecdotal evidence was offered from one of the participants in the study on 12/11/2020 that many Aboriginal burial sites had been located during the study, including on Track 501, but a decision had been taken not to record these sites.

Additionally, one of the members of the 2007 fieldwork team recently reported that sites of significance to Aboriginal people had been located during the study, but a decision had been taken by the group not to record these or highlight them for management.

A *Draft APCA Sustainable Recreational Vehicle Access Report* incorporating Pedder *et al* recommendations was prepared by the PWS in 2010 for public comment. Cultural Heritage Management Australia (CHMA) was subsequently engaged to undertake an assessment and prepare an Aboriginal Heritage Management Plan for 66 tracks, including Track 501 between Sandy Cape and the Interview River, and Track 601 between the Interview River and Pieman Heads, both of which were recommended to be closed within the PWSreport (Huys 2010). Recording focused on Aboriginal sites that were intersected by vehicle tracks, or in the immediate vicinity of tracks that may be impacted by braiding.

The survey resulted in the identification of 185 Aboriginal sites, of which 56 were re-recordings of AHR registered sites.

Huys made the following recommendations relevant to the current study area:

Track 501

- α. Close entire length of Track 501 to vehicle traffic, based on presence of significant Aboriginal heritage values.
- β. If it is not feasible to close Track 501, then site-specific management recommendations will apply for the eight identified Aboriginal sites located on this track.

Track 601

- χ. Close entire length of Track 601 to vehicle traffic, based on presence of significant Aboriginal heritage values.
- δ. If it is not feasible to close Track 601, then site-specific management recommendations will apply for the 12 identified Aboriginal sites

More recently, it was reported that in 2016 the Tasmanian Aboriginal Centre and the Tasmanian Wilderness Society undertook a visit to the area, observing 146 Aboriginal sites between Pieman Heads and Greenes Creek, many of which did not appear to have been previously recorded. On subsequent visits in 2017-2018, another 52 coastal sites were seen between Pieman Heads and Rupert Point, while a black chert outcrop was located in a gully approximately 1km from shore. None of these sightings were formally recorded.

Aboriginal heritage field survey

Survey method

A field survey was carried out in March 2020 for the purposes of determining the potential efficacy of proposed mitigation works on Tracks 501, 503 and 601 on Aboriginal heritage values. It was limited to determining impacts on physical site values, and did not involve the assessment of impacts on intangible values, such as aesthetic, social and spiritual values, which form part of Indigenous cultural heritage significance, and which can only be determined by Aboriginal people (i.e. Australia ICOMOS 2001, DOE 2016: 6)

The survey methodology involved pedestrian transects survey along the proposed 4m wide tracks, inclusive of a 5m buffer each side, resulting in a 14m wide survey corridor. Additional survey transects were walked in an attempt to relocate previously recorded sites in the local area and to define the boundaries of these and any new sites with respect to the track corridor.

Visibility in the rocky shore section south of the Interview River (i.e. Track 601) and inland surveys (Track 503) was typically very low away from tracks due to thick vegetation cover, significantly hindering site relocation and detection. Ground-surface visibility was higher along the sandy shore section north of the Interview (Track 501), however this area was affected by mobile sands, including quicksand in several areas, limiting site visibility and physical access.

The entire proposed track centreline and notional 14m wide works corridor was walked, however a substantially greater area was surveyed outside the corridor to determine a more appropriate context for assessing potential heritage impacts.

Ground-surface visibility (GSV) is a key determinant in the detectability of heritage materials. This is more so the case for stone artefact sites than for shell middens, due to the fact that shell remains comminute and multiply and can remain visible at even small concentrations, while stone artefacts do not. GSV was not recorded along survey transects; however, given the strongly bi-modal nature of vegetation cover along the proposed route, it was not considered necessary. On rocky vegetated ground, GSV commonly exceeded 80% along worn tracks, but was reduced to below 10% on track margins, reducing even further in heavily vegetated areas. In heavily eroded settings, including the dune fields north of the Interview River, GSV generally exceeded 80%, although it was clear that cultural material was in various states of concealment by mobile sands.

Survey results

A key aim of the present study was to re-delineate the boundaries of documented Aboriginal sites within the study area, relocate any previously recorded sites, and record any new sites encountered with reference to the proposed track corridor.

Summary of survey findings

A total of sixty-one (61) sites or precincts were able to be re-located or otherwise defined during survey from the 102 desktop survey records.

The bulk of previously recorded sites along Track 501 and Track 601 that were targets for re-delineation were able to be located in some form, confirming the clustering of cumulative studies, although in many cases, particularly along Track 601, the surface expressions of the re-located sites was smaller than the originally recorded extents (Figure 9). This is likely to reflect the extent of site erosion and vegetation changes since the original records were made, 30 years ago in some cases.

The grouping of legacy entities into combined sites or precincts essentially reflects the difficulty in discerning individual activity areas due to ongoing erosional and taphonomic processes, and is done primarily for data administration and land management purposes, and does not contribute materially to understanding actual occupation patterning. As indicated by the desktop results, visible 'sites' are concentrated into northern and southern clusters, separated by a large mobile dune field which has the potential to contain a considerable number of concealed deposits. Site surface presentations in the northern cluster tend to be larger than in the south. The most expansive precincts, although not necessarily containing the densest deposits, tend to occur at transitions between rocky shore and dune field environments, with most loci being within 200m of a permanent watercourse.

Despite the vastness of some of the mapped precincts, individual loci are often small, comprising single lenses of deposit which possibly reflect short periods of occupation by smaller groups rather than sustained use over long periods, or large gatherings. An additional significant finding of the present study is the identification of small midden deposits in the large dune field complex between Lagoon River and Interview River. While the surface presentation of these sites are typically low density and/or heavily eroded, they demonstrate, firstly, that the apparent absence of sites within this landscape unit suggested by previous work is not correct, and that Aboriginal people were content to carry food for over a kilometre rather than being tethered to specific shore resources. Secondly, the findings clearly demonstrate that sites are constantly being exposed and concealed in the dynamic dune field land unit, which highlights the risk of making management decisions based on fugitive site presentations.

Figure 6: Deflating midden deposits exposed by eroding dunes



Figure 7: Individual small middens reflect short-duration occupation prior to rapid burial



Many midden deposits are in poor condition, and rapidly deteriorating, while an unknown number remain buried for the moment. While many observed midden sites displayed intact deposits, these are actively eroding, and the geomorphological indications are that they are small vestiges of their original extents. Natural factors, including high rainfall and wind, are playing a major role in the loss of site integrity, with shells breaking down quickly and dispersing following exposure to the elements. Human agency clearly has also played a part, with evidence of direct vehicular disruption of middens in both sand and rocky substrate settings, and nucleation of sand blows and sheet-wash following the destruction of vegetation cover. The presence of former heathland on the now bare ground is attested by the presence of dead roots on many of the exposed surfaces, while relict palaeosols indicate the presence of ponds or wetlands. These, and other features, suggest that the middens formed at a time when the dunes were more thickly vegetated than at present, which helped trap windblown sand and bury the deposits, ensuring their preservation until recent years.

The effects of site deterioration are less visually dramatic above rocky shores where thicker trackside vegetation remains, however channel erosion along tracks has led to undercutting of embankments and profile retreat. In rocky-shore areas that have been subject to less severe vehicle impacts there is evidence that regrowth is taking place, helping to stabilise ground surfaces.

With regard to site content, the present survey results are broadly comparable with previous studies in terms of the types of sites present, and their general form and content. All sites typologically comprised shell middens with or without small amounts of visible stone.

Compared to equivalent-sized east coast middens, the observed stone content was low, assemblages being dominated by flaking debris with an unusually low proportion of visibly curated pieces or formal tools. It is unlikely that these areas would have been historically collected, consequently the low utilisation of stone is assumed to be real. Black 'chert' and spongolite dominated all stone assemblages, with minor proportions of quartzite, quartz and silcrete. Quartzite, in the form of flaked cobbles and cobble flakes, were observed in both southern and northern sites, while silcrete was observed in several southern assemblages. Black 'chert', not a true chert but a spectrum of altered dark cryptocrystalline rock species, commonly displayed evidence of a cobble source, suggesting local provenance, although glassy pieces were observed that may have been transported.

Stone was dispersed, with no conjoins or knapping 'floors' observed. Unutilised cobbles of various sizes were commonly seen, the function of which is unknown. No settings were noted that had the potential to demonstrate changes in stone technology or use, spatially or temporally.

Midden layers ranged from a few centimetres up to 20cm in thickness. While no counts were undertaken, no systematic patterning across the study area was noted in terms of shell species. Some evidence of targeting was indicated in several lenses; however, this may reflect local availability rather than preference.

Bone content in middens and scatters was very low, dominated by bird long bones, small macropods, and, more rarely, carnivores, including seal (mainly flipper and skull fragments). Seal bones were observed at eight locations, four of which were associated with rocky shores, and four located on sandy shores up to 1.6km from rock platforms, suggesting opportunistic consumption without requiring specialised site types such as hides. The coastline in the study area is highly exposed and does not contain cobble beaches suitable for seal colonies or hide construction, and

there are no NVA observations for local seal species between Johnsons Head and the Pieman River.³⁵

No evidence of hut depressions was observed. The absence of hut sites is consistent with the findings of previous researchers, as well as ethnographic accounts. While charcoal and ash were common in midden layers, no features that could be interpreted as hearths or campfires were noted.

In summary, the study area generally can be characterised as comprising numerous small sites that coalesce, largely through erosion, into large low-density deflation scatters, suggesting a relatively small and mobile population without evidence of large regular congregations or settlements.

Figure 8: Deflating midden deposit on relict palaeosol on eroding dune crest



Comparison with similar Australian coastal studies

The effects of coastal morphodynamic processes on shell midden expression are complex and variable, with cultural deposits being continually sealed, dispersed and sometimes reaggregated under the action of wind, water and vegetation. Processes can be broad scale where progressive accretion occurs influenced by unidirectional winds, and highly local due to differential erosion nucleated by chaotic events of both natural and anthropogenic origin (Bird 1995). The interplay between sand sequestration and midden preservation around the Australian coastline has been remarked by numerous researchers over the past 30 years, for instance by Bradshaw and Fry who recorded 49 sites in an 80km strip of coastline north and west of Broome, north-west Western Australia. Most midden deposits were adjacent to rocky platforms, ranging from single event camps to extensive scatters dispersed over large areas of neighbouring dune. Some sites exposed by shifting dune sands contained intact hearths and occupational scatters that did not appear to be dispersed by earlier wind action (Bradshaw and Fry 1989 quoted in O'Connor & Veth 1993: 26).

³⁵ <https://www.naturalvaluesatlas.tas.gov.au/#SpeciesObservationSearchPage> Accessed 19 November 2020

On the opposite side of the continent, 99 sites were recorded along 20km of coastline at Cape Patterson, Gippsland, Victoria, by a team from La Trobe University (Frankel *et al* 1989). No large sites were identified, the dominant expression being one layer of occupation deposit or several thin layers separated by sand which were interpreted as reflecting occasional and opportunistic use of the coast rather than signifying a marine-focused economy (Frankel *et al* 1989: 17).

Recent excavations at five coastal midden sites by Lister *et al* (2020) on the Dampier Peninsula in north-western WA provides the most directly relevant comparison with the current survey findings. The five excavated sites date to the last 1000-3000 years and are located in a dynamic sand-budget environment where winnowing, dispersal and redistribution of material is part of a seasonal cycle of sand sequestration and release, compounded by complex anthropogenic erosional factors including cattle agistment and ORV use. The middens, which were dominated by intertidal shellfish species but also contained turtle, dugong, fish and occasional macropod bones, and mostly unretouched stone artefacts, all showed primary signatures of shell processing and discard, hearth use, and shell and stone tool manufacture from short occupations. However, very poor correlation was found between surface presentation and subsurface integrity. The authors concluded “*What is clear, and of great relevance to cultural management of these sites, is that it is not possible to evaluate their depth, complexity, age or integrity from their surface condition*” (Lister *et al* 2020: 134).

Like the Dampier sites, the presentation of many of the midden sites in the current study area is atypical of the environment in which they formed, and their high visibility in the present reflects processes of recent human induced destruction.

Cultural significance assessment

Assessment frameworks

In a world of increasing competition for resources, including access to land, assigning significance or relative importance to cultural heritage places is a tool used by governments and land managers for determining which places will be conserved for the future, and which places will not. There are many frameworks for assessing cultural significance in Australia, with one of the most influential and enduring being the Australia ICOMOS Charter for the Conservation of Places of Cultural Significance, also known as the Burra Charter (Australia ICOMS 2013). The Burra Charter considers that cultural significance means the aesthetic, historic, scientific, social or spiritual value for past, present and future generations. Aesthetic, historic, social and spiritual values are associative or symbolic and highly subjective, with that subjectivity being culturally determined; the values of the west coast middens, for example, being different for Aboriginal and non-Aboriginal people.

Scientific value, often termed archaeological significance, aims at a certain objectivity insofar as it concerns itself with evidence collected through a forensic process. Like all processes that involve framing questions and determining what is and is not 'evidence', the scientific process is also subjective and culturally referenced.

Since the Burra Charter values were initially framed in 1977, Australian States and Territories, and the Commonwealth Government, have passed heritage legislation that different criteria for determining significance, generally based on Burra Charter values, but articulated and oriented to refer to the specific jurisdiction covered by the legislation.

In Tasmania, Aboriginal heritage significance is defined in the AHA as

2 (8) *significance*, of a relic, means significance in accordance with—

- a) the archaeological or scientific history of Aboriginal people; or
- b) the anthropological history of Aboriginal people; or
- c) the contemporary history of Aboriginal people; or
- d) Aboriginal tradition.

Aboriginal tradition means:

- (a) the body of traditions, knowledge, observances, customs and beliefs of Aboriginal people generally or of a particular community or group of Aboriginal people; and
- (b) any such tradition, knowledge, observance, custom or belief relating to particular persons, areas, objects or relationships;

Under the AHA, clause 2 (8) a) is broadly synonymous with the Burra Charter scientific value, 2 (8)b) with historical value, 2 (8) c) with social value and 2 (8) d) with spiritual value and possibly aesthetic value.

The primary Commonwealth vehicle for managing Aboriginal cultural heritage is the EPBCA. The EPBCA establishes the NHL for protecting natural, historic and Indigenous places of outstanding significance to the

nation. The National Heritage criteria against which the heritage values of a place are assessed are:

- 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;
- b) the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;
- c) the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;
- d) the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
 - i) a class of Australia's natural or cultural places; or
 - ii) a class of Australia's natural or cultural environments;
- e) the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- f) the place has outstanding heritage value to the nation because of the place's importance in demonstrating a high degree of creative or technical achievement at a particular period;
- g) the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
- h) the place has outstanding heritage value to the nation because of the place's special association with the life or works of a person, or group of persons, of importance in Australia's natural or cultural history;
- i) the place has outstanding heritage value to the nation because of the place's importance as part of Indigenous tradition.

Previous assessments

The current study area forms part of the WTACL, which is listed on the NHL under Criterion A. The official statement of value states:

During the late Holocene Aboriginal people on the west coast of Tasmania and the southwestern coast of Victoria developed a specialised and more sedentary way of life based on a strikingly low level of coastal fishing and dependence on seals, shellfish and land mammals (Lourandos 1968; Bowdler and Lourandos 1982).

This way of life is represented by Aboriginal shell middens which lack the remains of bony fish but contain 'hut depressions' which sometimes form semi-sedentary villages. Nearby some of these villages are circular pits in cobble beaches which the Aboriginal community believes are seal hunting hides (David Collett pers. comm.; Stockton and Rodgers 1979; Cane 1980; AHDB RNE Place ID 12060).

The Western Tasmania Aboriginal Cultural Landscape has the greatest number, diversity and density of Aboriginal hut depressions in Australia.

The hut depressions together with seal hunting hides and middens lacking fish bones on the Tarkine coast (Legge 1929:325; Puelleine 1929:311- 312; Hiatt 1967:191; Jones 1974:133; Bowdler 1974:18-19; Lourandos 1970: Appendix 6; Stockton and Rodgers 1979; Ranson 1980; Stockton 1984b:61; Collett et al 1998a and 1998b) are a remarkable expression of the specialised and more sedentary Aboriginal way of life.

The NHL statement is not an exhaustive assessment of the full spectrum of heritage values as defined under the Burra Charter, and focuses primarily on historical and scientific themes, however it does define the values that are relevant to the exercise of protections offered under the EPBCA.

The WTACL is not listed under the AHA as a distinct entity, however individual sites within it are. In Tasmania, all Aboriginal sites that are *of significance to the Aboriginal people of Tasmania* are protected under the AHA. While it is the stated view of the majority of Aboriginal communities in Tasmania that all traditional relics are of cultural significance, in practice the Aboriginal community is rarely consulted when sites are entered on the AHR, which is done as a matter of course as relics are found.

Unlike the NHL, the AHR does not record, or even require an assessment of significance, consequently, there are few standardised significance assessments for individual sites within the current study area. Macfarlane considered the area between Sandy Cape and the north head of the Pieman River as a 'significant set' of sites, but did not assess sites individually, with the exception of 1792 (Rock marking site).³⁶

In preparing the north-west coast Aboriginal Heritage management plan, Collett *et al* similarly discussed the concept of significance, but did not define the values for the area or assess the contribution of individual sites to the cultural landscape. Most recently, Huys (2010) again discussed broader significance, but only addressed scientific value.

Current assessment

The current assessment of significance references the AHA and NHL criteria as the basis on which management of individual places is likely to depend, at least until such time as a more holistic assessment of broader values is undertaken for the WTACL.

Aboriginal Heritage Act 1975

Significance in accordance with the archaeological or scientific history of Aboriginal people

Scientific significance is commonly considered to refer to the potential of a place to yield information, generally through a process of archaeological investigation in response to timely and specific research questions (Sullivan & Bowdler 1984). It is not possible to meaningfully assess the scientific value of a place in the absence of these questions, so as a workaround archaeologists commonly refer to such things as uniqueness or representativeness in terms of location, form and content that may be mined for data suitable for answering a range of potential future questions.

Both Macfarlane (2001) and Collett *et al* (1998) took the view that the scientific significance resided in the site complex, or landscape, as a whole, and could not be readily subdivided or ranked for individual sites. Collett *et al* did, however, suggest that long sequences with the potential to demonstrate change in behaviours at a single location were more research-worthy than smaller occupation expressions. They noted that west coast dunes may build up rapidly, trapping multiple

³⁶ Cosgrove (1983: 46) also considered 1792 of high cultural significance and recommended it be declared a State Reserve.

occupation horizons over a relatively short space of time that do not appear to demonstrate discernible trends in content or associated activity. When examined, many thick deposits also appeared to show no evidence for changes through time, limiting their value in demonstrating culture change. The threshold for scientific significance was reached for Collet *et al* only when sequential layers showed significant variation, such as a stone artefact layer superimposed on a shell layer. Only one site meeting this criteria was identified by Collet *et al* within the current study area, however it is unclear which site this is due to a disparity between field and AHR registration numbers.

This position expresses the 'culture-change' focus of traditional archaeology that privileges understandings of how things changed over time compared to understandings of what was happening at a particular time. This is largely due to the lack of absolute dating information that would allow temporal sequences to be constructed from dispersed sites, it being far easier to demonstrate relative temporal change at a single location. In defence of Collet *et al*, culture change in the late Holocene has been a significant theme in Australian archaeology since the 1990s, as evidenced by the debate over fish eating in Tasmania which some archaeological sequences suggest ceased around 3.5ka, but which is contested by many Aboriginal people, so for some questions intact vertical sequences at a single location remain highly important.

An alternate, or rather contributory view recognises the importance of temporal snapshots in the archaeological record. Large and thick deposits, containing vast quantities of material, represent the conflation of innumerable and irresolvable events over a long period. Small sites, by comparison, tend to reflect shorter occupations, perhaps single events, that may shed light on the ways that people relate to their environment and to each other at a particular place and point in time. Sites such as these are more suitable for scientific research that aims to examine aspects of Aboriginal lifestyle, group size and composition and gender issues. Shell middens are potentially more useful for examining short duration activities than other open-site types, such as stone artefact scatters, due to the tendency of the shell lenses to form a barrier to vertical displacement of particles due to bioturbation and other pedogenic effects (Knuckley 1999: 7).

Gender is another topic that may potentially be explored through detailed midden studies of short-occupation midden deposits. Ethnographic accounts of Tasmanian life make clear that a gendered differentiation of labour was practiced, and in the case of coastal economics, women and girls were observed to spend a greater amount of time producing marine food compared with men and boys. This has led to a widespread belief among practicing Aboriginal Heritage Officers, and others in the Aboriginal community, that shell middens are associated with women's work, while stone artefact sites are associated with men's activities. While historical accounts and more recent anthropological studies of living groups, such as the Gidjingali of northern Arnhem Land (Meehan 1982), support the idea of structurally gendered labour to a degree, they also highlight that males are also involved in gathering shellfish and other marine resources, while women participate fully in stone procurement, tool manufacture and use, often resulting in particular tool forms, such as ballawinne stones for powdering ochre, anvils for marrow extraction, and axes for tree climbing (Plomley 2008: 930, 937, Ling Roth 1899: 147-149). Rather than over-simplifying gender contributions by creating categorical distinctions between men's and women's 'sites', it is important to recognise that all food is prepared and material culture produced and used within a social context where 'male' and 'female' work overlaps at any one time, and where ethnographic renderings of gender cannot be injudiciously applied to earlier pasts (Beck & Balme 1994: 43). Examination of small, short-occupation deposits, such as those which commonly occur within the study area, have much to reveal about cultural and social behaviour at different points in time.

A further topic, yet to be meaningfully explored in Tasmanian coastal archaeology, but potentially relevant to north-west Tasmania, deals with the effects of white invasion/colonisation. Colley (1997) excavated a shell midden at Greenglade rock shelter, at the junction of a rocky headland and sandspit at Disaster bay in NSW, that spanned the period of European arrival, noting up to half a metre of post-contact deposit containing evidence of incorporation of exotic material, including flaked glass implements. While the 'official' contact period in Tasmania was very brief, spanning around 30 years, excavations at the former VDL's land outpost at Burghley in the Surrey Hills, within the north-west homelands, suggest that it extended until 1842 when the Lanne family were finally coerced to leave their land. By this time, the deposits at Burghley suggest the Lannes were incorporating select elements of European material culture into a largely traditional lifestyle which presumably also encompassed coastal transhumance (Murray 1998). It is not inconceivable, therefore, that the effects of colonisation are recorded in some of the uppermost, and hence most fragile, of remaining cultural deposits on the north-west coast. Given what little is known about Aboriginal responses to colonisation, such sites would be both of immense scientific significance as well as cultural significance to Aboriginal Tasmanians who continue to work to overcome the historic and lingering effects of colonialism. Pedder *et al* (2007) did not attempt to assess the scientific significance of sites between Johnsons Head and the Pieman River, but in essence supported the cultural landscape protection model, considering the heritage to be extensive and largely continuous, with many previously recorded individual sites being more appropriately considered part of larger complexes/systems.

Huys (2010) concurred with previous assessments that the significance of the APCA as a whole was collectively much greater than the sum of its constituent parts, but also provided a general assessment of site types, as well as individual sites, between West Point and the Pieman River, ranking them on a scale from Low to High "*based primarily on the numbers of artefacts associated with the sites, the intact nature of the artefact deposits and the potential for additional undetected subsurface artefact deposits to be present*" (Huys 2010: 51). For stone artefact sites within the present study area, isolated artefacts were ranked as Low significance, and artefact scatters were ranked from Low to Moderate significance based on the low numbers and locally common forms and fabrics.

Where comparisons between previously recorded extends and the current survey allowed, it is clear that many sites have continued to deteriorate since 2010, with further loss of intact deposits and expansion of deflation scatters. This is an expected outcome in such a hostile preservation environment. What is unclear, however, is the degree to which the speed of this process has changed since restrictions on vehicular access were put in place. There are signs of revegetation occurring along tracks within the rocky terrain areas, however sandy settings remain highly exposed and erodible. Indications are that progressive loss of potential scientific value is continuing to occur at large-scale, which will have an impact on the relative significance of what remains going forward.

In terms of what that ranking might be, the current study concurs with the approach of Collet *et al*, that the significance of the area can only be understood and managed at landscape level, as the nature of scientific questions remains unknown, and the rate of deterioration of specific sites is unclear. Essentially, we don't know what we want to know, and don't know how fast evidence for it is disappearing. At a broad scale, the landscape of currently known sites contains unparalleled potential for research into a range of topics relating to Aboriginal life on the north-west coast over the last 2000-4000 years, during a period of great transition and the emergence of historically documented people and culture. When one also considers the counsel of Lister *et al* that surface presentation is a weak analogue for what may remain buried, the attractiveness of conserving landscapes as an approach for managing scientific risk becomes more compelling.

Significance in accordance with the anthropological history of Aboriginal people

This criterion is interpreted as illustrating the relationship between survey findings and historical records produced by colonial observers rather than history documented or remembered by Aboriginal people.

The historical accounts of Aboriginal life presented in this report relate to the period between 1803 and 1834 when the local population was decimated by disease, harassment and, ultimately, exile. For many reasons, the historical accounts cannot be considered complete or representative, and the absence of anything from written records should not be considered indisputable evidence that it did not take place. In short, absence of evidence is not evidence of absence.

Historical accounts do not contain any primary accounts of people living at the specific locations identified in this report; however, at a broader but still applicable scale, they report aspects of material culture such as the use by women of baskets for holding kangaroo skins, string, and decorative items such as beads made from animal claws and ochre. The use of stone is mentioned, in natural form as pebbles the size of hen's eggs for throwing, and in worked form for sharpening spears. Disposal of the dead by cremation and subsequent carrying of ashes and fragments of bone as charms/medicine is referred to. Reference is made to the use of springs/wells and abalone shells as drinking vessels, and the construction and decoration of huts in clusters, including commodious semi-permanent structures in favoured locations. They record a gendered division of labour, with women being chiefly responsible for harvesting marine resources, including shellfish, crustaceans, seaweed and seals, while men hunted terrestrial game. There are accounts of the use of fire to maintain an open, heathy country, with areas of grass to support a diversity of wildlife.

Features associated with these and other historically documented activities were observed during the survey, in the form of the many large shell middens along the coast containing a small range of stone suggesting a material culture largely based on organic materials. The presence of bird, marsupial and seal bone in association with middens is consistent with the mixed maritime and terrestrial diet observed by Europeans. The presence of middens on root infused palaeosols hundreds of metres from shore, in now deflated areas, attests to the maintenance of a mosaic of herbfield, grassland and wetland maintained by cultural burning. These features connect the study area with the activities of the ethnographically described Sandy Cape people and other west coast groups.

Some features considered characteristic to the western peoples were not observed during the survey, including seal hides and hut depressions. The absence of cobble beaches and the presence of seal bone in settings away from rocky shores suggests that specialised sealing sites were not always necessary. Despite being remarked in other areas, huts are not mentioned by Carretts, Lorymer, or Robinson, who traversed the area several times, suggesting that, in this area at least, permanent huts may not have been considered necessary.

Significance in accordance with the contemporary history of Aboriginal people

All land in Tasmania is significant to the Tasmanian Aboriginal community arising from the history of colonial dispossession and ongoing denial of Aboriginal identity, and the capacity of country to connect living communities with past elders, peoples and traditions, continuing cultural practices and allied opportunities for spiritual health and economic self-determination.

The contemporary social significance of individual Aboriginal sites, cultural landscapes can only be attributed by the Aboriginal community (i.e. Australia ICOMOS 2001, DOE 2016: 6). No Aboriginal community consultation has occurred for this study, consequently, no assessment can be made against this criterion at this time.

Significance in accordance with Aboriginal tradition

The interpretation, maintenance and re-expression of traditional practices is solely a matter for the Aboriginal community to signify. Determining the significance of places and resources within the context of historical tradition and continued practice can only be done by Aboriginal people (i.e.

Australia ICOMOS 2001, DOE 2016: 6). No Aboriginal community consultation has occurred for this study, consequently, no assessment can be made against this criterion at this time.

WTACL National Heritage Values

The values statement contained in the NHL listing for the WTACL encompasses two main ideas that differentiate the place from other areas of Tasmania:

1. A late Holocene change in economy and diet to focus less on fishing, and more on the use of shellfish and sea and land mammals;
2. The associated development of a semi-sedentary way of living, involving the use of specialised sites, including large and durable huts for living, and possibly hides for hunting seals.

Sites within the current study area have the potential to yield information relating to Aboriginal economy and diet over the past 2000 years, and possibly longer. This is later than the theorised change away from scale fish at c 3.5ka, so these sites are more likely to confirm than challenge that notion - which is constantly under review. The appearance of bird, seal and marsupial bone in association with the middens indicates that a mixed marine and terrestrial food procurement strategy was being practiced. On this basis, the sites observed within the current study area demonstrate a key aspect of the national heritage values.

While many very extensive midden sites are present, no evidence of specialised living structures was identified in the study area. There are no historical reports of huts of any type within this zone. This may be because most Europeans would likely have travelled along the coast, rather than up the streams where huts were more likely to be located, however Robinson reported walking the 'native road' and camped *for the night in a wood at the foot of some high land, a place resorted to by the natives*, seemingly indicating that there was evidence of it being a living space, but without any accommodation structures which was his usual habit to remark on (Plomley 2008: 197).³⁷

While huts may have existed that were not reported, the lack of evidence means that the study area is currently unable to demonstrate this key element of National heritage values.

Similarly, no evidence of specialised coastal structures thought to be seal hides was observed. The study area lacks the cobble beaches necessary for this site type. The presence of seal bones at several midden locations, sometimes over 1km from the nearest potential haul site, suggests that seals were taken in ways that did not require specialised sites or locations, but was perhaps more opportunistic as individual seals came onto sandy beaches to sun. Consequently, the study area is currently unable to demonstrate the stated method of seal hunting referred to in the NHL statement, however it does potentially record a historically undocumented aspect of the seal consumption process.

Considered together, the sites within the current study area support the idea of a late Holocene mixed maritime and terrestrial economy being practiced on the northwest coast over the past c2000 years or so, which operated as part of a semi-sedentary strategy that encompasses both villages as well as broad foraging and hunting areas where increased mobility was preferred.

It is important to note that while the NHL statement articulates hut depressions and possible seal hides as important features of the cultural landscape, they are discussed within the context of a semi-sedentary lifestyle which involves a combination of sessile and mobile practices. The findings of the current study relate more to the mobile elements of the overall semi-sedentary social and economic strategy, but are nonetheless integral to the whole.

The NHL listing also acknowledges that the values of the WTACL National Heritage Place are not definitively mapped, and that Aboriginal people are the primary source of information on the value of their heritage and should be consulted on any proposed action likely to significantly impact on the listed Indigenous heritage values of the place.³⁸

³⁷ The location is unclear but appears to be somewhere between Ford Creek and Rocky Creek, c 7km north of Pieman Head.

³⁸ <https://www.environment.gov.au/heritage/places/national/western-tasmania>

Impact assessment

Proposed activity

The proposed works are outlined in the document: DPIPWE APCA ORV Mitigation Summary of Proposed Works (DPIPWE 2017)

The proposed works along Tracks 501 and 601, and to a lesser degree Track 503, involve a combination of track surface protection, drainage works, fencing, track markers, signage and, in some cases, track realignment aimed to reduce the direct vehicular impacts on Aboriginal heritage material. Descriptions of the techniques, and a summary of their proposed application derived from the DPIPWE summary document, are outlined below and in Table 6.

Track surface protection

Approximately 2.26km of track surface protection and hardening is proposed for wet areas, and the exposed Aboriginal heritage, through concealment under a protective surface. Clip together plastic mesh panels placed on a level bed of sand is the primary method being considered. The length of the hardened sections varies from 5m to 300m. An alternative method to lay geo-textile and cover with sand or lay gravel is being considered for wet areas.

Culverts and drainage

Drainage works will consist of remediating the track surface and installing water bars and side drains to direct water flow in areas currently exhibiting high levels of erosion. Culverts will be used in both permanent and ephemeral creek lines, bedded into existing watercourses and covered with sand and gravel.

Fencing

Fencing will be used to protect sensitive areas, with small sections used to block redundant and/or braided track sections and allow for their rehabilitation. Approximately 3.05km of fencing will be required in sections ranging from 5m - 200m. The fencing will consist of simple galvanized 'star pickets', with some wooden posts and strainers, with two strands of coloured plastic sight wire.

Track markers and signage

Track markers, comprising light-weight plastic 'star pickets' with reflective markers on the apex for day/night visibility, are proposed for clear, open areas such as mobile sands to ensure the route avoids Aboriginal heritage or environmental values. Approximately 250 track markers are proposed. The routes through the mobile dune areas will be established prior to the driving season, and will be assessed during the season. Track markers will be moved as required in response to conditions. Signs will be simple, single or double timber or metal posts, with metal or timber displays.

Track realignments

Approximately 720m of track re-routes are proposed to avoid sensitive areas. The re-routed sections may be subject to additional mitigation works, such as surface protection and markers. Two additional options are under consideration for track realignment, including a c990m section at

Johnsons Head, and c480m section at Dago Plains. These potential re-route options were not formally surveyed during the current assessment, but are discussed under Potential Impacts.

Construction process

It is proposed to use a small capacity excavator walked in from Pieman Heads for drainage works on Track 601, with smaller (i.e. 1 tonne) excavators helicoptered in for general works. Works on Track 501 will utilise tractors and trailers, power barrows etc. Utility terrain vehicles (UTV) will transport personnel and light equipment. Materials will be helicoptered into remote areas.

Table 6: Summary of proposed track works (DPIPWE 2017)

Number	Site name	Summary of Proposed Work	Mitigation Purpose
501/2	Johnsons Head north	Fence off track to coast, surface protection - midden, close coastal track to the south.	Protection of cultural values, soils.
501/3	Johnsons Head	Monitor damage to wet/seepage area, monitor midden to west of track, minor re-route (plastic matting – 250m), fencing (250 m), track markers.	Protection of soils, cultural heritage, wetland.
501/4	Johnsons Head south	Signage - Skull Creek Beach north access, fencing (130 m) - grassland and wetland. Surface protection and markers – wet areas. Surface protection – midden. Surface protection (plastic matting) – midden.	Quicksand awareness. Protection of grassland, wetland and cultural values.
501/5	Italian Creek Beach/Skull Creek Beach	Track markers - nesting shorebirds and cultural heritage, close northern route through midden.	Protection of nesting shorebirds and cultural heritage.
501/6	Dago Plains	Track markers and signage – cultural heritage and soils.	Protection of soils, cultural heritage.
501/7	Dago Plains North	Fence and close old dune access to the south, and start short re-route to the northeast.	Protection of cultural heritage.
501/8	Dago Plains North 2	Fence to block redundant track and mark new section of track, track markers and signage.	Protection of cultural heritage, soils.
501/9	Dago Plains	Track markers, fencing and monitoring – coastal lagoon, close coastal track. Close wet area braids and small re-route to east to avoid seepage area. Track markers on dunes.	Protection of wetlands, cultural heritage.
501/10	Dago Plains south	Fencing on track edge, fence coastal route. Track markers.	Protection of cultural heritage, grassland/herbfield and wetland.
501/11	Dago Plains south - Lagoon Beach North	Surface protection, signage, track markers – beach entry and traverse.	Protection of cultural heritage, shorebirds. Quicksand awareness.
501/12	Lagoon Beach	Signage, track markers.	Protection of cultural heritage, shorebirds. Quicksand awareness.
501/13	Monster Creek	Signage, track markers.	Protection of cultural heritage, shorebirds. Quicksand awareness.
501/14	Interview River Beach	Signage, track markers.	Protection of cultural heritage, shorebirds. Quicksand awareness.
501/15	Interview River midden north	Track markers, signage to avoid midden area.	Protection of cultural heritage.

503/1	Interview Mine Track	Track markers, signage to avoid midden areas.	Protection of cultural heritage, shorebirds. Quicksand awareness.
601/1	Interview River south	Track markers to avoid extensive Aboriginal heritage, signage, possible use of on-surface plastic matting.	Protection of cultural heritage.
601/2	Lanes Tor	300 m fencing to protect cultural heritage, herbfields and coast. Surface protection.	Protection of cultural heritage, herbfields, dunes. Mitigation of track erosion.
601/5	Rocky Creek	Contain gully erosion, harden, drainage. Fencing, monitor erosion, surface protection - cultural heritage. Fence and close coastal track. Track markers.	Mitigation of track erosion by wind and vehicles. Protection of cultural heritage, herbfields and coastal landforms.
601/6	Rocky Creek south	Contain gully erosion and drainage, signage. Fencing, track markers, signage. Harden and monitor small boggy sections.	Mitigation of track erosion by wind and vehicles and dangerous slope. Protection of cultural heritage and herbfield.
601/10	Ford Creek coast	Fence herbfield and monitor erosion. Fence coast access to very large midden on coast. Monitor. Fence and close coastal route - use inland track.	Protection of cultural values, herbfield. Mitigation of track erosion.
601/11	Ford Creek south	Track markers, surface protection, and monitor site - lagoon. Fence herbfield and monitor erosion. Surface protection – cultural heritage. Harden and monitor small boggy section.	Protection of lagoon (no feasible re-routes), herbfield and cultural values. Mitigation of track erosion.
601/12	Rupert Point north	Fencing and surface protection – cultural heritage. Close coastal route to the south. Fence midden to west of track and surface protection – cultural heritage. Fence wetland and move track to southern side. Close braids, monitor erosion, surface protection – cultural heritage. Track markers on beach entry/exits – shorebirds.	Protection of cultural heritage, wetlands and shorebirds. Mitigation of track erosion.
601/13	Rupert Point	Water bars and drainage. Harden and culvert wet area. Fence off coast access track and harden/culvert wet area, close braid. Direct route to centre of braided area.	Protection of cultural heritage. Mitigation of track erosion.
601/14	Rupert Point south	Surface protection – cultural heritage. Harden and culvert wet areas. Culvert and gravel through creek area. Harden, fence and monitor wet areas. Water bars and drainage. Signage to close Rupert Point access track.	Protection of cultural heritage. Mitigation of track erosion.
601/15	Foam Creek	Track markers and monitor damage to herbfield. Track markers and surface protection – cultural heritage. Track markers and fence to protect wetland and to reduce braiding.	Protection of cultural heritage, herbfield and shorebirds.
601/16	Foam Creek south	Fence coastal access track. Wet area. Harden and culvert if needed. Fence off braids. Monitor. Signage, close old shack access track, track markers.	Protection of cultural heritage and herbfields.
601/17	Pieman north	Fence coastal access, surface protection – cultural heritage. Fence coastal herbfield. Fence access to cobble beach, signage. Fence coastal access to the south - use inland route. Track markers and monitor damage to herbfield.	Protection cultural heritage, coastal features and herbfield.
601/18	Pieman	Close coastal track braid - fence. Close small braids to other tracks. Harden and fence braid area. Harden and culvert wet section. Fence and close inland track to the west. Fence and close inland track to the north (Track 602 - Elliott's	Mitigation of track erosion, closure of secondary tracks.

		Track)..Fence off braids. Hardening and culverts.	
601/5	Rocky Creek	Contain gully erosion, harden, drainage. Fencing, monitor erosion, surface protection - cultural heritage. Fence and close coastal track. Track markers.	Mitigation of track erosion by wind and vehicles. Protection of cultural heritage, herbfields and coastal landforms
601/6	Rocky Creek south	Contain gully erosion and drainage, signage. Fencing, track markers, signage. Harden and monitor small boggy sections.	Mitigation of track erosion by wind and vehicles and dangerous slope. Protection of cultural heritage and herbfield.
601/10	Ford Creek coast	Fence herbfield and monitor erosion. Fence coast access to very large midden on coast. Monitor. Fence and close coastal route - use inland track.	Protection of cultural values, herbfield. Mitigation of track erosion.
601/11	Ford Creek south	Track markers, surface protection, and monitor site - lagoon. Fence herbfield and monitor erosion. Surface protection – cultural heritage. Harden and monitor small boggy section.	Protection of lagoon (no feasible re-routes), herbfield and cultural values. Mitigation of track erosion.
601/12	Rupert Point north	Fencing and surface protection – cultural heritage. Close coastal route to the south. Fence midden to west of track and surface protection – cultural heritage. Fence wetland and move track to southern side. Close braids, monitor erosion, surface protection – cultural heritage. Track markers on beach entry/exits – shorebirds.	Protection of cultural heritage, wetlands and shorebirds. Mitigation of track erosion.
601/13	Rupert Point	Water bars and drainage. Harden and culvert wet area. Fence off coast access track and harden/culvert wet area, close braid. Direct route to centre of braided area.	Protection of cultural heritage. Mitigation of track erosion.
601/14	Rupert Point south	Surface protection – cultural heritage. Harden and culvert wet areas. Culvert and gravel through creek area. Harden, fence and monitor wet areas. Water bars and drainage. Signage to close Rupert Point access track.	Protection of cultural heritage. Mitigation of track erosion.
601/15	Foam Creek	Track markers and monitor damage to herbfield. Track markers and surface protection – cultural heritage. Track markers and fence to protect wetland and to reduce braiding.	Protection of cultural heritage, herbfield and shorebirds.
601/16	Foam Creek south	Fence coastal access track. Wet area. Harden and culvert if needed. Fence off braids. Monitor. Signage, close old shack access track, track markers.	Protection of cultural heritage and herbfields.
601/17	Pieman north	Fence coastal access, surface protection – cultural heritage. Fence coastal herbfield. Fence access to cobble beach, signage. Fence coastal access to the south - use inland route. Track markers and monitor damage to herbfield.	Protection cultural heritage, coastal features and herbfield.
601/18	Pieman	Close coastal track braid - fence. Close small braids to other tracks. Harden and fence braid area. Harden and culvert wet section. Fence and close inland track to the west. Fence and close inland track to the north (Track 602 - Elliott's Track)..Fence off braids. Hardening and culverts.	Mitigation of track erosion, closure of secondary tracks.

Forms of potential impact

There are various forms of impact to heritage potentially arising from the proposed works and subsequent re-opening of the tracks for ORV use.

Construction-related impacts

Potential impacts include disturbance of relics during drainage works and surface preparation for track hardening, compaction of cultural deposits during construction, damage to adjoining cultural deposits during vegetation removal or batter re-profiling, and erosion due to modification of drainage, among others.

Use-related impacts

Re-opening Track 501, Track 503 and Track 601 to ORV use, which for tracks 501 and 503 theoretically includes everything from trail bikes to heavy four-wheel drive campers weighing over 10 tonnes, has the potential to impact Aboriginal heritage in various ways. These include direct effects associated with the passage of vehicles over sensitive material of fragile substrates such as disruption, abrading and compaction of cultural deposits on track floors, widening of incised track sidewalls through tyre abrasion and brushing against vegetation, water and wind erosion of exposed surfaces, and general undesirable effects of opening up areas containing fragile heritage to increased pedestrian traffic and camping, including trampling, lighting fires, fossicking and littering. Arguably, over the long-term, the most significant risk to Aboriginal heritage is associated with unauthorised vehicular access to sensitive environments, as many of the more fragile midden sites are located in dune sands where the track is proposed to only be delineated by markers with no physical constraint to off-track access.

The referral limits the size of vehicles accessing Track 601 to UTV, all-terrain vehicles (ATV), and trail bikes, which may reduce potential impacts assuming the other proposed mitigations (i.e. surface hardening, fencing and signage) are effective. However, there is currently no regulation of vehicle numbers or sizes under the Arthur-Pieman Recreational Driver Pass system to allow for assessment of the application of this restriction

Figure 10: Recent ORV tracks over dune-field midden scatter



Figure 11: Dislodged ‘No Vehicle’ sign on Track 501



Assessment of potential impacts on identified values

Heritage site intersections

The discussion on heritage intersections is based on mapped surface presentation only, and does not consider the potential for subsurface material to be intersected by the proposed route. As such, the estimates given below should be treated with extreme caution.

The proposed Track 501 was found to intersect eleven re-located or new sites/precincts with a cumulative linear intersected distance of 633m, or 3.6% of the total track length. A further four re-located/new sites/precincts are situated within 30m of the proposed track, while eleven sites/precincts are 50m away or more, but accessible on side tracks or open areas flanking the track route. Three sites that were unable to be re-located during the survey have legacy coordinates that plot within 30m of the track and may potentially be impacted.

Proposed Track 503 intersects two sites over a cumulative linear distance of 171m, or 2.1% of the total track length. No other sites were identified in proximity to this track; however, the survey of this track was the most heavily constrained by vegetation cover.

Proposed Track 601 intersects twenty-two re-located or new sites/precincts over a cumulative linear distance of 1566m, or 13.1% of the track length. A further four re-located or new sites/precincts are situated within 30m of the proposed track, while seven sites/precincts are 50m away or more, but accessible on side tracks flanking the track route. Five sites that were unable to be re-located during the survey, but plot within 30m of the track, may potentially be impacted.

Two potential realignment options were surveyed on-ground during the current study. These include a c990m section at Johnsons Head, and a c480m section at Dago Plains. The Johnsons Head realignment option avoids two re-located sites, totaling 80m of intersection, but passes close to, and likely through, two sites, and is at high risk of causing greater harm to Aboriginal heritage than the current proposed route.

The Dago Plains realignment option avoids 130m of visible site by passing further upslope into the mobile dune. Given the potential for subsurface portions to extend upslope, and the reported presence of burials at Dago Plains, any proposal to disturb fresh ground in this area should be evaluated with great caution and in consultation with the Tasmanian Aboriginal community .

Impact assessment

The assessment of potential impacts has been undertaken to a very preliminary degree based on the horizontal surface expression of cultural material and degree of potential track intersection observed during the field survey, and the level of detail provided about proposed mitigation works in the DPIPWE scope of works. This scope does not contain surveyed plans, cross sections, or geotechnical information about soil structure, compressive strength and erodibility of soils, or the performance characteristics of featured treatments or data on their efficacy as control measures for direct and indirect impacts.

The current assessment has not been able to identify comparative literature on heritage impacts of the proposed surface treatment methods on which to base an informed appraisal of the potential benefits and risks of the proposed approach. One NSW study which involved establishing a temporary hardstand, comprising arterial turf carpet covered by 100mm of sand, covered by 50-60cm of gravel with a bitumen seal, on an Aboriginal artefact scatter, found, following removal, that the site was negatively impacted by compression, reducing soil porosity and making the re-exposed site more susceptible to surface erosion, although no artefact breakages were observed (KNC 2012). Study concluded *“Placing significant quantities of material on top of archaeological sites is not a recommended management strategy as the process has an impact on archaeological context which may decrease the scientific value of the site”* (KNC 2012: 12).

This example is not directly comparable to the proposed application, which involves an aeolian sand substrate as opposed to a sandy clay soil in the cited example, and would cover fragile and compressible shell deposits rather than robust stone artefacts. The environmental conditions between the NSW example and the APCA study area, and context of use, are also not comparable. Specific trials of the proposed method in a comparable environmental and cultural setting to the proposed application would be needed to provide relevant data for a meaningful assessment of potential physical impacts and protections.

Given the lack of essential environmental and performance data, all the current impact assessment was able to achieve was to overlay the extents of proposed mitigation measures with the re-mapped extents of Aboriginal heritage sites identified during fieldwork, to identify gaps in mitigation coverage and to make a first-pass judgement of the degree to which potential heritage risks

associated with theoretical uncontrolled access would be mediated by the proposed action. Assessed heritage risks include both direct and indirect impacts, as cause and intent are irrelevant to heritage value categories.

- Very High risk is present where the proposed track directly intersects a heritage site;
- High risk is present where an off-track site is readily accessible to ORVs and the site is highly susceptible to damage;
- Medium risk is present where an off-track site is theoretically close enough to be accessible to ORVs, but some form of natural barrier such as rough ground or vegetation cover may afford some degree of protection, or where an un-relocated site is intersected by the track
- Low risk is present where an off-track site has no current vehicle access.

The preliminary risk assessment results include the 61 relocated or new sites/precincts, plus 13 sites that were unable to be re-located during survey but are recorded as being sufficiently close to be potentially impacted by the proposed works (Total 74 sites).

According to the risk analysis, implementing the proposed controls along Track 501 may result in a theoretical reduction from a Very High level uncontrolled risk to High risk (or lower) at one location, a High level uncontrolled risk will be reduced to Medium risk (or lower) at one location, and a Medium level risk will be reduced to Low risk at one location. This equates to a material reduction in risk of direct and indirect impacts by at least one risk level at three out of a total of 32 sites (comprising 26 re-located or new sites/precincts, plus six un-relocated sites, that may be impacted).

The proposed works will not result in any reduction in risk to the two sites identified along Track 503.

For Track 601, implementing the proposed controls may result in a theoretical reduction from a Very High level uncontrolled risk to High risk (or lower) at eight locations, a High level uncontrolled risk will be reduced to Medium risk (or lower) at four locations, and a Medium level risk will be reduced to Low risk at seven locations. This equates to a material reduction in risk of direct and indirect impacts by at least one risk level at nineteen out of a total of 40 sites (comprising 33 re-located or new sites/precincts, plus seven un-relocated sites, that may be impacted).

These results may be improved if the proposed mitigation actions are extended to the re-mapped heritage site/track intersection extents, but are unlikely to reduce the potential impacts to acceptable levels, particularly along Track 501 where large expanses of highly fragile heritage will remain accessible to users not abiding by the spirit of the proposed mitigations. Importantly, the proposed mitigations will also not afford any protection to subsurface cultural deposits which may be concealed by as little as 5-10cm of sand and are highly susceptible to crushing and erosion.

Legal requirements

The current study area containing Tracks 501, 503 and 601 is subject to a raft of Tasmanian and Commonwealth Government heritage and environmental management legislation. A summary of the primary legislative context for managing Aboriginal heritage regarding the proposed activity is given below.

Statutory context

Environment Protection and Biodiversity Conservation Act 1999 (EPBCA)

The EPBCA establishes the NHL which includes natural, Indigenous and historic places that are of outstanding heritage value to the nation. The EPBCA is administered by the Commonwealth Government's Department of Agriculture, Water and the Environment (DAWE). Under the Act, there are penalties for anyone who takes an action that has, or will have, a significant impact on the Indigenous heritage values of a place that is recognised in the NHL. Any action that has, will have, or is likely to have a significant impact on National Heritage values must be referred to the Federal Environment Minister for a decision about whether the action should be a controlled action or not (DEWHA 2010). A controlled action is one that requires formal approval under the Act.

The *EPBC Act Policy Statement 1.1 Significant Impact Guidelines - Matters of National Environmental Significance* (MNES Guidelines) state that an action is likely to have a significant impact on Indigenous heritage values of a National Heritage place if there is a real chance or possibility that the action will:

- restrict or inhibit the continuing use of a National Heritage place as a cultural or ceremonial site causing its values to notably diminish over time;
- permanently diminish the cultural value of a National Heritage place for an Indigenous group to which its National Heritage values relate;
- alter the setting of a National Heritage place in a manner which is inconsistent with relevant values;
- remove, destroy, damage or substantially disturb archaeological deposits or cultural artefacts in a National Heritage place;
- destroy, damage or permanently obscure rock art or other cultural or ceremonial, artefacts, features, or objects in a National Heritage place;
- notably diminish the value of a National Heritage place in demonstrating creative or technical achievement;
- permanently remove, destroy, damage or substantially alter Indigenous built structures in a National Heritage place; and
- involve activities in a National Heritage place with substantial and/or long-term impacts on the values of the place.

Where a proposed action is likely to significantly impact on a protected matter that has Indigenous heritage values such as a listed heritage place, the National Heritage management principles

require that the views of affected Indigenous peoples should be sought and treated as the primary source of information in relation to the value of that heritage (DOE 2016: 4)

The proposed action occurs within the WTACL, a 2km wide coastal strip within the APCA that extends for 100km between Nettley Bay in the north, and Duck Creek in the south, encompassing 20,723Ha. The WTACL was listed on the NHL in February 2013.

The proposed action involves re-opening and modifying tracks for ORV use within the NHL listed area. The position of the proponent (Government of Tasmania) is that the proposed action relates only to the physical works associated with track re-opening, and not to any consequential impacts on Aboriginal heritage values that may arise from subsequent intended use. It is unclear whether this argued limitation accords with the way values and impacts are defined within the NES Guidelines and National Heritage management principles.

The Commonwealth takes the view that where a proposed action is likely to significantly impact on a protected matter that has Indigenous heritage values, such as a listed heritage place, the views of affected Indigenous peoples should be sought and treated as the primary source of information in relation to the value of that heritage (DOE 2016:)

Aboriginal Heritage Act 1975

The AHA is the principal legislation governing the treatment of Aboriginal cultural heritage in Tasmania. It sets out what legally constitutes unacceptable impacts, and a process to approve impacts (via a permit under S. 14 of the Act) where they will occur. The AHA is administered by AHT, a part of the Natural and Cultural Heritage Division of the Tasmanian Government's DPIPWE.

The relevant provisions of the AHA in relation to Aboriginal heritage protection within the current study area are:

- All relics are protected under the Act and it is illegal to 'destroy, damage, deface, conceal or otherwise interfere with a relic' without a permit;
- It is illegal to remove a relic from the place where it is found or abandoned;
- It is illegal to 'sell or offer for sale a relic', or 'to cause or permit a relic to be taken out of Tasmania without a permit'.
- It is illegal to 'cause an excavation to be made or any other work to be carried out on Crown land for the purpose of searching for a relic' without a permit;
- Persons who own or who have knowledge of a relic shall inform the Director of National Parks and Wildlife³⁹ of this, and provide information about the location of the relic(s);

A relic is defined as:

- a) any artefact, painting, carving, engraving, arrangement of stones, midden, or other object, made or created by any of the original inhabitants of Australia or the descendants of any such inhabitants, which is of significance to the Aboriginal people of Tasmania; or

³⁹ Responsibility currently vested in Aboriginal Heritage Tasmania.

- b) any object, site, or place that bears signs of the activities of any such original inhabitants or their descendants, which is of significance to the Aboriginal people of Tasmania; or
- c) the remains of the body of such an original inhabitant or of a descendant of such an inhabitant that are not interred in:
 - (i) any land that is or has been held, set aside, reserved, or used for the purposes of a burial ground or cemetery pursuant to any Act, deed, or other instrument; or
 - (ii) a marked grave in any other land.

The AHA also gives the Minister responsible for the Act the ability to declare certain sites and objects as 'protected' sites or objects which are required to be managed by the PWS.

Importantly, the Act does not differentiate between relics that are in a primary context of use or discard (i.e. *in-situ*), and relics that are disturbed or dispersed, such as deflated midden lag deposits.

Further to its general heritage protections, the Act also establishes a due diligence defence and associated Guidelines. For the proposed activity, the process for undertaking assessments and seeking approvals is outlined in AHT's *Aboriginal Heritage Standards and Procedures*. In summary, these establish the following obligations:

- To undertake assessments to an appropriate standard to ensure that Aboriginal sites and other relics are not knowingly disturbed or destroyed by the development;
- To report Aboriginal relics identified during assessments and encountered during works to the Director of NPW (in this case, AHT).
- Where impacting relics cannot be avoided, and when excavating in search of relics on Crown land (including land managed by the PWS), to obtain a permit to destroy, damage, deface, conceal or interfere with any Aboriginal relics prior to the action.

Section 7 of the AHA contains provisions for declaring an area containing Aboriginal heritage a Protected Site. The WTACL is not a Protected Site under the AHA, but does encompass two protected areas; West Point Aboriginal Site, and Sundown Point Aboriginal Site. All other sites within the WTACL, and throughout Tasmania, are protected as individual relics/sites. It is a requirement of the AHA that all known relics/sites are reported to the Department. AHT maintains a database of reported sites, the AHR. While all Aboriginal relics in Tasmania are protected under the AHA, in practice, permits are only issued for relics/sites that are listed on the AHR.

Actions that will directly interfere with, or conceal relics, which include fragments in a secondary context such as midden deflation scatters or artefacts lying on a track that have washed out of adjacent deposits, require an AHA Permit. Consequently, all works that occur within the AHR registered extents of sites require permitting. It is unclear, however, whether re-opening a track known to contain relics that may be impacted by subsequent use, but where no works are proposed, will also trigger an AHA Permit requirement. Under the *Guidelines issued by the Minister* (AHT 2018b) there is a stated obligation to not harm relics, and no defence of 'ongoing use'. Once the presence of a relic is known, it must be managed in accordance with the AHA. Consequently, the advice of AHT should be sought in relation to the approval requirements for any actions or works that have the potential to harm relics, potentially including harm that occurs subsequently as a result of intended use.

State Coastal Policy 1996 (SCP) (Revised 2009)

The SCP is a policy under the *State Policies and Projects Act 1993* that applies to all land to a distance of one kilometre inland from the high-water mark. The policy is concerned with the protection of natural and cultural values of the coast, use and development of the coast in a sustainable way, and the shared responsibility of integrated management and protection of the coastal zone. The policy is a statutory document which is intermediate between the provisions of an Act and the lesser policies and provisions of planning schemes and other mechanisms identified in the relevant legislation comprising the System, including statutory Management Plans prepared in accordance with the *National Parks and Reserves Management Act 2002* (NPRMA). It is a requirement that planning schemes and other subordinate management tools are consistent with the objectives of the SCP.

The SCP contains the following principles and provisions relating to managing Aboriginal heritage:

- Natural and cultural values of the coast shall be protected. This principle recognises the importance of the coastal zone to Aboriginal people, in particular traditional use and Aboriginal culture.
- 1.2.1 Areas within which Aboriginal sites and relics are identified will be legally protected and conserved where appropriate.
- 1.2.2 All Aboriginal sites and relics in the coastal zone are protected and will be identified and managed in consultation with Tasmanian Aboriginal people in accordance with relevant State and Commonwealth legislation.
- 2.6.3 Agreements between landowners, landholders and councils or State Government to grant public access to the coast, and Aborigines access to Aboriginal sites and relics in the coastal zone over private and public land will be encouraged and shall be considered when preparing plans or approving development proposals.
- 3.1.4 Provision for effective and greater involvement of Aboriginal people in areas of particular interest to Aboriginal people will be made as part of community participation processes.

Arthur-Pieman Conservation Area Management Plan 2002

The APCA is reserved land proclaimed under the Tasmanian *Nature Conservation Act 2002* and managed in accordance with the Tasmanian NPRMA. Under the NPRMA, the managing authority responsible for the management of the APCA is the PWS, a division of DPIPW.

The APCA MP is a statutory Management Plan prepared under the NPRMA in 2002. The Management Plan sets out how the management objectives apply in the APCA. The Management Plan contains a number of aims and prescriptions for managing Aboriginal heritage within the reserve.

The aims of managing Aboriginal heritage are, in co-operation with the Aboriginal community, to:

- identify and record sites and landscapes of Aboriginal heritage;
- protect and conserve Aboriginal heritage;
- where possible, enlist the assistance of the wider community in collaboration with Aboriginal groups to assist in properly managing and protecting the sites;

- interpret Aboriginal heritage to assist in educating the wider community about the importance of the Aboriginal sites along the coast; and
- facilitate and enrich Aboriginal community use of the area, its resources, and its educational opportunities.

Management prescriptions that are relevant to the proposed activity include:

- Apply the provisions of the SCP with respect to Aboriginal sites in consultation with the Aboriginal community.
- Prepare a program for the relocation of vehicle routes over sites other than those protected by order under the AHA. Alternative routes are to be identified in consultation with the Aboriginal community and relevant consultative groups. Where an alternative route is not feasible, an appropriate permit to deal with the site should be sought from the Minister under the AHA.
- Prepare, in conjunction with the Aboriginal community, affected community groups and users, a program for the fencing of Aboriginal sites not protected by order under the AHA, but that are under continuing or immediate threat of damage or degradation.
- Erect, where it is considered appropriate, and in conjunction with the Aboriginal community, signs indicating the presence of Aboriginal sites and the need for user respect.
- Prepare and approve, in conjunction with the TALC, a program for the recording, evaluation, conservation and monitoring of Aboriginal sites.
- Prepare, in conjunction with the TALC, a program for the assessment of damage to Aboriginal sites. Develop priorities for the rehabilitation and protection of sites subject to ongoing damage.
- Aboriginal sites will not be publicised unless the site has been assessed, in co-operation with the Aboriginal community, for educational or interpretative use. Where applicable, make use of any agreed Aboriginal interpretation strategy.
- The Aboriginal community will be consulted on any undertaking or development that may impinge upon Aboriginal sites.
- As far as possible, development will be located well away from areas of Aboriginal heritage.
- Aboriginal heritage will not be deliberately disturbed for management, development or research purposes unless the Director determines there is no practicable alternative and a permit has been issued under the AHA.
- Report all Aboriginal sites discovered in the reserve to the Director, in accordance with the AHA.
- Monitor Aboriginal sites to ensure that protection is being achieved.
- Facilitate, with the Aboriginal community, a more comprehensive understanding of the APCA as an Aboriginal landscape.

The APCA MP states that the prescriptions for the conservation, protection and management of Aboriginal heritage should be enacted in accordance with the principles outlined in the ICOMOS Burra Charter (APCA MP: Appendix 1).

Proposals for developments or activities on public land in Tasmania are normally subject to an Environmental Impact Assessment (EIA) process to determine if the proposed development or activity meets relevant environmental, social and economic criteria. For Reserved land managed by the PWS, such as the APCA, the EIA takes the form of a Reserve Activity Assessment (RAA). RAAs are scaled to the level of the proposed development/activity; however, in all cases, the process will reflect the objectives and management criteria for natural and cultural values identified within the relevant Management Plan. In the case of the proposal to re-open Tracks 501, 503 and 601 and undertake associated mitigation works, the criteria for managing the Aboriginal heritage values listed above will apply as a minimum requirement.

The APCA MP was prepared in 2002 and is now considerably out of date. It refers to several defunct frameworks and organisations, such as the RNE, which was closed in 2007 and became a non-statutory archive in 2012; and to the Tasmanian Aboriginal Land (and Sea) Council, that was dissolved in 2018. Importantly, the plan has not been revised to reflect the listing of the WTACL and associated management and approval requirements, including Aboriginal community consultation.

Summary of key findings

Survey results

The current survey re-located or identified sixty-one (61) Aboriginal heritage sites or precincts in the vicinity of proposed tracks 501, 503 and 601. In general, sites located along Track 601, which traverses mainly rocky headlands, present with smaller visible extents than sites along Track 501, which intersects a higher proportion of dunefield. In all cases, however, site presentations are primarily a function of erosion, which is noticeably more pronounced along the northern track. All of the sites formed in a dynamic sand-budget environment where winnowing, dispersal and redistribution of material is part of a seasonal cycle of sand sequestration and release. Evidence suggests that for most of the period of site formation, thought to correspond to the last 2 000-3 000 years, the net sand budget was cumulative, trapping small campsites soon after they were formed, and protecting them beneath a living windbreak.

Post-contact land use, including cattle agistment, indiscriminate burning and ORV use has reversed the sediment equation, leading to erosion of previously stable landforms and exposing cultural material to dispersal by wind and water. Intact midden deposits occur at different elevations within the erosional deflated landscape, representing separate encampments in time space. As the sand progressively deflates, the midden layers within them conflated to form larger areas of cultural debris which are widespread on the lowest erosional land surfaces. Erosion affects cultural material differently; siliceous stone is not biodegradable, and will only become smoothed over time by windblown sand. Thick-walled shells and opercula last longer in the open than thin-walled shells like mussel, the presence of which generally indicates recent exposure. Exposed bone is susceptible to relatively rapid decomposition, which likely explains its observed relative scarcity in lag deposits. Sites displaying well preserved shell and bone are universally very recently exposed and will be destroyed in a short time unless preventive action is taken.

Potential impacts

Aboriginal heritage sites are continually being exposed as a result of natural and anthropogenic factors. The patterning of visible cultural material will change as the disturbance and erosion progresses, exposing and destroying sites, and with it evidence of Aboriginal life on the coast over the last 2 000-3 000 years. There is clear evidence that ORV use has directly impacted sites within the study area, and also contributed to general entropy by suppressing vegetation, disrupting palaeosols, and otherwise nucleating de-stabilising erosion.

Tracks 501, 503 and 601 directly intersect thirty-five (35) confirmed sites/precincts over a cumulative linear distance of c2.3km on a range of substrates and terrain. A further twenty-six (26) confirmed sites are potentially at risk of activity away from the proposed tracks, while eight (8) previously recorded sites that could not be re-located have legacy coordinates that plot within 30m of the proposed track alignment and may be potentially impacted. Due to their currently buried status, an unknown number of heritage sites that do not present at surface may be potentially impacted over time.

Further investigations

The proposed mitigation works, which include track surface protection, track markers, fencing, drainage works, signage and local re-routing, aim to address selected track condition problems and known environmental risks. However, significant gaps remain in understanding the full range of heritage values and proving that the track engineering concept, the current scale of proposed deployment, and the likely level of user compliance will not result in cumulative impacts to Aboriginal heritage values that are of sufficient significance to require re-closure of the tracks.

Expanding deployment to cover the additional physical heritage intersections identified by survey may appear a simple exercise, however the complex geomorphology and potential for currently concealed sites to be exposed or impacted in the future means that a high level of residual risk will remain. Even if the spatial coverage of mitigation works proved adequate, the lack of data attesting to the effectiveness of the proposed track surfacing, fencing, and signage etc on preserving Aboriginal heritage is unlikely to meet statutory duty of care obligations. Trials of the proposed hardening/matting medium have not yet been undertaken elsewhere within the APCA in relation to managing heritage impacts, and no data is available regarding the degree to which users might comply with the proposed mitigations. To the contrary, evidence was observed during fieldwork of unauthorised vehicle access along the currently closed tracks.

Further evidence demonstrating the efficacy of the proposed mitigations is required before they can be considered to support the proposed action. In addition to proving the track hardening concept, demonstrating user compliance, and expanding the deployment to cover known heritage risks, a range of additional mitigation actions would likely be necessary to reduce potential heritage risks below statutory thresholds and comply with the principles of Ecologically Sustainable Development. These additional actions may include subsurface archaeological investigation, archaeological salvage, limiting vehicle types and numbers, real-time vehicle tracking and policing, regular impact monitoring, ongoing asset maintenance, and environmental rehabilitation.

Determining which of the currently proposed and potential additional mitigation measures should be used, in which location, will require expertise in a range of heritage and technical fields, and input from the Aboriginal community. Consequently, no site-specific commentary on proposed or potential mitigations is able to be presented in this report.

While it is not a core task of the current study to explore, it is important to understand the financial implications and long-term budget strategy for the proposed capital works program and ongoing maintenance. The costs associated with implementing and maintaining the necessary engineering and administrative controls for re-opening Track 501, Track 601, and to a lesser degree Track 503, have not been estimated, but are likely to be considerable, and given the competing imperatives of capping vehicle numbers to limit impacts, and reliance on vehicle permit fees for cost recovery, effective and ongoing impact mitigation may not be economically viable.

Knowledge gaps

Significant knowledge gaps exist with regard to understanding:

- the risk of buried cultural deposits in areas where there is no current surface presentation;
- the performance characteristics of the proposed track surfacing material;
- site-specific geotechnical settings and installation requirements;
- maintenance requirements, including ongoing heritage site condition monitoring;
- the likely degree of vehicle use and user compliance;

- how to limit, track, and police vehicle numbers/sizes/weights;
- the effectiveness of the proposed mitigations in reducing user impacts to heritage in analogous settings; and
- how the proposed actions are supported by the Tasmanian Aboriginal community.

Management planning

Filling the knowledge gaps, and potentially undertaking other actions, will be required to adequately acquit the broader aims of the reserve classification, vision and process that are articulated in the 2002 APCA MP to ensure that “*the natural and cultural values of the area are well conserved, managed and presented*”.

The APCA MP contains the following prescriptions for managing usage impacts on Aboriginal heritage values

- Prepare a program for the relocation of vehicle routes over sites other than those protected by order under the AHA. Alternative routes are to be identified in consultation with the Aboriginal community and relevant consultative groups. Where an alternative route is not feasible an appropriate permit to deal with the site should be sought from the Minister under the AHA.
- Prepare, in conjunction with the Aboriginal community, affected community groups and users, a program for the fencing of Aboriginal sites not protected by order under the AHA but that are under continuing or immediate threat of damage or degradation.
- Erect, where it is considered appropriate, and in conjunction with the Aboriginal community, signs indicating the presence of Aboriginal sites and the need for user respect.
- Prepare and approve, in conjunction with the TALC, a program for the recording, evaluation, conservation and monitoring of Aboriginal sites.
- Prepare, in conjunction with the TALC, a program for the assessment of damage to Aboriginal sites. Develop priorities for the rehabilitation and protection of sites subject to ongoing damage.
- The Aboriginal community will be consulted on any undertaking or development that may impinge upon Aboriginal sites.
- Monitor Aboriginal sites to ensure that protection is being achieved.

Appendix 1 of the APCA MP invokes several ICOMOS Burra Charter articles, including the following which are relevant to the proposed action:

- Conservation, interpretation and management of a place should provide for the participation of people for whom the place has special associations and meanings, or who have social, spiritual or other cultural responsibilities for the place (Article 12).
- Work on a place should be preceded by studies to understand the place, including analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines (Article 26.1).

At a fundamental level, it is evident that the APCA MP requires urgent review to take into account the WTACL NHL listing and the additional statutory obligations and imperatives for Aboriginal

community consultation, and to provide the most equitable forum for broader community input into the future management and uses of the place.

Aboriginal community engagement

References to the now defunct Tasmanian Aboriginal Land (and Sea) Council aside, the APCA MP stresses the importance of involving the Aboriginal community in activities that have the potential to impact cultural heritage within the reserve. This requirement is made even more potent by the 2013 listing of the WTACL on the NHL. It is essential that any actions undertaken regarding Tracks 501, 503 and 601 are consistent with the requirements of the APCA MP, including the requirement for Aboriginal community consultation, and that works are based upon appropriate evidence, knowledge and disciplines.

A number of heritage assessments, including Collett *et al* (1998), Pedder *et al* (2007) and Huys (2010), have recommended track closure as the preferred means of protecting the remaining Aboriginal heritage values of the area between Johnsons Head and the Pieman River. These assessments have either included Aboriginal community consultation, or have been conducted by Aboriginal people and therefore, arguably, have status under ICOMOS and Commonwealth guidelines as appropriate knowledge. It is also clear that knowledge of other Aboriginal heritage values in the area that are not documented within official State records, such as burials, resides within the Aboriginal community and has not been available for the current study.

Engaging with the Tasmanian Aboriginal community is essential for understanding the Aboriginal heritage values of the WTACL and broader APCA, for developing effective, equitable and sustainable values management, and demonstrating compliance with reserve and statutory guidelines and policies.

Public Environment Report Advice

In addition to documenting the Aboriginal heritage values within the study area, and assessing, so far as it is possible, the potential impacts of opening the tracks on those values and the effectiveness of the proposed mitigation works, the study is required to provide the Department with advice regarding the potential viability of the proposed action or alternative options for approval through the PER process.

This advice is provided in the form of a commentary addressing each of the relevant headings contained in the document:

Guidelines for the content of a draft PER: APCA – ORV mitigation actions (reference EPBC 2017/8038)

For ease of reading, the commentary responding to each of the PER questions is provided in bold italics. For ease of cross-referencing with the *Guidelines*, all questions are reproduced. Where providing an effective response to the PER questions is outside the scope of the current Aboriginal heritage assessment, a statement is given to that effect.

2.1 Feasible alternatives

Any feasible alternatives to the action to the extent reasonably practicable, including but not limited to:

- a. If relevant, the alternative of taking no action.

It is considered that taking no action, i.e. leaving the tracks closed to vehicle access, is a viable option for conserving Aboriginal heritage sites and values including listed National Heritage values. Closure of tracks 501 and 601 has been recommended in several previous assessments and is recommended in the APCA Sustainable Recreational Vehicle Access Report 2012. Taking no action (i.e. keeping the tracks closed) is likely to be the simplest and most cost-effective means of affording physical protection to Aboriginal heritage sites, conserving NHL values and aligning with current APCA management policies.

- b. Consideration of further alternatives than those initially provided, for example but not restricted to:
 - o Limiting the action to some/not all of the tracks.
 - o Restrictions on the types of ORV allowed on the tracks.
 - o Reduced/limited allocation of ORV permits.
 - o Increased compliance actions as an alternative to physical works.
 - o Re-routing tracks away from middens, hut depressions and seal hunting hides.

The results of the current assessment indicate that the proposed Track 501 alignment (excluding potential re-routes) intersects 633m of visible heritage sites (3.6% of track length) compared to 1566m of heritage site intersections (13.1%) for the proposed Track 601 alignment. The high proportion of intertidal verses headland track route is the primary reason for the reduced heritage intersection figure for Track 501. Intertidal tracks clearly

provide greater opportunities for bypassing sensitive cultural deposits than onshore or headland tracks. Avoiding heritage impacts in onshore soft-sediment environments is rendered problematic due to the potential for concealed deposits.

Assessment of the relative impacts of different sized vehicles was outside the scope of the current study, however it seems logical to conclude that larger and heavier vehicles may pose greater risk to fragile cultural sites intersected by tracks than smaller, lighter vehicles. The referral limits the size of vehicles accessing Track 601 to UTVs, ATVs and trail bikes, which may reduce potential impacts, assuming the other proposed mitigations (i.e. surface hardening, fencing and signage) are effective. There is currently no regulation of vehicle numbers or sizes under the Arthur-Pieman Recreational Driver Pass system to allow for assessment of the application of this restriction.

No data is presently available regarding heritage impacts associated with permitted ORV use and compliance in other areas of the APCA. Consequently, no advice can be given in relation to options involving changes to ORV permit conditions or allocations.

No data is presently available regarding the effectiveness of alternatives to physical works, including education, vehicle tracking, policing etc for reducing heritage impacts in other parts of the APCA. Consequently, no advice can be given in relation to the potential effectiveness of non-works mitigation options. Vehicle tracks and trail-bikes were observed on closed tracks during the field survey, which indicates that education and signage alone are not effective mitigation measures.

No hut depressions or 'seal hides' were documented by the present study within proximity to Tracks 501, 503 and 601. Shell middens, many containing stone artefacts, are very common, and often extensive. Many are intersected by the existing tracks, with several being intersected by proposed re-routes. While it may be possible to avoid some of the smaller identified sites by additional re-routes, larger sites will be difficult, if not impossible, to avoid.

Significantly compounding the issue is the fact the mapped extents of sites reflect erosional processes rather than the full extent of the cultural deposits. Cultural material is continually being exposed and concealed by action of water and wind, and there is a very high risk that re-routing tracks will simply expose and impact concealed heritage material.

In accordance with Commonwealth National Heritage Management Principles, and Indigenous engagement guidelines, assessment of any alternatives must involve consultation with affected Aboriginal communities.

- c. A comparative description of the impacts of each alternative on the MNES protected by controlling provisions of Part 3 of the EPBC Act for the action.

No assessment has been undertaken in relation to any potential alternative to the proposed action, as this process would require access to currently unavailable data, specialist skills, and must involve consultation with affected Aboriginal communities

- d. Sufficient detail to make clear why any alternative is preferred to another.

As per previous response.

2.2 Description of the environment

- a. A description of the National Heritage values of the WTACL National Heritage Place, including but not limited to:
 - o Statement of the listed National Heritage Values for the WTACL as gazetted and available on the Federal Register of Legislation.

The description of the National Heritage values of the WTACL is reproduced and discussed in relation to the survey findings in the Cultural significance assessment/Previous assessments section of the main heritage assessment report.

- o Comprehensive updated details of the location, condition and significance of middens, hut depressions and seal hunting hides, and their relationship to each other within the proposed action area, with reference to their listed National Heritage Values, and their location with reference to proposed works, including direct and indirect impacts.

Comprehensive updated details of all re-located sites and newly identified Aboriginal midden sites are contained in the revised Aboriginal Heritage Site Recording Forms submitted to AHT in accordance with the requirements of the AHA and associated Standards and Procedures dated June 2018. No hut depressions or seal hunting hides were identified during the current assessment.

Summary details on site type, location and size are reproduced in the Aboriginal heritage field survey/Survey results section of the main heritage assessment report. Due to the variability in previous records, it has not been possible to establish a suitable baseline for assessing the changing condition of heritage sites over time.

The cultural significance of the collective suite of identified heritage sites has been assessed against the criteria contained in the AHA and NHL values statement for the WTACL. The relative cultural significance of individual sites has not been assessed as this requires engagement with the Tasmanian Aboriginal community in accordance with Tasmanian and Commonwealth heritage legislation and associated guidelines.

The location of sites in relation to the proposed works, and preliminary assessment of potential impacts, is given in the Impact assessment section of the main heritage assessment report. While a range of potential impacts on middens sites has been identified, no potential impacts on hut depressions or seal hunting hides were identified during the current assessment, or are considered likely.

- o Details of the scope and methodology of survey to provide this updated information.

The scope and methodology are summarised in the Aboriginal heritage field survey/Survey method section of the main heritage assessment report.

2.3 Relevant impacts

- a. A detailed assessment of any likely impact that this proposed action may have directly, indirectly, or facilitate on the following:
 - ii. The National Heritage values of the WTACL National Heritage place. A Heritage Impact Statement must be prepared with specific reference to impacts on the listed values, particularly taking into account, but not limited to:
 - o Consequences of facilitated impacts of the action, such as ORV driving on the tracks, the risk of increased off-track use, and the facilitation of camping and increased movement of ORV between tracks.

The proposed action, as defined by the Department, relates to implementing the proposed track mitigation works rather than consequential impacts arising from either authorised or unauthorised use. The APCA PER Guidelines make clear that all impacts, both direct and facilitated, on Aboriginal heritage values require assessment. There is clear evidence that past vehicular access via Tracks 501 and 601 has resulted in significant damage to Aboriginal heritage. What is unclear, however, is the degree to which these impacts may be effectively mitigated by the proposed action, as no data regarding its efficacy in analogous settings is available.

- o Consequences of ORV driving over matting on middens, hut depressions and seal hunting hides, and how the combination of ORV use, and matting, may impact these sites.

No hut depressions or 'seal hides' were documented during the current study, consequently the potential impacts of the proposed action, including facilitated impacts, along the assessed sections of Tracks 501, 503 and 601 are likely to be low.

The consultants have not been able to assess the efficacy of the proposed matting for protecting Aboriginal shell middens, or use in cultural heritage settings generally, so cannot comment on its potential effectiveness as currently proposed.

The results of the current assessment indicate that the proposed Track 501 alignment (excluding potential re-routes) intersects 633m of visible heritage sites (3.6% of track length), compared to 1566m of heritage site intersections (13.1%) for the proposed Track 601 alignment. Overlaying the proposed works, as defined in the GIS tracks shapefile supplied by the Department, onto the re-mapped extent of heritage sites appears to reveal significant gaps in works coverage, necessitating a revision of the proposed scheme. Given the multitude of terms used to describe the proposed track works, however, including "matting", "track hardening", "hardening", and "harden" under the aegis of "Track Surface Protection", it is unclear which areas of track are specifically proposed for matting, and which areas are proposed for surface treatments of other design. Consequently, it is not possible to quantify the extent of the matting coverage gap. It is also unclear how far the proposed matting or other measures should be extended beyond individual sites to create secure approach and departure conditions. Much of the track works detail and other measures will need to be tailored to each specific site setting. It may be that more than the 2.2km of estimated intersections may need to be armoured to achieve an acceptable level of physical protection of heritage sites. Such a high level of intervention may result in other impacts to the cultural values of the WTACL.

- Consequences of accessing the WTACL for installation and maintenance of proposed works, for example comparison of impacts of accessing sites by ORV vs helicoptering in staff and equipment.

This element was not assessed in detail during the study, however it is considered that the use of vehicles for construction works should be minimised as a general principal. Use of helicopters may be effective in areas with low potential for disturbing sites through rotor downwash, such as heavily vegetated areas along Track 601 and portions of Track 501, but may be unsuitable for works in dune-fields where extensive and highly fragile heritage sites occur. Helicopter activity in susceptible areas may need to be scheduled for immediately following rain, for instance, to minimise downwash effects. A full HAZOP assessment should be conducted as part of the works planning process.

- Consistency of the potential impacts with any management plans for the area.

Management prescriptions for Aboriginal heritage contained within the APCA MP that are considered particularly relevant to re-opening Tracks 501, 503 and 601 are reproduced below.

- ***Apply the provisions of the SCP with respect to Aboriginal sites in consultation with the Aboriginal community.***
- ***Prepare a program for the relocation of vehicle routes over sites other than those protected by order under the AHA. Alternative routes are to be identified in consultation with the Aboriginal community and relevant consultative groups. Where an alternative route is not feasible, an appropriate permit to deal with the site should be sought from the Minister under the AHA.***
- ***Prepare, in conjunction with the Aboriginal community, affected community groups and users, a program for the fencing of Aboriginal sites not protected by order under the AHA, but that are under continuing or immediate threat of damage or degradation.***
- ***Erect, where it is considered appropriate, and in conjunction with the Aboriginal community, signs indicating the presence of Aboriginal sites and the need for user respect.***
- ***Prepare and approve, in conjunction with the TALC, a program for the recording, evaluation, conservation and monitoring of Aboriginal sites.***
- ***Prepare, in conjunction with the TALC, a program for the assessment of damage to Aboriginal sites. Develop priorities for the rehabilitation and protection of sites subject to ongoing damage.***
- ***The Aboriginal community will be consulted on any undertaking or development that may impinge upon Aboriginal sites.***
- ***As far as possible, development will be located well away from areas of Aboriginal heritage.***

- **Aboriginal heritage will not be deliberately disturbed for management, development or research purposes unless the Director determines there is no practicable alternative and a permit has been issued under the AHA.**
- **Monitor Aboriginal sites to ensure that protection is being achieved.**
- **Facilitate, with the Aboriginal community, a more comprehensive understanding of the APCA as an Aboriginal landscape.**

While individual technical elements of the proposed action, such as fencing and signage, align with the physical conservation objectives of the Management Plan, their effectiveness as a holistic solution is materially diminished by the lack of Aboriginal community consultation required under the Management Plan and SCP. It is understood that the Aboriginal community consultation will be undertaken should the PER be progressed.

- b Maps identifying the location of the action relative to the location of the protected matters and any impacts.

The proposed action will require revision in the light of the current survey findings and Aboriginal community consultation. It is the responsibility of the Department to map all values and potential impacts to the required PER standard.

- c. A detailed assessment of the nature and extent of the likely short-term and long-term impacts.

As previously stated, there is insufficient data available regarding the mechanical efficacy of the proposed mitigation techniques, likely levels of compliance, site-specific geotechnical conditions, or installation details to assess likely short- or long-term impacts with any degree of accuracy. Failure on any of these points will likely result in considerable damage and impacts to NHL values in the longer term.

- d. The discussion of impacts must take into account direct, indirect, cumulative and facilitated impacts of the proposed action.

Direct (construction) impacts include disturbance of relics during drainage works and surface preparation for track hardening, compaction of cultural deposits during construction, damage to adjoining cultural deposits during vegetation removal or batter re-profiling, and erosion due to modification of drainage. Facilitated (use) impacts include disruption, abrading and compaction of cultural deposits on track floors, widening of incised track sidewalls through tyre abrasion and brushing against vegetation, water and wind erosion of exposed surfaces, and general undesirable effects of opening up areas containing fragile heritage to increased pedestrian traffic and camping, including trampling, lighting fires, fossicking and littering.

As previously stated, there is no systematic baseline data describing either the mechanical efficacy of the proposed mitigation works, or the levels of compliance and cumulative impacts for other areas of the APCA where similar values, environmental conditions and

uses occur. This lack of knowledge constitutes a significant risk that heritage breaches may result from a broader deployment in relation to Tracks 501, 503 and 601.

- e. A statement of whether any relevant impacts are likely to be unknown, unpredictable or irreversible.

Tracks 501 and 601, and the western portion of Track 503, traverse a highly dynamic geomorphic environment where Aboriginal heritage material is being constantly exposed and/or concealed through natural processes, and as a result of human activity. The consultants for the current study are also aware that there is knowledge within the Aboriginal community of significant cultural sites, including human remains, that are not included in AHR records, but which are potentially accessible to vehicles, and highly susceptible to damage or interference. All damage to Aboriginal heritage is irreversible, as sites are finite and non-renewable. The high degree of unpredictability of some impacts, and irreversibility of all impacts, constitutes significant risks that heritage breaches may result from cumulative and facilitated use.

- f. Analysis of the significance of the relevant impacts.

The cultural significance of Aboriginal heritage sites within the study corridor is discussed in the Cultural significance assessment/Current assessment section of the heritage assessment report. The scientific significance of Aboriginal sites in the study area is poorly understood and managed owing to the very limited geomorphological understandings of the region and its landforms, the lack of dated heritage sites, the lack of an agreed research framework, and consequent low priority for scientific study. The broader cultural heritage significance of the Aboriginal cultural landscape and its constituent parts, and the significance of any impacts, can only be determined by the Tasmanian Aboriginal community through a process of meaningful and empowered engagement.

As a general rule, impacts that physically degrade or destroy Aboriginal heritage sites similarly degrade or destroy their scientific significance by proportional measure. Sites that are fully deflated, and retain no structural integrity, are effectively lost to science for all time. From assessments in other settings it is understood that physical impacts to individual sites also cause great harm and distress within the Aboriginal community as they further demonstrate disrespect and hostility to surviving culture, while large-scale interventions and incompatible uses, such as constructing tracks through living places, may impact the aesthetic, social and spiritual values of the cultural landscape.

- g. Any technical data and other information used or needed to make a detailed assessment of the relevant impacts.

Assessment of potential impacts has been hampered by the lack of reference data that is relevant to the APCA. What is required is data based on trials of the proposed method in other areas of the APCA with similar conditions, i.e. presence of Aboriginal heritage, fragile substrates, usage modes etc to model the effectiveness of the proposed actions and allied compliance to determine likely gaps or failings that may arise from a broader deployment on Tracks 501, 503 and 601. Without this baseline knowledge, the consultants for this study

consider full-scale deployment to be an unsupported and unacceptable risk on technical grounds alone.

Another significant knowledge gap relates to the potential for currently buried sites to be exposed during future use. The current survey only assessed visible presentations of cultural material, the patterning of which was clearly more a function of soil erosion than primary cultural behaviour. It is unknown how currently concealed 'sites' are distributed in the landscape, and how these may be impacted in the future. Further archaeological investigations, including subsurface testing, would be required to determine the potential for concealed cultural deposits in any given area.

Any proposals for establishing or reinstating land-uses that may increase heritage risks, intrusive investigations to determine site potential, or works for mitigating impacts, must be developed in consultation with the Aboriginal community as a requirement of Tasmanian and Commonwealth law. It is understood that the Aboriginal community consultation will be undertaken should the PER be progressed.

- h. A statement identifying and addressing cumulative impacts, where potential project impacts are in addition to existing or future impacts of other activities (including known potential future expansions or developments by the proponent and other proponents in the region and vicinity).

It is presumed that this question relates to impacts that may arise from future development or expansion, rather than from the proposed activity alone. Any significant expansion or development beyond the proposed action would need to be in accordance with the APCA MP, PWS RAA process, and may be subject to the AHA and EPBCA referral processes, all of which require demonstrable evidence that heritage values will not be impacted, and consultation with the Tasmanian Aboriginal community.

2.4 Proposed avoidance and mitigation measures

- a. A consolidated list of mitigation measures proposed to be undertaken to prevent or minimise the relevant impacts of the action, including:
 - o A description of the environmental outcomes the measures are expected to achieve, including details of any baseline data or proposed monitoring to demonstrate progress towards achieving these outcomes.

A preliminary list of proposed actions is provided in Table 6 of the main heritage assessment report. The final list of mitigation measures will be provided by the Department following review of this assessment and Aboriginal community consultation. Further technical work will be required to support the use of matting and to address concerns regarding other proposed measures that are raised in the assessment report or through Aboriginal community consultation.

- A description of proposed safeguards and mitigation measures to deal with relevant impacts of the action, including mitigation measures proposed to be taken by the State Government, local governments, or the Proponent, including, but not limited to:
 - The process for the implementation and expected effectiveness of the proposed program of education and information for ORV users, including how information on the heritage and compliance consequences of ORV use in the WTACL will be incorporated into this program.
 - Consideration of culturally appropriate recording of Aboriginal cultural heritage sites and their relationship to each other (middens, hut depressions and seal hunting hides).
 - Consideration of heritage interpretation measures to communicate heritage values of the area.

The Department is responsible for demonstrating the likely effectiveness of, and implementing, education and information programs for ORV users within the WTACL. This will involve revision of existing peripherals such as the Sustainable Recreational Vehicle Access policy, APCA Recreational Driving Guide, and ORV permitting and monitoring processes.

The Department is responsible for developing a culturally appropriate approach for documenting and managing Aboriginal heritage values in consultation with the Aboriginal community as per the requirements of the APCA MP. The current heritage assessment report has been prepared in accordance with AHT's technical standards for recording Aboriginal sites, as outlined in their Standards and Procedures (dated June 2018), but is not informed by Aboriginal community consultation.

There is not yet widespread support within the Aboriginal community for communicating the location of Aboriginal heritage places to the wider community due to concerns about the ways that Aboriginal heritage has been disrespected and damaged in the past. Any proposal for Aboriginal heritage interpretation within the WTACL for the purposes of mitigating user impacts, including on-ground signage and peripheral media, must be developed in consultation with the Tasmanian Aboriginal community.

- Specific details of which impacts (direct, indirect, cumulative and facilitated) the mitigation measures aim to prevent or minimise.

Detailed recording of historic user impacts is outside the scope of the current project and difficult to determine retrospectively given the variable detail and quality of previous heritage records and lack of a standardised monitoring framework. In general, the impacts associated with compliant reserve usage include disruption, abrading and compaction of cultural deposits on track floors, widening of incised track sidewalls through tyre abrasion and agitating vegetation, creating channels for water and wind erosion of exposed surfaces, and general undesirable effects of opening up areas containing fragile heritage to increased pedestrian traffic, camping and fossicking. Evidence on unauthorised activity was observed during the field survey, including vehicle tracks across midden deposits, campfires close to vegetation, broken signage, and littering. It is the responsibility of the Department to detail how direct, indirect, cumulative and facilitated impacts to Aboriginal heritage values will be managed.

- Assessment of the expected or predicted effectiveness of the mitigation measures, including, but not limited to:
 - Evidence as to why plastic matting is proposed as an effective mitigation measure for driving impacts.
 - Evidence as to how the proposed mitigation measures will address the identified risk of ORV going off-track, and the associated impacts of off-track driving.

It is the view of the consultants for the heritage assessment that further evidence is required to support the use of the proposed plastic matting as an effective means of mitigating impacts on Aboriginal heritage values within the WTACL, and to demonstrate that the other proposed measures, including signage and education etc, will address the risk of vehicles going off-track, and other forms of non-compliance. It is the responsibility of the Department to provide the required evidence to the satisfaction of the Tasmanian Aboriginal community and Commonwealth regulator. It is suggested that trialing and monitoring of the proposed measures in other areas of the APCA with similar heritage values, conditions and usage may be needed to obtain the required data. Such trials should be developed and executed in consultation with the Aboriginal community as per the requirements of the APCA MP.

- Any statutory or policy basis for the mitigation measures.

The current heritage assessment concludes that the present proposal would not yet conform with many of the current APCA management prescriptions for Aboriginal heritage. It is the responsibility of the Department to demonstrate statutory and policy compliance, including Aboriginal community consultation, for the final proposed actions.

- The cost of the mitigation measures.

It is the responsibility of the Department to establish the cost of, and fund, all works including Aboriginal community consultation, material trials and monitoring, user education, and any other investigations or mitigation measures that might be required to conserve Aboriginal heritage values. All costs associated with establishment and managing use must be fully budgeted in addition to normal operating budgets, in order to not degrade resources or values elsewhere in the reserve.

- b. A detailed outline of an Environmental Management Plan (EMP) that sets out the framework for management, mitigation and monitoring of relevant impacts of the action, including any provisions for independent environmental auditing.
 - The EMP needs to address the project phases (construction, operation, decommission) separately. It must state the environmental objectives, performance criteria, monitoring, reporting, corrective action, responsibility and timing for each environmental protection measure.

This is outside the scope of the current assessment. The development of an EMP for the final proposed actions is the responsibility of the Department. Developing provisions for managing impacts to Aboriginal heritage as part of this process must involve meaningful and empowered Aboriginal community consultation.

- o The EMP should also describe contingencies for events such as, but not limited to, delays, adverse weather events, or heavy or prolonged rainfall.

This is outside the scope of the current assessment. The development of an EMP for the final proposed actions is the responsibility of the Department.

- c. The name of the authority responsible for endorsing or approving each mitigation measure or monitoring program.

This is outside the scope of the current assessment. The development of an EMP for the final proposed actions is the responsibility of the Department.

- d. Maps identifying the location of physical mitigation measures (for example physical barriers, fencing or signage) relative to the location of protected matters and works areas of the proposed action.

The proposed action will require revision in the light of the current survey findings and Aboriginal community consultation. It is the responsibility of the Department to map all values and potential impacts, and design and locate mitigation measures to the required PER standard.

2.5 Residual impacts/proposed offsets

- a. The likely residual impacts on MNES after proposed avoidance and/or mitigation measures are taken into account. If applicable, this must also include reasons why avoidance, or mitigation of impacts, cannot be reasonably achieved.

Owing to the large knowledge gaps regarding the mechanical efficacy of the proposed mitigations, level of likely subsequent compliance, and detailed understanding of how Aboriginal heritage may be impacted, it will be necessary to undertake rigorous ongoing monitoring and real-time policing, which may determine that the heritage risks remain unacceptably high, and tracks must be closed again.

- b. If relevant, an offset package to compensate for residual impacts to MNES. This should consist of an offset proposal (strategy) and key commitments and management actions for delivering and implementing a proposed offset (e.g. an Offset Management Plan).

Environmental offsets are measures designed to compensate for the residual significant environmental impacts arising from an action. Offsets are considered during the assessment stage under the EPBC Act, and may be required as a condition of approval for a development (DOE 2016: 6)

For offsets that relate to impacts on listed Indigenous heritage values, Indigenous stakeholders, including traditional owners, must be consulted and be the primary source of

information on what offsetting activities are considered possible or appropriate (DOE 2016: 6)

The Aboriginal heritage values of the APCA values are non-transferable. Offset management is not a methodology that is used or acceptable to the Tasmanian Aboriginal community for compensation of residual impacts at this time. It is not possible to address the question of offset management without comprehensive Aboriginal community consultation.

2.6 Conclusion

An overall conclusion as to the environmental acceptability of the proposal should be provided, including discussion on compliance with the principles of Ecologically Sustainable Development (see Attachment 1), and the objects and requirements of the EPBC Act.

Reasons justifying undertaking the proposal in the manner proposed should also be outlined.

Management of cultural heritage is not simply an environmental matter, and the acceptability of any proposal that may impact Aboriginal heritage values can only be determined by the Aboriginal community. This position is consistent with the United Nations Declaration on the Rights of Indigenous Peoples, the Australia (ICOMOS) Statement on Indigenous Cultural Heritage, and the Commonwealth Government's National Heritage Management Principles.

This concept is also reflected in the following Objects and Principles of the EBPCA:

3 Objects of the Act

3 (d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples;

3A Principles of Ecologically Sustainable Development

(b) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the view of the consultants undertaking the present study, the current proposal is not currently supported by sufficient evidence that it will be materially effective in mitigating damage to Aboriginal heritage values, including listed national heritage values, associated with intended compliant use. It does not adequately address the unacceptably high risk of impacts associated with non-compliant activities which have created significant damage in the past, and in several instances, were observed to still be occurring.

Most significantly, to date the proposed activity has not involved engagement with the Tasmanian Aboriginal community so currently cannot demonstrate compliance with the APCA MP and Tasmanian and Commonwealth heritage legislation, policies and guidelines. Engagement with the Tasmanian Aboriginal community will be a critical and central requirement for the preparation of the PER should the proposal proceed.

References

- Aboriginal Heritage Tasmania 2018a. *Aboriginal Heritage Standards and Procedures*. June 2018. DPIPWE, Tasmania
- Aboriginal Heritage Tasmania 2018b. *Guidelines: issued by the Minister for Environment, Parks and Heritage under section 21A of the Aboriginal Heritage Act 1975*. DPIPWE, Tasmania
- Australia ICOMOS 2001. Australia ICOMOS Statement on Indigenous Cultural Heritage. Australia ICOMOS Inc. Deakin University, Burwood, Victoria
- Australia ICOMOS 2013. The Burra Charter. The Australia ICOMOS Charter for Places of Cultural Significance. Australia ICOMOS Inc. Deakin University, Burwood, Victoria
- Bacon, C. A. 1992. Notes on previous mining and exploration activities in the Interview River area. Tasmania Department of Mines Report 1992/31
- Beck, W. and Balme, J. 1994. Gender in Aboriginal archaeology: Recent research. *Australian Archaeology*, No. 39, 1994. Pp 39-46
- Binks, C. J. 1980. *Explorers of Western Tasmania*, Mary Fisher Bookshop, Launceston
- Bird, M. 1995. Coastal morphodynamics and the archaeological record: Further evidence from Upstart Bay North Queensland. *Australian Archaeology*. No. 40. June 1995. pp57-58
- Blom, W. M. 1988. Late Quaternary sediments and sea levels in Bass Basin, southeastern Australia – A preliminary report. *Search* 19: 94-96
- Bowdler, S. 1984. Hunter Hill, Hunter Island. *Terra Australis* 8, Australian National University, Canberra
- Bowern, C., September 2012, The riddle of Tasmanian languages. *Proceedings of the Royal Society B: Biological Sciences*. 279: 4590–4595
- Bradshaw, E. and Fry, R. 1989. A Management Report for the Lurajarri Heritage Trail, Broome, Western Australia, Unpublished report prepared for the Department of Aboriginal Sites, Western Australian Museum, Perth.
- Brown, B. Mattingley, S. and Ted Mead, T. 1993. *Tarkine trails: guide for bushwalking and rafting in Tasmania's grand northwest wilderness*, Wilderness Society, Hobart
- Calver, C.R, Everard, J. L. , Berry, R. F. Bottrill R. S and D. B. Seymour, 2014. Proterozoic Tasmania. In K.D. Corbet, P.G. Quilty and C. R Calver (eds) *Geological Evolution of Tasmania. Geological Society of Australia Special Publication 24*. Geological Society of Australia (Tasmania), Hobart. pp 33-94
- Colhoun, E. 1989. Quaternary. In C. F. Burrett and E. L. Martin (eds). *Geology and Mineral Resources of Tasmania. Geological Society of Australia Inc. Special Publication*.
- Colhoun, E. A. & Shimeld, P. W. 2012. Late-Quaternary vegetation history from pollen records. In *terra australis 34: Peopled Landscapes: Archaeological and Biogeographic Approaches to Landscapes*. S. G. Haberle & B. David (eds.).
- Colhoun, E. A., Harris, P.T., Heap, A. Bottrill, R. S., Bacon, C. A and D. McP. Duncan. 2014. The Quaternary in Tasmania. In K.D. Corbet, P.G. Quilty and C. R Calver (eds) *Geological Evolution*

of Tasmania. *Geological Society of Australia Special Publication 24*. Geological Society of Australia (Tasmania), Hobart. pp512-574.

Collett, D., Green, C., Hughes, R., Summers, D. (1998) *Project Pah-Leah Nattie: Aboriginal Sites and Impacts on the North-West Coast of Tasmania*. Tasmanian Aboriginal Land Council, North Hobart. Final Report to the Australian Heritage Commission.

Colley, S. 1997. A pre-and post-contact Aboriginal shell midden at Disaster Bay, New South Wales coast. *Australian Archaeology*. No. 45, 1997: pp 1-19

Cosgrove, R, 1983. Tasmanian West Coast Aboriginal Rock Art Survey. PWS Unpublished Report N7.68

Cosgrove, R. 1990. The Archaeological Resources of Tasmanian forests: Past Aboriginal Use of Forested Environments. *Occasional Paper No. 27*. Department of Parks, Wildlife and Heritage, Hobart, Tas.

Cosgrove, R. 1995. Late Pleistocene behavioural variation and time trends: the case from Tasmania. *Archaeology in Oceania* 30:83-104.

Dean, J. 2002. *Shooting the Franklin: early canoeing on Tasmania's wild rivers*, no publication details, pp.27–33.

Department of the Environment, Water, Heritage and the Arts 2010. Australia's National heritage, Commonwealth of Australia, Canberra

Department of the Environment 2016. Australia's Engage Early, Guidance for proponents on best practice Indigenous engagement for environmental assessments under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Commonwealth of Australia, Canberra

Department of Primary Industry and Water (DPIW) 2007. Arthur Pieman Conservation Area Vehicle Tracks Assessment: Geoconservation, Flora and fauna values and Impacts. Report to Tasmanian Parks & Wildlife Service, Tasmania

Division of Recreation, Education Department 1978. *Tasmanian recreation and use study, off-road recreation vehicles data report*, Hobart

Emmett, E. T. 1933. A walk through "no-man's land", *Tasmanian Tramp*, January 1933, p.43

Emmett, E. T. 1936. The far north-west, *Tasmanian Tramp*, December 1936, pp.23–25

Fletcher, M. S and Thomas, I. 2010. A Holocene record of sea levels, vegetation, people and fire from western Tasmania., Australia. *The Holocene* 20: 351-361

Frankel, D. Gaughwin, D. Bird, C. and Hall, R. Coastal Archaeology in South Gippsland. 1989. *Australian Archaeology* No. 28, 1989. pp14-25

French, G. 2002. *Tasmanian trout waters*, Greg French and the Australian Fishing Network, Croydon South, Victoria

Good, J. 1991. The impact and management of four-wheel drive vehicles, Temma/Sandy Cape, Tasmania, Graduate Diploma of Environmental Studies (Hons) thesis, University of Tasmania, Hobart

Guiler, E. 2001. *The enthusiastic amateurs: The Animals and Birds Protection, 1929–1971*, Sandy Bay,

- Guiler, E. and Godard, P. 1998. *Tasmanian tiger: a lesson to be learnt ...*, Abrolhos Publishing, Perth (WA)
- Haygarth, N. 2012. An "island" within an island: the maritime/riverine culture of Tasmania's Pieman River goldfield 1877–85, *Journal of Australasian Mining History*, vol.10: pp.55–71.
- Hope, G. 1999. Vegetation and fire response to late Holocene human occupation in island and mainland north west Tasmania. *Quaternary International* 59: 47-60.
- Huys, S. 2010. An Aboriginal cultural heritage Assessment of Designated Vehicle Tracks Within the Arthur Pieman Conservation Area. Report to Tasmanian Parks & Wildlife Service
- Jetson, T. 2004. *It's a different country down there: a history of droving in western Tasmania*, Circular Head Bicentenary Team, Smithton
- Jones, R. M. 1964. Archaeological fieldwork in Tasmania. *Antiquity* 38: 305-6
- Jones, R. M. 1974. Tasmanian Tribes. Appendix in Tindale, N. B. *Aboriginal Tribes of Australia. Their Terrain, Environmental Controls, Distribution, Limits, and Proper Names*. University of California Press.
- Jones, R. M. 1995. Tasmanian Archaeology: Establishing the Sequences. *Annual Review of Anthropology* 24: 423-446.
- KNC (Kelleher Nightingale Consulting Pty Ltd) 2012. Impact assessment of temporary hardstand placed on top of Aboriginal archaeological site W23. Preliminary geotechnical assessment. Report for Hume Highway Woomargama Alliance and Roads and Maritime Services.
- Kerr, G. and McDermott, H. 2004 (2nd edn) *The Huon pine story: a history of harvest and use of this unique timber*, Mainsail Books, Portland (Vic),
- Kirkpatrick, J. B. and S. Harris. Coastal Heath and Wetland vegetation, in Reid, Hill, Brown and Hovenden (eds). *Vegetation of Tasmania. Flora of Australia Supplementary Series Number 8*. University of Tasmania, Forestry Tasmania and CRC for Sustainable Production Forestry
- Knuckley, G. 1999. A shell midden at Clybucca, near Kempsey, New South Wales. *Australian Archaeology* No. 48, 1999, pp1-11
- Lister, M., Barham, A., Meyer, J., Maloney, T., Shipton, C., Fallon, S., Willan, R., & O, O, Connor. 2020. Late Holocene coastal land use, site formation and site survival: Insights from five middens at Cape Leveque and Lombadinia, Dampier Peninsula, Kimberley, Australia. *Australian Archaeology* Vol. 86, No. 2: 1993. pp 118-136
- Macfarlane, I. 2001. A Regional Archaeological Site Survey of North-West Tasmania. Unpublished report to the Parks and Wildlife Service Hobart and the Australian Heritage Commission Canberra.
- MacFarlane, I. 2008. Beyond Awakening. *The Aboriginal tribes of north west Tasmania: A history*. Fullers Bookshop, Riawunna, and Community, Place and heritage Research Unit, University of Tasmania
- Macphail, M., Shepard, R., Brown, M. and W. Jackson. 1975 Norfolk Range Area Environmental Impact Study. Tasmanian Environment Centre.
- Macphail, M. 1979. Vegetation and climate in southern Tasmania since the last glaciation. *Quaternary Research* 11: 306-341

- McInnes, K. L., O'Grady, J. G., Hemer, M., Abbs, G. J., White, C. J., Corner, S. P., Grose, M. R., Holz, G. K., Gaynor, S. M., & Bindoff, N. L. 2012. *Extreme Tide and Sea-Level Events. Climate Futures for Tasmania Technical Report*. Antarctic Climate & Ecosystems CRC.
- McIntosh, P.D., Price, D.M., Eberhard, R., Slee, A.J., 2009. Late Quaternary erosion events in lowland and mid-altitude Tasmania in relation to climate change and first human arrival. *Quaternary Science Reviews*, 28 (9–10), 850–872
- McKay, G. 1986. Those “couth” years, *Circular Head Local History Journal*, vol.2, no.4, Summer 1986
- Meehan, B. 1982. *Shell bed to shell midden*. Australian Institute of Aboriginal Studies, Canberra.
- Mollison, B. 1996. *Travel in dreams: an autobiography*, Tagari Publications, Tyalgum, NSW
- Murray, T. 1998. The childhood of William Lanne: contact archaeology and Aboriginality in Tasmania. *Archaeology of Aboriginal Australia: A Reader*. Allen & Unwin, St Leonards, NSW.
- O'Connor, S. and Veth, P. 1993. Where the desert meets the sea: A preliminary report of the archaeology of the southern Kimberly coast. *Australian Archaeology* No. 37: 1993. pp 25-34
- Parks and Wildlife Service, ND, *Arthur-Pieman recreational driving guide*
- Parliamentary Paper 33/1957 *Report of Select Committee on the Arthur River Ferry and agistment area*. no.33/1957, p.2
- Pedder, C. (2007) *An Assessment of Vehicle Impacts on Aboriginal Heritage Between Temma and Greenes Creek in the Arthur Pieman Conservation Area*. The Tasmanian Land and Sea Council, Hobart.
- Pedder, C., Hughes, C., Edwards, J. (2007) *An Assessment of Vehicle Tracks Between Greenes Creek and the Pieman River and their Impacts on Aboriginal Heritage*. The Tasmanian Land and Sea Council, Hobart.
- Plomley, N. J. B. 1991. *Jorgen Jorgenson and the Aborigines of Van Diemen's land*. Blubber Head Press Hobart.
- Plomley, N. J. B. 2008. *Friendly Mission. the Tasmanian Journals and Papers of George Augustus Robinson 1829-1834*. (2nd Ed.) Queen Victoria Museum and Art Gallery and Quintus Publishing, University of Tasmania
- Roth, H. Ling, Butler, M., Backhouse Walker, J. & J. G. Garson. 1899. *The Aborigines of Tasmania*. Cambridge University Press 2009.
- Ryan, L. 2012. *Tasmanian Aborigines: A history since 1803*. Allen & Unwin, Crow's nest, NSW
- Scott, P. 1955. Transhumance in Tasmania, *New Zealand Geographer*, vol.11, no.2, 1955, pp.167–68.
- Stockton, J. 1982. *The prehistoric geography of Northwest Tasmania*. Unpublished PhD. Thesis. Dept. of Prehistory, Research School of Pacific Studies, Australian national university, Canberra
- Stockton, J. 1983. The prehistoric population of Northwest Tasmania. *Australian Archaeology*, pp 67-78
- Sullivan, S. and Bowdler, S. (eds) 1984. *Site surveys and significance assessment in Australian archaeology*, Dept. of Prehistory, Research School of Pacific Studies, Australian National University, Canberra

Sutherland, F. L. The classification, distribution, analysis and sources of materials in flakes stone implements of Tasmanian Aborigines. *Records of the Queen Victoria Museum* No. 42. Launceston.

Thornley, E. M. 1897. Some notes on hydraulicing and ground sluicing in New Zealand, and comparisons with the drift gravel of the Corinna district in Tasmania, *Transactions of the Australian Institute of Mining Engineers* (ed. AS Kenyon), vol. iv, Melbourne

Appendices

Appendix A - Glossary

The following glossary of terms used in this report is reproduced, with selective edits, from the AHT *Unanticipated Discovery Plan*⁴⁰, unless otherwise attributed.

Archaeological Locus

A locus is a distinct portion of an archaeological site representing a specific centre of cultural activity, typically separated from other parts of the site by space devoid of cultural materials. Many open-air sites consist of various loci spread over a large area.

Archaeological Precinct

A precinct is another term for a complex site made of many smaller sites or activity loci, but which are grouped together because of common features, such as age, geomorphic setting, or simply for reasons of administrative or management efficiency.

Archaeological site

Often abbreviated to just 'site', an archaeological site is a place which has been occupied by people in the past, and where evidence of past activity is preserved, and which may be investigated using archaeological/scientific methods. The term 'heritage site' is often preferred to indicate that the place has cultural values beyond archaeological. A 'site' may range from a simple place, such as a campsite only occupied on a single occasion, to a complex place that records the activity of many people over a long period of time. It is a general term that covers concepts of locus and precinct.

Burial

Aboriginal burial sites are highly sensitive and may be found in a variety of places, including sand dunes, shell middens and rock shelters. Despite few records of pre-contact practices, cremation appears to have been more common than burial. Family members carried bones or ashes of recently deceased relatives.

Hut Depression

Hut depressions are large circular hollows that have been dug into the top of small hills, dunes or shell middens, that are the remains of Aboriginal huts - large beehive shaped structures composed of wood and bark that could accommodate between 6 -14 people. Hut depressions are found predominantly in coastal and estuarine environments. In Tasmania, these sites are more commonly found on the west coast in association with sand dunes and shell middens.

Quarry

An Aboriginal quarry is a place where stone or ochre has been extracted from a natural source by Aboriginal people. Quarries can be recognised by evidence of human manipulation such as battering of an outcrop, stone fracturing debris, or ochre pits left behind from processing the raw material. Stone and ochre quarries can vary in terms of size, quality and the frequency of use.

⁴⁰ <https://www.aboriginalheritage.tas.gov.au/Documents/UDP.pdf>

Relic

The term 'relic' is used within the AHA (S2 (3)) to describe any Aboriginal heritage object, place or component of a place. It includes:

- (a) any artefact, painting, carving, engraving, arrangement of stones, midden, or other object, made or created by any of the original inhabitants of Australia or the descendants of any such inhabitants, which is of significance to the Aboriginal people of Tasmania; or
- (b) any object, site, or place that bears signs of the activities of any such original inhabitants or their descendants, which is of significance to the Aboriginal people of Tasmania; or
- (c) the remains of the body of such an original inhabitant or of a descendant of such an inhabitant that are not interred in–
 - (i) any land that is or has been held, set aside, reserved, or used for the purposes of a burial-ground or cemetery pursuant to any Act, deed, or other instrument; or
 - (ii) a marked grave in any other land

Rock Marking

Rock marking is the term used in Tasmania to define markings on rocks which are the result of Aboriginal practices. Rock markings come in two forms; engraving and painting. Engravings are made by removing the surface of a rock through pecking, abrading or grinding, whilst paintings are made by adding pigment or ochre to the surface of a rock.

Rock Shelter

An occupied rock shelter is a cave or overhang that contains evidence of past Aboriginal use and occupation, such as stone tools, middens and hearths, and in some cases, rock markings. Rock shelters are usually found in geological formations that are naturally prone to weathering, such as limestone, dolerite and sandstone

Seal Hide (CHMA 2020: 44)

Seal hides are circular or semi-circular depressions which are generally formed in cobble stoned beaches. The depressions can range in size from 1.5m in diameter, through to over 4m in diameter, and are up to 1m in depth. The depressions are believed to have been constructed by Aboriginal people for the purposes of hunting seals. The hunting party would hide within the formed depressions and wait for the seals to exit the water and come up onto the beaches, where the Aboriginal people would be waiting.

Shell Midden

Middens are distinct concentrations of discarded shell that have accumulated as a result of past Aboriginal camping and food processing activities. These sites are usually found near waterways and coastal areas, and range in size from large mounds to small scatters. Tasmanian Aboriginal middens commonly contain fragments of mature edible shellfish such as abalone, oyster, mussel, warrener and limpet, however they can also contain stone tools, animal bone and charcoal.

Stone artefacts

A stone artefact is any stone or rock fractured or modified by Aboriginal people to produce cutting, scraping or grinding implements. Stone artefacts are indicative of past Aboriginal living spaces, trade and movement throughout Tasmania. Aboriginal people used hornfels, chalcedony, spongelite, quartzite, chert and silcrete, depending on stone quality and availability. Stone artefacts are typically recorded as being 'isolated' (single stone artefact), or as an 'artefact scatter' (multiple stone artefacts).

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