

**PLAN 5 REQUEST TO AMEND THE NORTHERN TASMANIA
REGIONAL LAND USE STRATEGY:
98 RIDGESIDE LANE, 211 LOGAN ROAD AND
CT 101154/1, LOGAN ROAD, EVANDALE**

- Request from TCG Planning obo Traders in Purple for Amendment to Northern Tasmania Regional Land Use Strategy dated 12 December 2018 including attachments:
 - Concept Master Plan
 - Land Use Master Plan
 - Aboriginal Heritage Assessment
 - Agricultural Assessment
 - Community Engagement Report
 - Economic Impact Analysis
 - Historic Heritage Assessment
 - Road Capacity Assessment
 - Utilities Assessment
 - Stormwater Strategy
- Reviews requested by Northern Midlands Council
 - Review of Agricultural Assessment
 - Review of Economic Impact Analysis
 - Review of Road Capacity Assessment
 - TasWater advice on Utilities Assessment
 - Review of Stormwater Strategy
- Response to reviews provided by Traders in Purple
 - Response to review of Agricultural Assessment
 - Response to review of Road Capacity Assessment
- Letter and Information Sheet from the Minister for Planning – Reviewing and Amending the Regional Land Use Strategies
- Northern Midlands Council’s request for additional information dated 21 March 2019
- Additional information received 8 July 2019 and 18 July 2019
 - Ridgeside Lane Master Plan Presentation - H
 - Ridgeside Lane – Land Use Plan - J
 - Economic Impact Analysis MCA May 12
 - Agricultural Assessment December 2018
 - Agricultural GES Response Feb 2019
 - Agricultural Report No. 3 May 2019
 - Initial Bushfire Assessment May 2019
 - Natural Values Report April 2019
 - Stage 1 Preliminary Assessment June 2019
 - Preliminary Flood Hazard Assessment May 2019
 - Landslip Assessment May 2019
 - Response to RTLS Request April 2019

- TasWater Servicing Advice May 2019
- Infrastructure Plan
- Assessment of Growth TIP
- Traffic Impact Assessment July 2019
- Aircraft Noise Intrusion Assessment
- Regional General Manager Consultation Report
- Engagement Report Version 7
- Evandale Servicing Assessment – Sept 2018 Cardno

- Reviews requested by Northern Midlands Council
 - Agricultural review
 - Traffic Review
 - Preliminary Report on the Heritage Impacts of the proposed Ridgeside Lane subdivision on the township of Evandale

- Request from Northern Midlands Council to Northern councils
- Responses from seven Northern councils
 - Flinders Council dated 3 March 2020
 - George Town Council dated 25 February 2020
 - Meander Valley Council dated 17 February 2020
 - West Tamar Council dated 23 January 2020
 - City of Launceston dated 20 January 2020
 - Break O’Day Council dated 15 January 2020
 - Dorset Council dated 17 October 2019

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12 December 2018

Dear Des,

**Request for Amendment to Northern Tasmania Regional Land Use Strategy
RIDGESIDE LANE - HOUSING AND TOURISM SUSTAINABLE COMMUNITY AT EVANDALE**

TCG Planning, acting on behalf of Traders in Purple, submit this request to Council for consideration of an amendment to the Northern Tasmania Regional Land Use Strategy to permit the progression of the 'Ridgeside Lane' project which comprises a \$450M housing and sustainable tourism community at Evandale. The project is proposed to be developed on land with frontage to Logan Rd and Ridgeside Lane which comprises three allotments referenced as CT 106773/1, CT 145763/2 and CT 101154/1, with a combined area of approximately 245 hectares.

The advancement of this project will provide a significant number of economic and employment benefits to assist in meeting the growth objectives of Tasmania's Population Growth Strategy (2015). However, major projects such as Ridgeside Lane are currently impeded by planning legislation, which requires consistency with a regional land use strategy, irrespective of whether such a strategy has effectively recognised recent growth trends and targets within Tasmania.

The land on which the Ridgeside Lane project is to be located is currently classified as 'rural' land use under the Northern Tasmania Regional Land Use Strategy (RLUS), however, **this request is seeking Council's support for amendment to the RLUS to allow for the inclusion of this land within the 'urban growth area' classification under the Strategy.**

1. The Subject Site

The land subject to this amendment comprises the following allotments, as shown in **Figure 1**:

- CT 106773/1 at 211 Logan Road, Evandale
- CT 145763/2 at 98 Ridgeside Lane, Evandale
- CT 101154/1 at Logan Road, Evandale

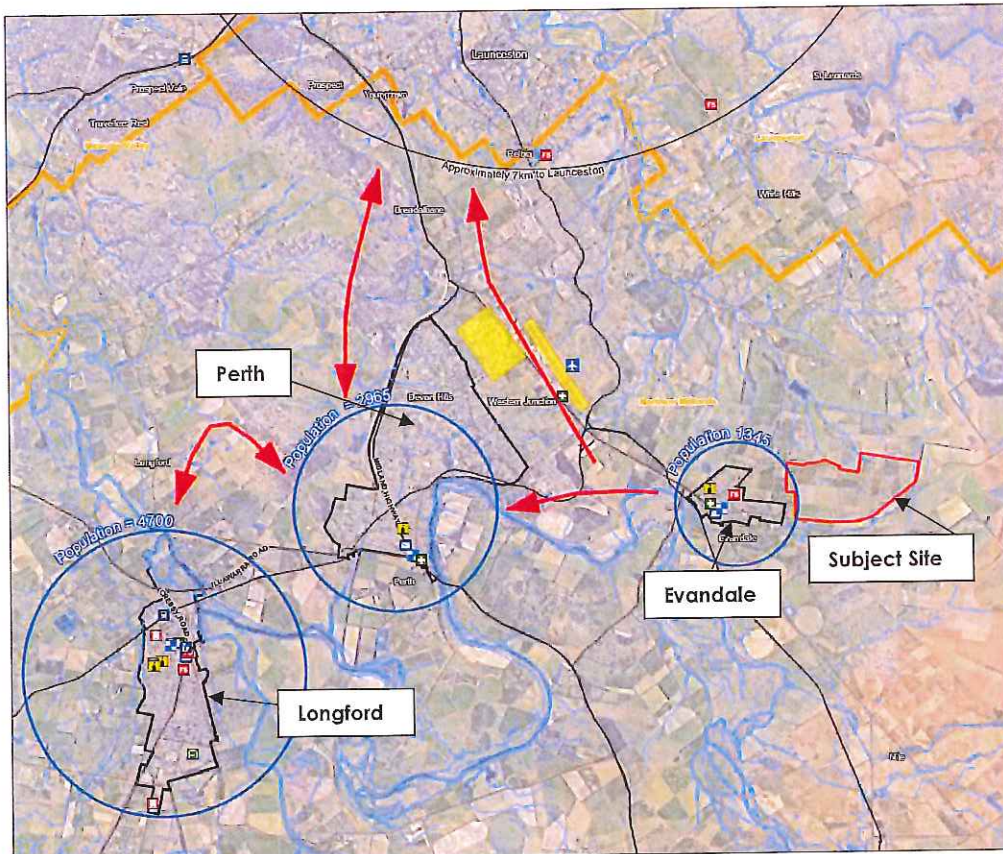


Figure 1: Aerial photo showing location of subject site (Base Map Source: Cardno 2018)

The sites are currently utilised for sheep grazing. There is one residential dwelling and associated farming structures located at 211 Logan Road, while the other two allotments are void of structures. There are a number of small dams across the properties while there are two minor dry watercourses located near the north eastern property boundaries. There is limited vegetation across the site due to use for sheep grazing.

There is minimal slope on the site, with a slight depression within the north west corner of the Lot 101154/1. The remainder of the site is relatively flat at approximately 170m AHD.

The site is bounded to the north by additional agricultural grazing land. The northern boundary of Lot 106773/1 is Ridgeside Lane, which also provides access to 98 Ridgeside Lane. The southern boundary of the site follows Logan Road.

The land is currently zoned Rural Resource under the Northern Midlands Interim Planning Scheme 2013, as shown in **Figure 2** and is located to the east of residentially zoned land with the township of Evandale. Evandale had a static population of 1124 persons as at the 2016 Census and is a popular tourist destination due to its well preserved Georgian and early Victorian buildings.

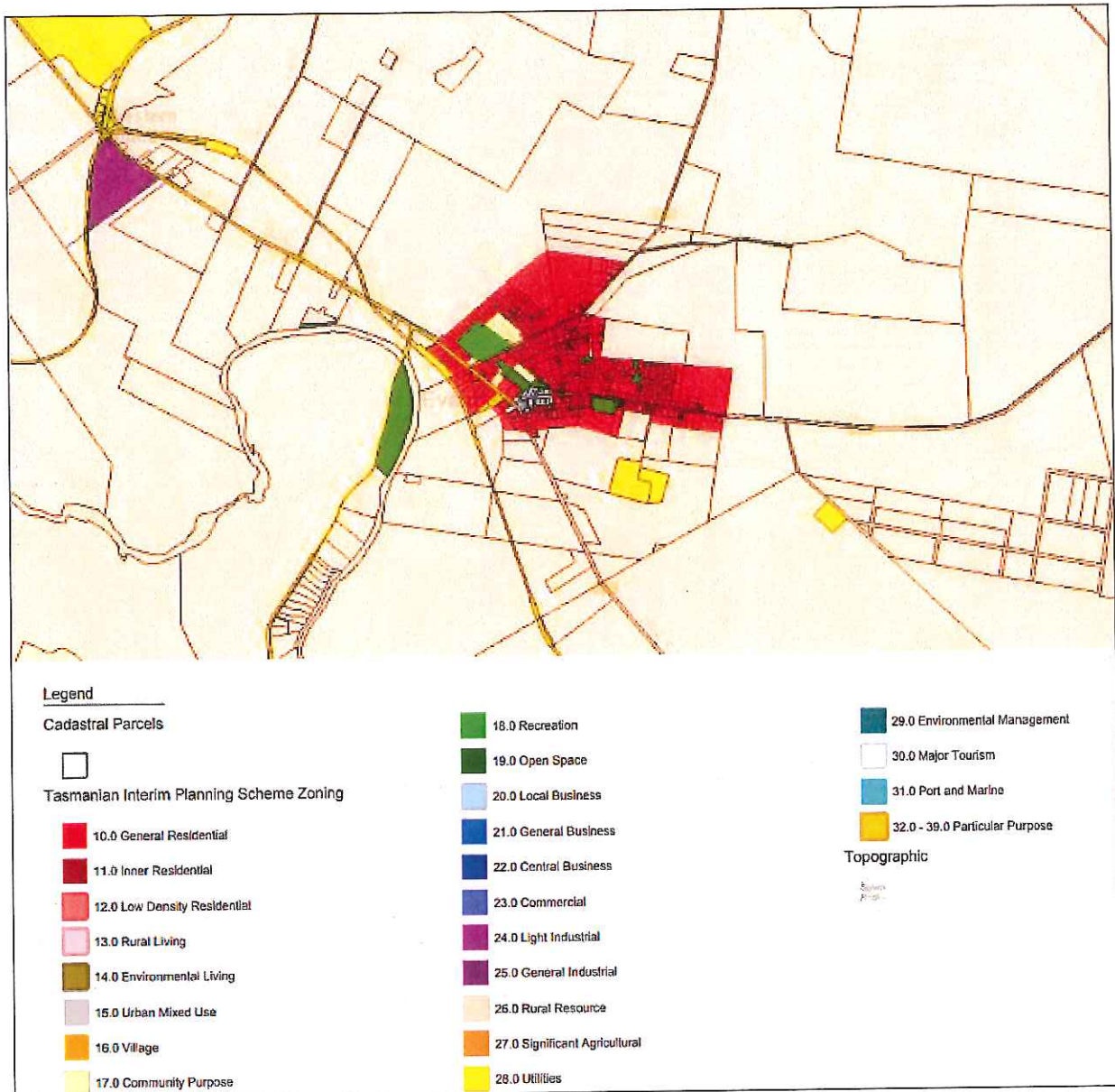


Figure 2: Extract of Zoning Map showing subject site within the Rural Resource under the Northern Midlands Interim Planning Scheme 2013

2. Project Background

Traders in Purple is a family owned development, building and construction company with over 30 years experience delivering a diverse range of developments nationally. Traders in Purple acquired the Ridgeside Lane site in 2018 and are seeking to develop the site for the purpose of a sustainable mixed-use development, which incorporates significant tourism ventures, together with a range of housing types which cater for young families to retirees. The accompanying Concept Masterplan, which has been prepared by Lange Design following community consultation undertaken in May 2018, confirms that the project will incorporate the following key elements:

- A village comprising a café, restaurant, cellar door specialising in local produce. The village will also include a sustainability centre, education hub and artisan village, with a variety of Green Star

buildings accommodating workshops, studios and classroom facilities for sustainable living, backyard growing and small-holder farm courses, culinary arts and art & craft courses.

- A 4.5 star 100 room hotel with conference and wedding facilities for 200 guests, restaurant, bar and café. A hotel management education facility will provide training for up to 25 students.
- A health and wellbeing retreat in a tranquil setting with accommodation for up to 40 guests.
- Eco resort accommodation consisting of 20 villas within a landscaped setting.
- A retirement village comprising 80 independent living units, a 25 bed specialist aged care facility and a 20 bed dementia unit.
- 7 residential super lots to provide sustainably designed and constructed multiple dwellings offering a variety of housing opportunities.
- 407 x General Residential allotments ranging in size from 450m² to 669m².
- 46 x Low Density Residential allotments ranging in size from 1,500m² to 5,500m².
- 31 x Rural Living 'Zone A' lots ranging in size from 1 hectare to 1.95 hectares.
- 14 x Rural Living 'Zone B' lots ranging in size from 2 hectares to 2.64 hectares, with private driveways off Logan Road.
- Botanical gardens featuring native and exotic species and demonstration gardens, pathways, picnic shelters and seating area.
- Neighbourhood parkland providing recreational open space for residents and visitors, with a pathway network connection through to Evandale village.
- Neighbourhood demonstration farm and agribusiness facility.
- Utilities precinct to accommodate the neighbourhoods 'state of the art' sewerage and waste water treatment facility, renewable energy storage facility, recycling centre and green waste composting facility.

3. Accompanying Documentation

This submission is accompanied by the following supporting documentation:

Document Title	Author	Reference	Date
Overall Landuse Masterplan	Lange Design	Issue G	5/12/18
Overall Concept Masterplan	Lange Design	Issue F	5/12/18
Community Engagement Report	The Noa Group		July 18
Economic Impact Analysis Summary Report	Mca		November 18
Preliminary Utilities Assessment	Cardno	8201824101-001	15/9/18
Agricultural Assessment	Macquarie Franklin		5/12/18
Road Capacity Assessment	Pitt & Sherry	Rev 01	11/12/18
Aboriginal Heritage Assessment	Cultural Heritage Management	Final V1	12/7/18
Historic Heritage Assessment	Cultural Heritage Management	Final V1	14/7/18

4. Economic Benefits of the Project

The Economic Impact Analysis (Summary Report) prepared by MCA in November 2018 confirms that the proposed development will have significant economic impacts on Evandale and the adjacent region, which includes an increase in the population by 2635 persons to an estimated 3579 in 2035. The report states that this will stem a potential decline in population and which will have "implications for local businesses and the provision of services (including primary school education). The take up of housing will include families, which will renew the population. As the population grows their spending will create additional local and regional jobs, which would reach a total of 147 (direct and indirect) by 2035".

The provision of a major tourist precinct "will provide a major boost to Evandale businesses, as visitors will also spend outside the precinct in the Evandale village. This local spending will increase over time as visitor numbers grow and by 2035 visitor spending would be supporting an additional 20 direct jobs in Evandale businesses" Further, "with the establishment of all the precinct businesses, in 2030, there will be a total of 133 direct jobs on site covering the tourism, care and education activities, and the spending of these employees would create another 32 indirect/induced jobs in the region".

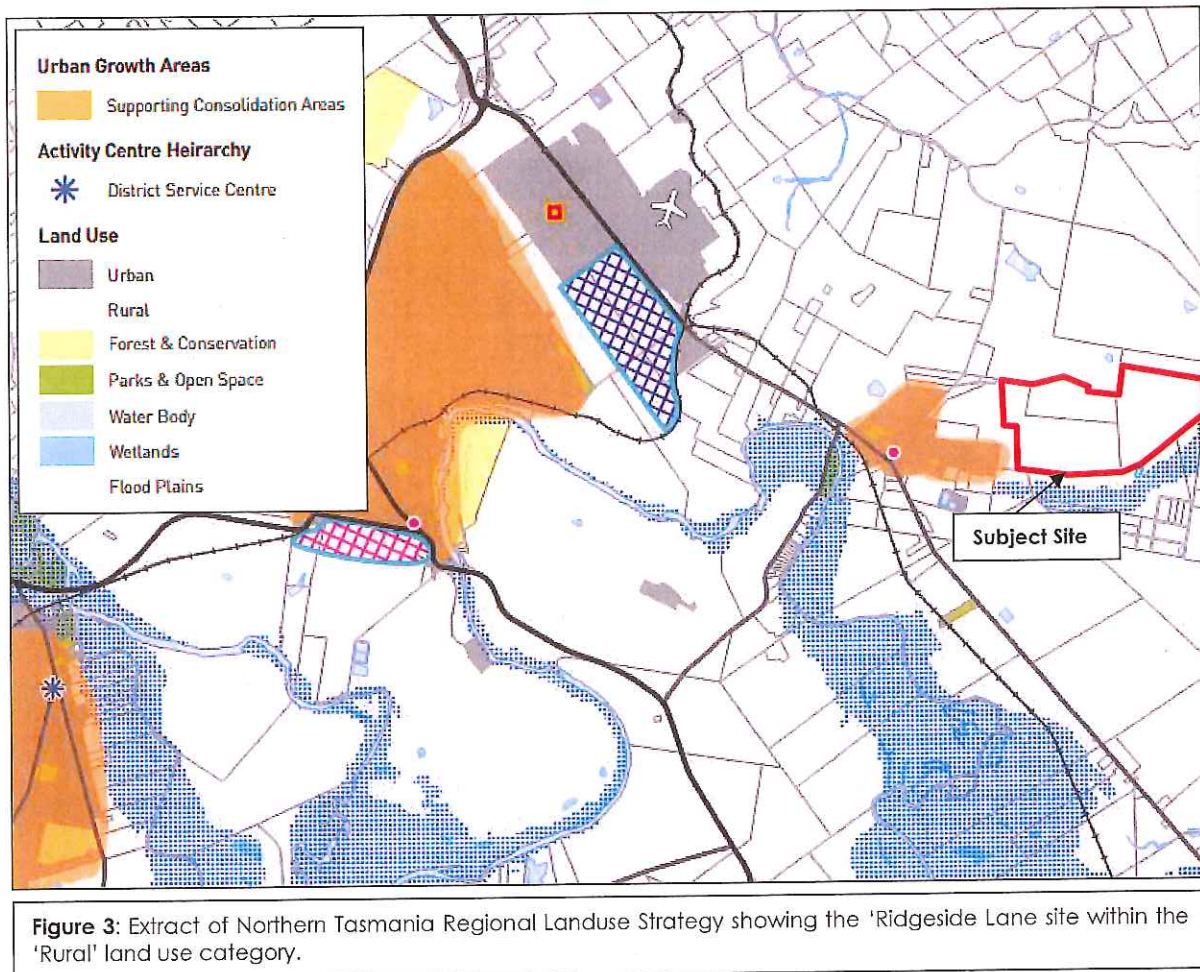
MCA also confirm that "Construction impacts are significant with site development and construction of housing, buildings and infrastructure extending over a 15 year period. This will generate substantial work for regional businesses (building companies and tradespersons). The number of jobs each year will vary according the staging of construction.

- Direct on site construction jobs (FTE), would average 63 per year over the 15 year period (2020-2034), with most of these jobs in regional businesses (Launceston and Northern Midlands).
- Materials/equipment supply jobs would average 15 per year over the period, with most of these being in suppliers from Launceston and elsewhere in Tasmania.
- When the indirect/induced jobs are taken into account total jobs generated during the construction period would average 93 per year (78 direct FTE jobs and 15 indirect/induced jobs)."

5. Northern Tasmania Regional Land Use Strategy

The Northern Tasmania Regional Land Use Strategy does not currently identify the subject land within an urban area or within an area identified for urban growth. Therefore, to ensure the success of this proposal, an amendment to the Northern Tasmania RLUS is first required. This would then enable lodgement of a request for amendment to the Northern Midlands Interim Planning Scheme 2013, which would ensure that the project is consistent with the RLUS, as required by Section 34(2)(f) of the Land Use Planning and Approvals Act (LUPAA).

The most recent amendment of the Northern Tasmania Regional Land Use Strategy came into effect 27 June 2018. The document provides a strategic framework to manage the region's development in response to ongoing socio-economic and physical environmental change and to protect and enhance the region's quality of life (liveability), productivity and sustainability until 2032. The strategy defines three key land use categories, being Urban Growth Areas, Rural Areas or Natural Environment Areas which will then guide the zoning in municipal planning schemes. The subject site is currently within the 'Rural' land use category, as demonstrated by **Figure 3**.



This strategy identifies Evandale as a 'Satellite Settlement' being a settlement within proximity to the Greater Launceston Urban Area, which provides a dormitory function to the regional city. The Strategy confirms that such settlements "..... provide for a rich mixture of land uses, including locations for residential housing for a significant proportion of the region's workforce, associated industrial areas and localised employment opportunities. The settlements are supported by a wide range of local community, retail, business and commercial functions. As key regional urban areas they will deliver services to their surrounding area as they are subject to substantial change and growth pressures."

It is proposed to amend the Northern Regional Land Use Strategy whereby the subject area be reclassified from its current land use classification of 'Rural' to be included within an 'Urban Growth Area'.

Despite the fact that the site is not currently identified as a growth area within the RLUS we note that the objectives of this strategy will be met as the development will:

- Provide increased opportunity for access by increased tourist visitation through Launceston Airport which handles 1.3million passengers per year and which is located only 7km from the site;
- Provide opportunity for regional population growth, including interstate migration;
- Provide investment opportunities by attracting offshore and mainland capital;
- Allow for economic growth, job creation and upskilling of the workforce;

- Provide housing diversity for all stages of life, including seniors living;
- Provide a liveable community and a vibrant, sustainable urban settlement, with access to a range of facilities.

Accordingly, we request that Council progress an amendment to the Northern Midlands RLUS to incorporate the site within an 'Urban Growth Area'. We consider it appropriate this new 'Urban Growth Area' be identified as a 'Growth Corridor' which the RLUS defines as:

"land contiguous with existing urban areas, including greenfield land, which will be developed to accommodate projected population growth where the land has been assessed against contemporary evidence and determined as being suitable for urban development."

6. Local and Regional Context

The Evandale Development Plan 2012, which was prepared for Northern Midlands Council by Pitt and Sherry acknowledges that existing identified areas for residential growth in Evandale have some servicing limitations. The report notes that previous studies have referenced a suggested population of 2000 persons. The Strategy concludes that *"Evandale is a township with potential for more development to reach the expected population of 2000 if servicing issues can be resolved and provided heritage preservation is recognised within any development."* The Ridgeside Lane site was not located within the specific study area of this plan. However, noting that servicing of the site could be achieved (as discussed in **Section 7** of this correspondence), the subject site has the potential to provide additional housing for population growth of Evandale and surrounds.

Further, we note that the Greater Launceston Plan forecast residential land requirements for Northern Midlands to be 1,720 lots for the period of 2013 – 2036. The site has the potential to provide the required additional land requirements for residential allotments without impacting directly on the towns existing heritage character. In conclusion the site has the capacity to provide required additional allotments for the existing urban area of Evandale which in turn supports the growth projections of Greater Launceston.

7. Site Constraints and Suitability for Development

Clause D.2.1.3 of the RLUS confirms that New Urban Growth Areas should be located to:

- *Achieve a balanced settlement pattern across the region and sub-regions;*
- *Maintain a well-planned region of distinct cities, towns and villages;*
- *Maintain the integrity of 'intra-regional' open space green breaks;*
- *Minimise impacts on natural resources;*
- *Maximise the use of major transport and water and sewerage infrastructure (committed and/or planned);*
- *Enable efficient physical and social infrastructure, including public transport;*
- *Have ready access to services and employment; and*
- *Ensure significant non-residential activities will meet specific location, infrastructure and site requirements."*

Recent subconsultant investigations which have now been completed in respect of flooding, bushfire, Aboriginal Heritage and European Heritage have confirmed that the land has minimal site constraints which would impede its development. Further, investigations into traffic movements and servicing indicate that

viable options exist to access and service the land, whilst the agronomist's investigations confirm that appropriate separation can be provided to protect adjacent agricultural enterprises.

In addition, investigations into the availability of residential, village, mixed use or rural living zoned sites within 20km of Evandale (including land at Hadspen/Travellers Rest, Devon Hills, Relbia and Carrick) have revealed that development of appropriately zoned land has been impeded by fragmented land ownership, servicing restrictions and terrain. In comparison, the Ridgeside site, which is a 240-hectare site in one ownership, presents an opportunity for immediate development by the willing land owner, subject to resolution of land zoning issues.

The accompanying subconsultants reports, which have been prepared in respect of the Ridgeside Lane site, confirm that the site is physically suitable for development, being free from natural hazards, does not feature significant biodiversity values, is not located in proximity to incompatible land uses and is of a sufficient size to support on site infrastructure and services.

Traffic Generation and Road Capacity:

Pitt and Sherry were engaged by Traders in Purple to undertake a Road Capacity Assessment which has considered the available spare traffic capacity of roads surrounding the site and to consider at what level of development the local roads would be at capacity. The report notes that once this capacity is reached, it is proposed to build an Evandale bypass road which would keep the majority of traffic associated with the development from using the local roads, except for local trips.

Pitt and Sherry confirm that Barclay Street, White Hills Road, Russell Street and Logan Road West currently have significant spare capacity. The exception is Logan Road to the east of No. 58, where the narrow width of the seal results in the road already carrying traffic volumes higher than the allowable capacity. The assessment concludes that *"there is currently capacity for traffic movements equivalent to 23 residential dwellings on Logan Street East of No. 58. This could accommodate the 14 Rural 'Zone B' lots which are planned to directly access Logan Road. If more lots are to access via Logan Road it will be necessary to widen Logan road to a 6.0m carriageway width. Based on the minimum capacities, there is capacity for the traffic movements equivalent to 200 dwellings on White Hills Road/ Barclay Street and 176 dwellings on Logan Road/ Russell Street. After the number of dwellings above is reached, the existing road network would be expected to be at capacity and construction of the Evandale bypass road is required."*

The Concept Masterplan therefore incorporates 14 Rural Living allotments ranging in size from 2 hectares to 2.64 hectares, with direct access off Logan Road, in compliance with the recommendations of this Road Capacity Assessment. Access for the remainder of the development will be provided using the existing road network, with further investigation into the option of widening Logan Road or constructing a Bypass should this be required, based on traffic generation.

Servicing:

A Preliminary Services Assessment which has been conducted by Cardno confirms the following:

- Potable Water: Evandale is part of the Longford System which takes water from the South Esk. The system is part of the Greater Launceston Water Supply Strategy work which is currently in progress. The site is currently not serviced with potable water. Existing potable water infrastructure is located along Logan Road (DN150) and White Hills Road (DN100) that is located in close proximity to the

site.... It is expected that these assets will be extended to the development to service the site. There is approximately 2000 ET's of capacity at the reservoirs at Devon Hills that supply Evandale.

- **Wastewater:** The site is currently not serviced for wastewater. The existing wastewater infrastructure is located along Logan Road (twin DN150 mains) that is in close proximity to the site..... It is expected that these assets can be extended to the site to service the initial development. The STP has a licence limit of 0.37ML/day, with current inflows averaging around 0.2ML/day. This is equivalent to 309 ET's of capacity remaining at the STP. The remaining sewage will need to be diverted to a new STP or upgrades to the existing STP will be required.
- **Electrical:** The site is currently not serviced by electrical infrastructure. The development will require the existing infrastructure to be extended to the development boundary. It is expected major network upgrades will be required to service the fully developed site.

Agricultural Assessment:

An Agricultural Assessment prepared by Macquarie Franklin in December 2018 addresses agricultural considerations of the subject land which is classed as class 4 land with no prime agricultural land present. It was determined that future agricultural land uses are predominately based on irrigated crops, as well as vegetable crops and perennial horticultural enterprises which were also found to have potential. However, the site is highly restricted to irrigation resources which will limit future agricultural land uses options on the site. Accordingly, Macquarie Franklin conclude that:

- "The design and layout the proposed development would be sensitive to neighbouring agricultural land use activity, and a range of significant and substantial measures and mitigation actions would be undertaken to minimise any negative impact and/or constraints on the management and operational activities conducted on the adjacent rural land.
- The design and layout the proposed development would result in a negligible negative impact and possible conflict generated from the agricultural land use activity that is currently and could be conducted on the neighbouring properties.
- The properties are located within the North Esk irrigation scheme, and each has a 20 ML water allocation for a total of 40 ML of irrigation water. Based on the quantum of irrigation water that has been invested in, 40ML, the scale and intensity of any irrigated cropping (broadacre, vegetable and/or perennial horticulture) are limited."

With respect to consistency with the Protection of Agricultural Land Policy Macquarie Franklin confirm that:

- The design and layout the proposed development would be sensitive to neighbouring agricultural land use activity, and a range of significant and substantial measures and mitigation actions would be undertaken to minimise any negative impact and/or constrain on the management and operational activities conducted on the adjacent rural land.

Aboriginal Heritage:

Investigations conducted by Cultural Heritage Management Australia in July 2018 confirm that no Aboriginal heritage sites or specific area of elevated Aboriginal heritage sensitivity were identified, and an AHR search shows no registered Aboriginal sites within or in the vicinity of the site area. As a result of the surveys carried out by Huys and Sainty, the designated Aboriginal Heritage Office concluded that the proposal would not

impact on known Aboriginal sites. Furthermore, given the extent of cleared land, any bush food resources are no longer in existence and as such, the proposal will have minimal impact on Aboriginal heritage resources.

European Heritage:

Cultural Heritage Management conducted an assessment of European heritage in July 2018 which confirmed that the township of Evandale is a National Trust classified Georgian village, with some 39 heritage listed properties included on the Australian Heritage Database. Based on site surveys, there is very little potential for in situ historic features to occur within the site area. Furthermore, the negative survey results were considered an accurate indication that the potential for heritage features is very low. However Cultural Heritage Management recommend that the proponent ensure there is ongoing consultation with the broader public regarding future design to ensure it will be sympathetic with the values and qualities of the Evandale township and appropriately minimises visual impacts of the development.

Sustainability:

The Concept Masterplan proposes a sustainable mixed use community, with the following sustainability initiatives for the project currently being investigated;

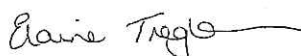
- Incorporation of solar panels and communal batteries to all buildings;
- Water sensitive urban design to recapture and reuse all rainwater on the property;
- Onsite treatment and potential reuse of black water;
- Household waste and recycling initiatives on site;
- Communal gardens for residents;
- Sustainability Education Centre for the community; and
- Demonstration Agricultural Farm.

8. Conclusion:

As confirmed in the Economic Analysis prepared by MCA the Ridgeside Lane project "will renew the population, create a quality regional tourism destination, provide needed services for existing and new residents and create jobs in: hospitality and tourism; care professions; and learning. The larger population and tourist visitors will generate a significant number of other jobs in Evandale and the region." Whilst the project is consistent with the objectives of the Northern Tasmania Regional Land Use Strategy (RLUS), classification of the land as an 'urban growth area' will more readily allow for the future progression of a zoning amendment to the Northern Midlands Interim Planning Scheme 2013. Therefore, having regard to the significant economic benefits of the project and the absence of identified site constraints, Council is requested to progress this amendment to the RLUS.

We greatly appreciate Council's consideration of this request and remain available should further clarification of the above submission be required.

Yours Faithfully,



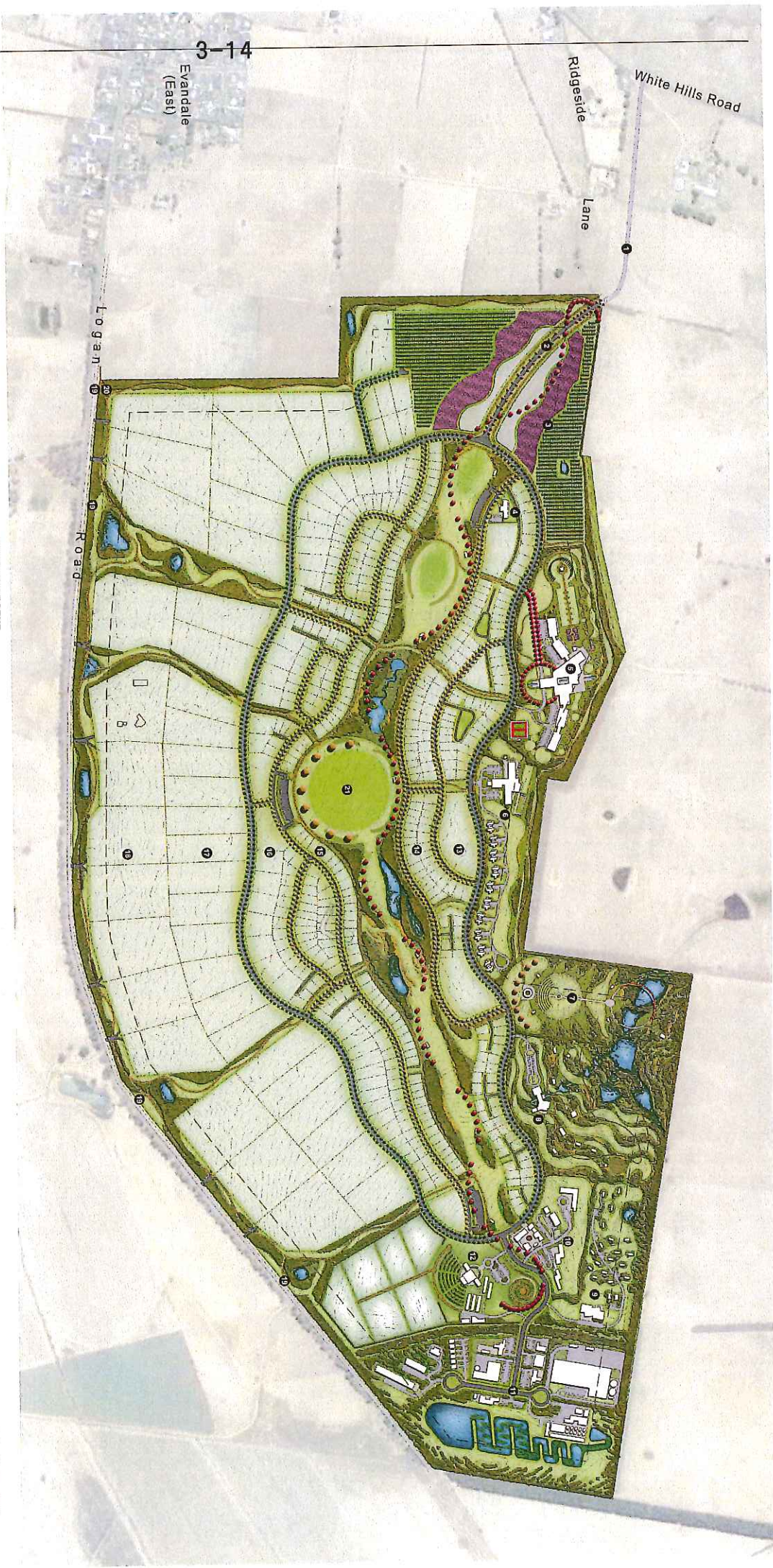
Elaine Treglown
Director, TCG Planning

White Hills Road









Ridgeside Lane

3-14
Evangdale
(East)

Logan Road



PLAN LEGEND

-  Contours
Existing (0.2m contours).
-  Get Back
A 10m wide, non-salvaged including a 5m wide vegetative strip to provide an agricultural buffer from adjoining uses.
-  Residential Alignment
Proposed residential alignments varying from traditional housing to 2' hectare rural residential B lots.
-  Existing Residential Area
The LST topographic map.
-  Internal Boundary
Street line and primary collector, loop road, secondary road, residential street (20m reserve width), and access driveway (10m reserve width).
-  Shared Pedestrian and Cycle Paths
(A) providing an active/recreational network undulating around and through the neighbourhood
(B) narrow vegetation buffer, pathways, and open grass areas provide passive & active recreation opportunities.
-  Open Space Boundary Corridor
15m (A) Native vegetation buffer, pathways, and open grass areas provide passive & active recreation opportunities.
-  Water Sensitive Urban Design
A series of existing and new water bodies utilized to filter and store stormwater from within the neighbourhood.

NUMBER LEGEND

- 1 Connector road to link the proposed neighbourhood with White Hills Road and beyond to provide sufficient capacity to service traffic, pedestrians, and bicycles including pedestrian use from tourist vans.
- 2 Neighbourhood entry consisting of the start of the signature tree wall that links the entry with the lookout at the eastern end of the neighbourhood.
- 3 Mass planting of Chionochloa and lavender with a backdrop of olive plantings flanking the roadway adding to the experience entering the neighbourhood.
- 4 Child care centre positioned across from the parkland and towards the neighbourhood entry for easy access.
- 5 Proposed 4.5 star, 100 room hotel with conference and meeting facilities, 200 beds, restaurant, bar and cafe. A hotel management education facility will also provide training for up to 25 students.
- 6 Proposed retirement village with an activity hub, 80 independent living units, and a care facility (aged care, 65 beds), and dementia garden (60 beds).
- 7 Botanical garden featuring a blend of native and exotic plant species and demonstration garden, with seasonal pathways, picnic shelter and seating areas.
- 8 Health and wellbeing retreat with a central activities hub, accommodation for up to 40 guests, and tropical gardens with areas for quiet contemplation and meditation.
- 9 Eco Resort accommodation consisting of 20 villas with a central communal hub set within a landscape of native trees, gardens and open lawn areas.
- 10 Sustainability Centre, Education Hub and Artisan Village with a variety of Green Star buildings accommodating workshops, studio and classroom facilities for sustainable living, backyard growing and smallholder farm courses, country arts, as well as restaurant and cafe/food specialising in local produce.
- 11 Utilises recycled to accommodate the neighbourhood's state-of-the-art energy and waste water treatment facility, renewable energy storage facility, recycling centre, and green waste composting facility.
- 12 Neighbourhood Demonstration Farm and Agribusiness Facility including organic vegetable gardens, livestock paddocks, and pop-up stalls around the main 'Barn' which includes an organic co-op store, plant nursery and farm workshops.
- 13 Seven residential super lots provide sustainability design and showcased multiple dwellings offering a variety of affordable housing opportunities.
- 14 407 7 General residential lots ranging in size from 450sqm to 650sqm.
- 15 General residential lots with finished frontage.
- 16 48 x Low density residential lots ranging from 1,500sqm to 5,500sqm.
- 17 31 x Rural Zone A' lots ranging in size from 1 hectare to 1.95 hectares.
- 18 14 x Rural Zone B' lots ranging in size from 2 hectares to 2.84 hectares, and include private access driveways off Logan Road.
- 19 Emergency access points off Logan Road through the open space corridor.
- 20 Neighbourhood pathway network connection through to the Evangdale village.
- 21 Neighbourhood central garden provides recreational open space for residents and visitors and includes an amphitheater for community events, ornamental gardens with WSUD ponds, indigenous gardens, community gardens and a central park (in size 1/2 ha) and central oval for informal sporting events.

RIDGESIDE LANE

Ridgeside Lane Evangdale Tasmonic

Concept Master Plan

0 50 100m
5 December 2018
NORTH

GRADERS IN PURPLE



LANGE
design



LEGEND

- Contours
Existing 20m contours.
- Set Backs
70m Set back for agricultural buffer, and 200m set from adjoining agricultural zones.
- Existing Residential Areas
Topographic map as shown in 'The LIST'.

	Open Space 56.86 ha. Pavement & active recreation, vegetation buffers, gardens, play areas, pathways.		Rural Living 69.5 ha. 45 Rural Living including Rural Residential A (1 - 1.98 ha) and Rural Residential B (2 - 2.97 ha).
	General Residential 29.03 ha (414 lots including 7 super lots). Residential living including traditional lots, small lots and medium density lots.		Mixed Use 44.03 ha. Tourism, hotel, boutique business, health & well being, shops, town centre, schools, residential.
	Low Density Residential 11.64 ha (46 lots). Low density residential including multiple dwellings.		Utilities 14.5 ha. Green waste & recycling facility, sewerage & non-potable water treatment facility, energy tanks.

RIDGESIDE LANE

Land Use Master Plan

0 50 100m
5 December 2018
Issue 6



Evandale Residential Subdivision Project

Aboriginal Heritage Assessment Report
Final Version 1

AUTHOR: Stuart Huys and Rocky Sainty
27 Apsley St South Hobart, TAS 7004

CLIENT: Traders in Purple

12.7.2018

CULTURAL
HERITAGE
MANAGEMENT
AUSTRALIA

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Executive Summary

Project Details

Traders in Purple are seeking planning approval for a residential subdivision project at Evandale in the Northern Midlands Region of Tasmania (see Figure 1). The study area boundaries for the residential development encompasses 246ha, and is situated approximately 1km to the east of the Evandale township. The study area is bounded to the south by Logan Road, and to the north by Ridgeside Lane (see Figures 2 and 3).

CHMA Pty Ltd and Vernon Graham (AHO) have been engaged by Traders in Purple to undertake an Aboriginal heritage assessment for the proposed residential subdivision project. This report presents the findings of the assessment.

Registered Aboriginal Sites in the Vicinity of the Study Area

As part of Stage 1 of the present assessment a search was carried out of Aboriginal Heritage Register (AHR) to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the proposed Evandale subdivision project.

The search shows that there are a total of 10 registered Aboriginal sites that are situated within a 5km radius of the study area (search results by Cindy Thomas from AHT on the 1-6-2018). Of these 10 sites, five sites are classified as isolated artefacts, and five sites are classified as artefact scatters. None of these sites are situated either within or in the immediate vicinity of the study area boundaries. The nearest site is AH13114 (an artefact scatter) which is situated around 1km to the north. Table i provides the summary details for these 10 sites, with Figure i showing the location of the sites in relation to the study area boundaries.

Table i: Summary details for Registered Aboriginal sites located within an approximate 5km radius of the proposed Evandale Residential Subdivision (Based on information generated from the AHR search dated 1-6-2018)

AH Number	Site Type	Locality	Grid Reference Easting (GDA94)	Grid Reference Northing (GDA94)
164	Artefact Scatter	Evandale	519712	5397783
10312	Isolated Artefact	Nile	525560	5392140
13111	Isolated Artefact	White Hills	526968	5403119
13112	Artefact Scatter	Evandale	526784	5402619
13113	Isolated Artefact	Evandale	525990	5400610
13114	Artefact Scatter	Evandale	523111	5399776
13115	Isolated Artefact	Western Junction	519286	5400317
13116	Artefact Scatter	Western Junction	519155	5400563
13117	Isolated Artefact	Evandale	519973	5400010
13118	Artefact Scatter	Relbia	518820	5402783

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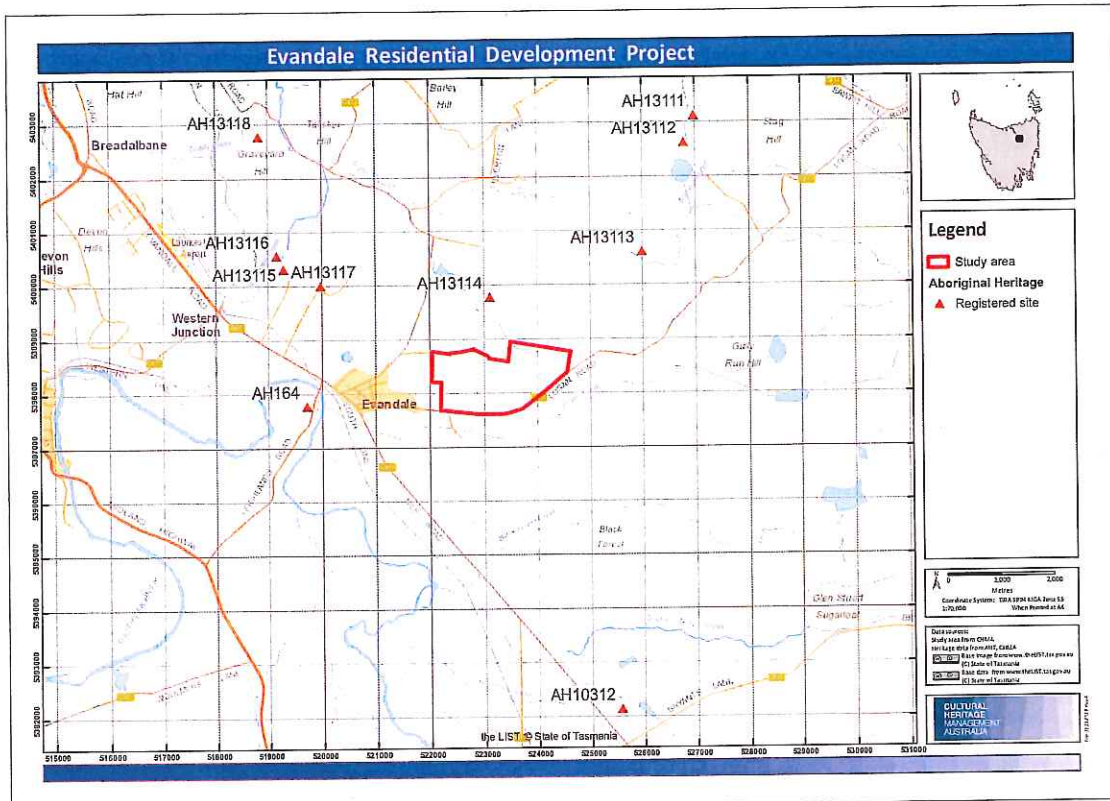


Figure 1: Registered Aboriginal sites within an approximate 5km radius of the proposed Evandale Residential Subdivision (Based on information generated from the AHR search dated 1-6-2018)

Results of the Field Survey

The field survey was undertaken by Stuart Huys (CHMA archaeologist) and Vernon Graham (Aboriginal Heritage Officer), over a period of 3 days (28-6-2018 to 30-6-2018).

The proposed residential subdivision footprint encompasses an area of approximately 246ha. The field team walked a total of 28.4km of survey transects across this area, with the average width of each transects being 10m. The transects were aligned to cover all of the landscape units that occur within the study area.

No Aboriginal sites were identified during the field survey assessment of the Evandale Residential Subdivision footprint. The search of the AHR undertaken for this project shows that there are no registered Aboriginal sites that are located within or in the immediate vicinity of the study area boundaries.

Surface visibility across the study area was generally in the low to medium range (averaging 30%). Given these constraints, it can't be stated with absolute certainty that there are no undetected Aboriginal heritage sites present in the study area. With this acknowledged, the survey assessment still did achieve effective coverage of 85 200m², with the field team having walked 28.4km of survey transects. This level of effective coverage is deemed to be sufficient for the purposes of generating a reasonable impression as to the extent, nature and distribution of Aboriginal heritage sites across the study area.

The negative survey results can therefore be taken as a reasonably accurate indication that site and artefact densities across the study area are likely to be very low, reflecting sporadic activity. Any sites located within these kinds of disturbed environments are always compromised in their archaeological integrity. There is very little potential for in situ sites to occur within the study area.

The field survey was able to confirm that there are no stone resources within the study area that would be suitable for stone artefact manufacturing. The stone bedrock across the study area comprises non-marine sequences of gravel, sand, silt, clay and regolith, none of which is in any way suited for artefact manufacturing. Additionally, there are no stone outcrops occurring anywhere across the study area, so there is no possibility of Aboriginal rock shelters or rock art sites occurring in the study area.

The more detailed survey results and discussions are presented in section 7 of this report.

Management Recommendations

Heritage management options and recommendations provided in this report are made on the basis of the following criteria:

- Consultation with Vernon Graham (Aboriginal Heritage Officer);
- Background research into the extant archaeological and ethno-historic record for the study area and the surrounding region.

- The results of the investigation as documented in this report; and
- The legal and procedural requirements as specified in the *Aboriginal Relics Act 1975* (The Act);

Recommendation 1

No Aboriginal heritage sites or specific areas of elevated Aboriginal heritage sensitivity were identified along the survey of the Evandale Residential Subdivision footprint. The search of the AHR undertaken for this project shows that there are no registered Aboriginal sites that are located within or in the immediate vicinity of the study area boundaries. On the basis of the above, it is clear that the proposed subdivision project will not impact on any known Aboriginal heritage sites, and there is a very low potential to impact undetected Aboriginal heritage. It is therefore advised there are no Aboriginal heritage constraints, or legal impediments to the project proceeding.

Recommendation 2

It is assessed that there is generally a low to very low potential for undetected Aboriginal heritage sites to occur within the study area boundaries. However, if, during the course of the proposed development works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see section 11). A copy of the Unanticipated Discovery Plan (UDP) should be kept on site during all ground disturbance and construction work. All construction personnel should be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

Recommendation 3

Copies of this report should be submitted to Aboriginal Heritage Tasmania (AHT) for review and comment.

1.0 Project Outline

1.1 Project Details

Traders in Purple are seeking planning approval for a residential subdivision project at Evandale in the Northern Midlands Region of Tasmania (see Figure 1). The study area boundaries for the residential development encompasses 246ha, and is situated approximately 1km to the east of the Evandale township. The study area is bounded to the south by Logan Road, and to the north by Ridgeside Lane (see Figures 2 and 3).

CHMA Pty Ltd and Vernon Graham (AHO) have been engaged by Traders in Purple to undertake an Aboriginal heritage assessment for the proposed residential subdivision project. This report presents the findings of the assessment.

1.2 Aims of the Investigation

The principal aims of the current Aboriginal Heritage assessment are as follows. The principal aims of the present Aboriginal heritage assessment are as follows.

- Complete an Aboriginal Heritage Assessment for the Evandale Residential Subdivision Project (the study area). The assessment is to be compliant with both State and Commonwealth legislative regimes, in particular the intent of the *Aboriginal Heritage Act 1975* and the associated Guidelines and Standards and Procedures,
- To determine the extent of previously identified Aboriginal heritage sites within and in the immediate vicinity of the study area.
- To locate and document Aboriginal heritage sites that may be present within the identified bounds of the study area.
- To assess the archaeological sensitivity values of the study area.
- To assess the scientific and Aboriginal cultural values of identified Aboriginal heritage sites.
- Consult with (or ensure the Aboriginal community representative consults with) Aboriginal organisation(s) and/or people(s) with an interest in the study area in order to obtain their views regarding the cultural heritage of the area.
- To advise on the management of Aboriginal heritage in line with best practice archaeological guidelines, including The Burra Charter (ICOMOS 2013) and *Practice Note: The Burra Charter and Indigenous Cultural Heritage Management*.
- Prepare a report which documents the findings of the Aboriginal heritage assessment, and meets the standards and requirements of the current *Guide to the Aboriginal Heritage Assessment Process* prepared by AHT, Department of Primary industries, Parks, Water and Environment.

1.3 Project Limitations

All archaeological investigations are subject to limitations that may affect the reliability of the results. The main constraint to the present investigation was restricted surface visibility due primarily to vegetation cover. At the time of the field survey, surface visibility across most parts of the study area was restricted to an estimated average of around 30%. These constraints limited to some extent the

effectiveness of the survey assessment. The issue of surface visibility is further discussed in Section 6 of this report.

1.4 Project Methodology

A three stage project methodology was implemented for this assessment.

Stage 1 (Pre-Fieldwork Background Work)

Prior to field work being undertaken, the following tasks were completed by CHMA staff.

Consultation with Aboriginal Heritage Tasmania

Aboriginal Heritage Tasmania (AHT) was contacted and informed that a field survey was to be undertaken for the proposed Evandale Residential Subdivision Project. As part of this initial contact a search request of the Aboriginal Heritage Register (AHR) was submitted to AHT in order to ascertain the presence of any previously registered sites in the vicinity of the study area (search request submitted on the 31-5-2018).

The collation of relevant documentation for the project

As part of Stage 1 the following research was carried out and background information was collated for this project:

- A review of the relevant heritage registers (AHR register) and the collation of information pertaining to any registered heritage sites located within the general vicinity of the study area.
- Maps of the study areas;
- Relevant reports documenting the outcomes of previous Aboriginal heritage studies in the vicinity of the study area;
- Ethno-historic literature for the region;
- References to the land use history of the study area;
- GIS Information relating to landscape units present in the study area;
- Geotechnical information for the study area, including soil and geology data.

Consultation with Aboriginal Heritage Officer

Vernon Graham is the Aboriginal Heritage Officer for this project. As part of Stage 1 works Stuart Huys (CHMA archaeologist) was in regular contact with Vernon Graham. The main purpose of this contact was to discuss the scope of the present investigations, to ratify the proposed methodology for the investigations and to co-ordinate the timeframes for implementing field work.

Stage 2 (Field Work)

Stage 2 entailed the field work component of the assessment. The field survey was undertaken by Stuart Huys (CHMA archaeologist) and Vernon Graham (Aboriginal Heritage Officer), over a period of 3 days (28-6-2018 to 30-6-2018).

The proposed residential subdivision footprint encompasses an area of approximately 246ha. The field team walked a total of 28.4km of survey transects across this area, with the average width of each transects being 10m. The transects were aligned to cover all of the landscape units that occur within the study area.

In the course of the field assessment, any areas of improved surface visibility were subject to a detailed inspection. Section 6 provides further details as to the survey coverage achieved within the study area.

The results of the field investigation were discussed by Vernon Graham and Stuart Huys. This included the potential cultural and archaeological sensitivity of the study area, and possible management options.

Stage 3

Stage three of the project involves the production of a Draft and Final Report that includes an analysis of the data obtained from the field survey, an assessment of archaeological sensitivity and management recommendations. The report has been prepared by Stuart Huys in consultation with Vernon Graham.



Plate 1: Vernon Graham, the AHO for this project

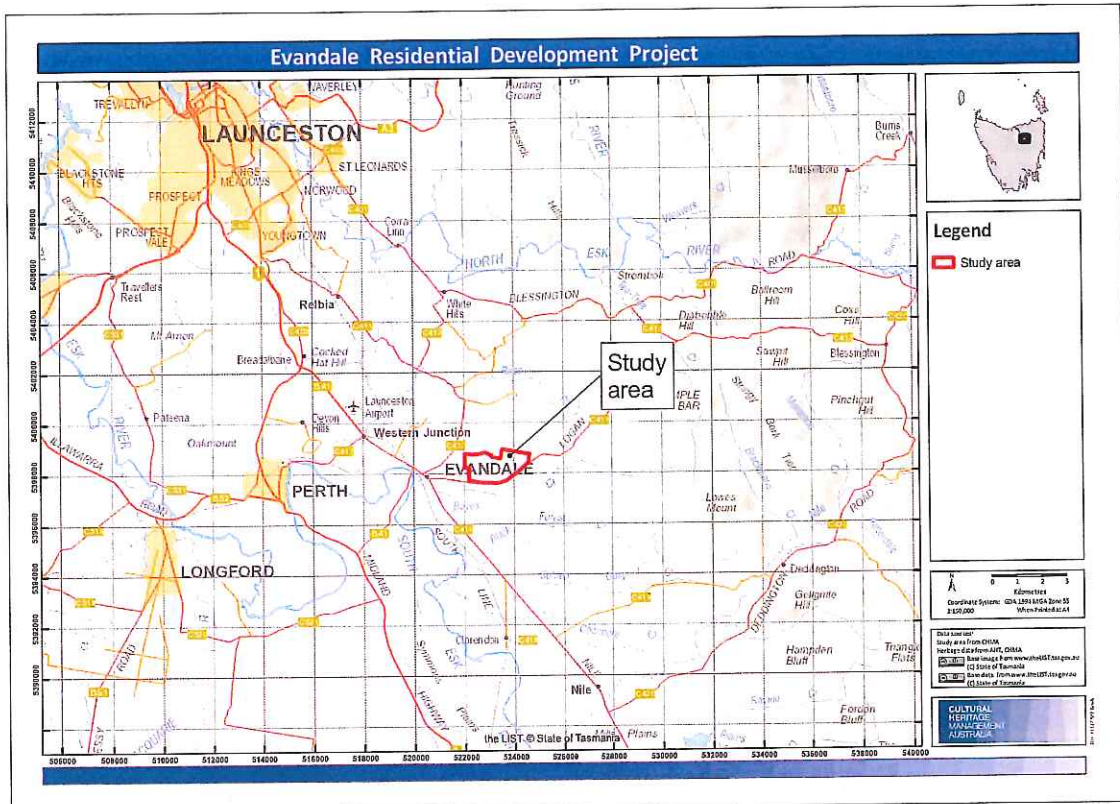


Figure 1: The general location of the proposed residential subdivision project at Evandale in the Northern Midlands Region

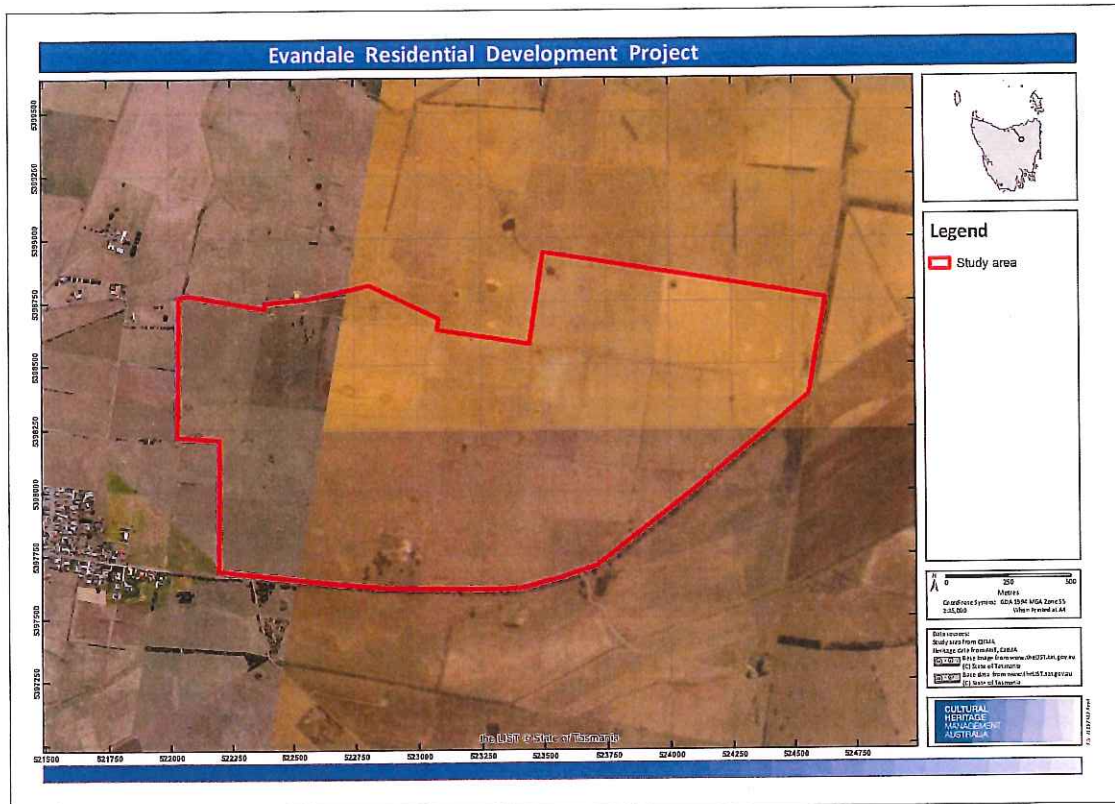


Figure 2: Aerial image showing the proposed footprint for the 246ha residential subdivision, located just to the east of the town of Evandale

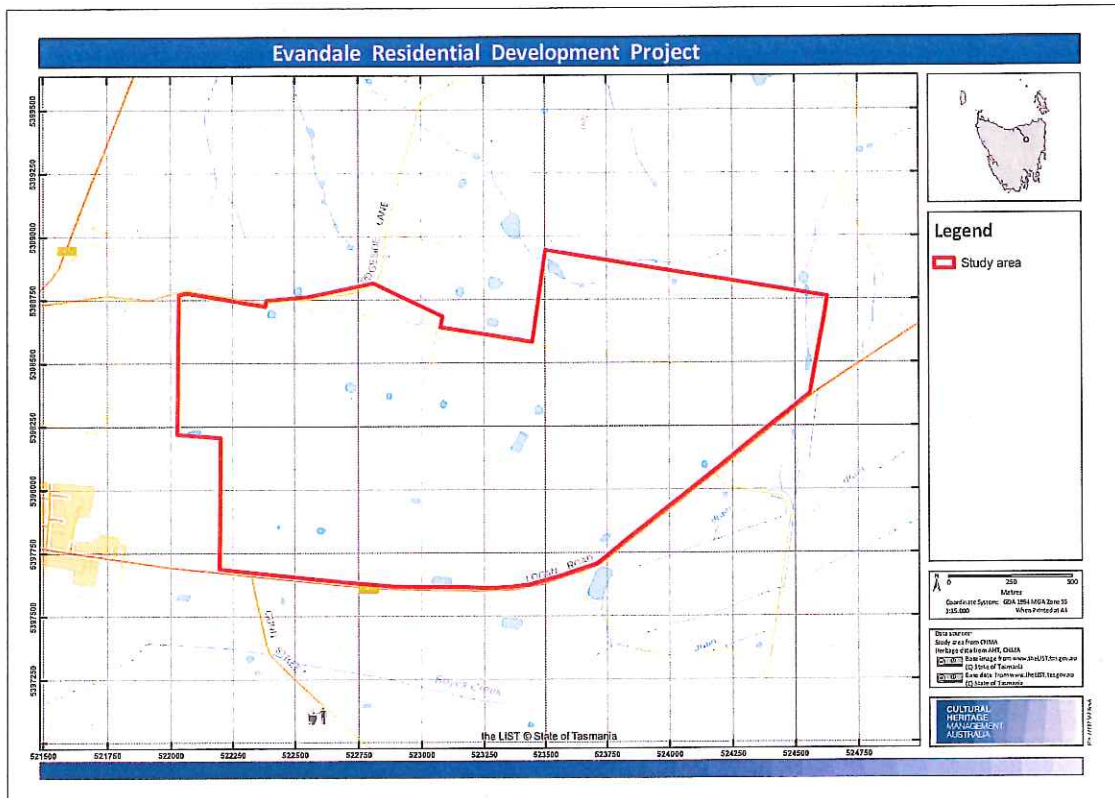


Figure 3: Topographic map showing the proposed footprint for the 24ha residential subdivision, located just to the east of the town of Evandale

2.0 Environmental Setting of the Study Area

2.1 Introduction

Prior to undertaking archaeological survey of the study area, it is necessary to characterise the landscape. This includes considering environmental factors such as topography, geology, climate, vegetation and past and current landscape use. An assessment of the environmental setting helps to develop understanding of the nature of Aboriginal occupation and site patterning that might be expected to occur across the study area. In addition, it must be remembered that in Aboriginal society, the landscape extends beyond economic and technological behaviour to incorporate social geography and the embodiment of Ancestral Beings.

The archaeological context is generally only able to record the most basic aspects of Aboriginal behaviour as they relate to artefact manufacture and use and other subsistence related activities undertaken across the landscape such as raw material procurement and resource exploitation. The distribution of these natural resources occurs intermittently across the landscape and as such, Aboriginal occupation and associated archaeological manifestations occur intermittently across space. However, the dependence of Aboriginal populations on specific resources means that an understanding of the environmental resources of an area accordingly provides valuable information for predicting the type and nature of archaeological sites that might be expected to occur within an area.

The primary environmental factors known to affect archaeological patterning include the presence or absence of water, both permanent and ephemeral, animal and plant resources, stone artefact resources and terrain.

Additionally, the effects of post-depositional processes of both natural and human agencies must also be taken into consideration. These processes have a dramatic effect on archaeological site visibility and conservation. Geomorphological processes such as soil deposition and erosion can result in the movement of archaeological sites as well as their burial or exposure. Heavily vegetated areas can restrict or prevent the detection of sites, while areas subject to high levels of disturbance may no longer retain artefacts or stratified deposits.

The following sections provide information regarding the landscape context of the Glenview farm dam study area including topography, geology, soils and vegetation.

2.2 Landscape Setting and Hydrology of the Study Area

The study area is located just to the east of the town of Evandale, in the Northern Midlands region of Tasmania (see Figures 1-3). The Northern Midlands region is characterised by extensive lowland plains and rounded topography which ranges from gently sloping to steep. The northern portion of the region is bounded by the dolerite-capped escarpment of the Great Western Tiers to the west, and the Ben Lomond Plateau in the north-east. The Midlands region is comprised of the Launceston Basin; the valley between these landforms.

The South Esk River and its tributaries, including the Macquarie, St Pauls, Elizabeth and the Blackman Rivers, drain all the northern portion of the Midlands (Matthews *et al* 1996). The South Esk River is the largest of the water courses in the general vicinity of the study area, being situated around 2km to the west. The South Esk River has its origins in the rugged ranges around Ben Nevis and Mt Saddleback, and eventually empties into the Tamar River at Launceston. In the area around Evandale, the river flows through a broad open valley system, with a wide flood plain. The only other named water course in the vicinity of the study area is Boyes Creek, a semi-permanent water course, which is situated around 500m to the south. There are no named water courses within the study area. The only water course that occurs in the study area boundaries is the head waters of a small ephemeral creek that flows through the northern corner of the study area.

The terrain across the study area is characteristically flat to very gently undulating, with slope gradients typically in the range of between 1-5° (see Plates 2 and 3). Only in the very northern portion of the study area does the slope gradient increase to between 5-10° (see Plate 4). The area is well drained, and is slightly elevated above the lower lying flood plains of the South Esk River. To the east and north of the study area are a series of prominent hills and tiers.



Plate 2: View south across the central portion of the study area showing the typical flat to gently undulating terrain



Plate 3: View east across the southern portion of the study area showing the flat to gently undulating terrain



Plate 4: View north-west across the northern portion of the study area showing the more moderately undulating terrain around the headwaters of an ephemeral creek

2.3 Geology and Soils

The underlying geology across the study area comprises non-marine sequences of gravel, sand, silt, clay and regolith (see Figure 4 and Plate 5). There are no stone outcrops occurring anywhere across the study area. In terms of soils, the study area lies almost entirely on lateritic podzolic soils (Australian Soil Classification: chromosol) developed on flat to gently undulating (0-3%) river terraces. In the north and north-east, and to a smaller extent north-west, soils developed on deeply dissected Tertiary sediments of the Launceston Basin can be found (see Figure 5).

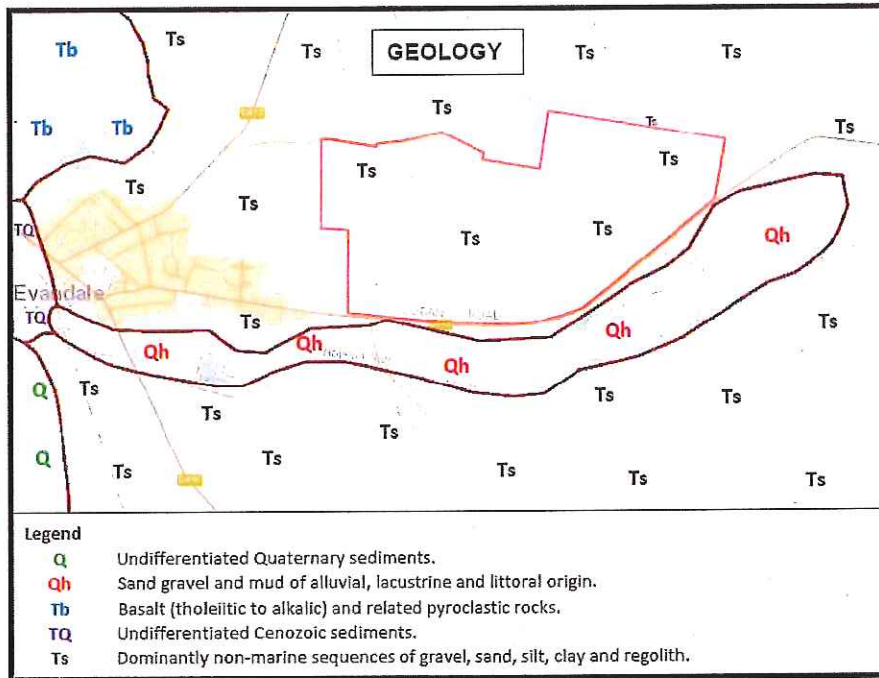


Figure 4: Geology underlying the study area. Image modified from The LIST (Geological Polygons 1:250K) accessed 15 June 2018



Plate 5: Non-marine sequences of gravel, sand, silt, clay and regolith that occur across the study area

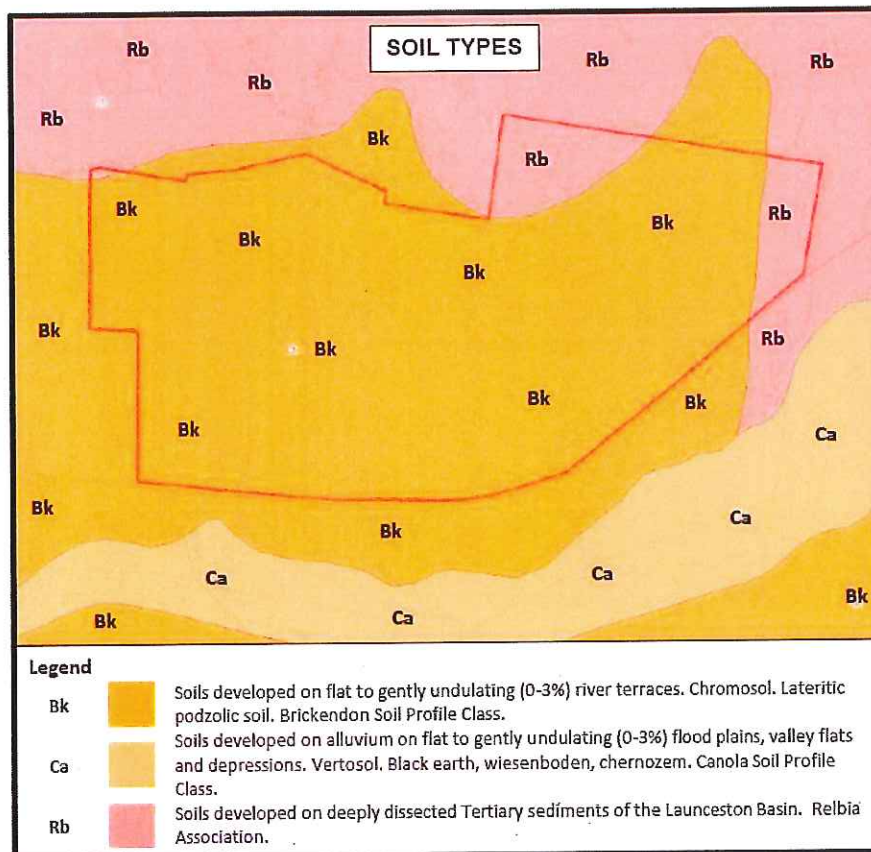


Figure 5: Soil types across study area. Image modified from The LIST accessed 15 June 2018

2.4 Vegetation and Past Landscape Use

The study area footprint is situated within a rural landscape, encompassing a series of farm paddocks that has been almost entirely cleared of native vegetation, and regularly ploughed and cropped (see Plate 6). Within the north-west portion of the study area there are three small remnant patches of lowland grassland complex (see Figure 6). A few mature Eucalypts are also scattered across the study area (see Plate 7).

In addition to the vegetation clearing and agricultural practices, there are a series of farm dams that occur across the study area (see Plate 8), as well as graded vehicle tracks and fences. In the southern portion of the study area there is a homestead complex (see Plate 9), and a range of machinery sheds and barns.

Importantly, sites located within cleared agricultural areas will necessarily have been adversely impacted by agricultural and development activities, unavoidably compromising the integrity of any cultural sites retained within these areas. The extent to which these sites have been impacted will range from total obliteration to dramatic movement in spatial and temporal context. As such, sites located within these kinds of disturbed environments are always compromised in their archaeological integrity. There is very little potential for in situ sites to occur within the study area. The possible exception is where the small remnant patches of lowland grassland complex occur.

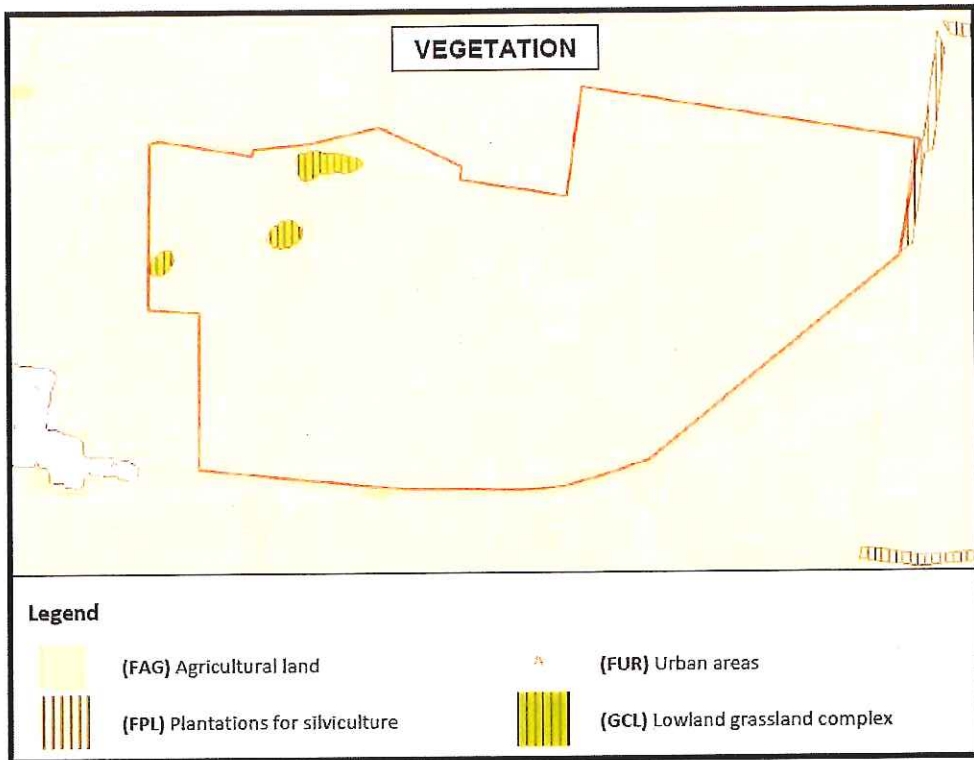


Figure 6: Vegetation across study area. Image modified from The LIST (TASVEG 3.0) accessed 15 June 2018



Plate 6: View north across the study area showing farm paddocks that have been cleared of native vegetation and ploughed



Plate 7: view south across the study area showing a remnant stand of mature Eucalypts



Plate 8: one of several farm dams that occur across the study area



Plate 9: The homestead that occurs in the southern portion of the study area

2.5 Climate

The study area has a cool, wet climate typical of inland northern Tasmania. Rainfall occurs throughout the year; with a mean annual rainfall of 589mm. Rainfall is highest in August and September (64 – 71mm) and lower from January to February (28 – 31mm). The warmest months of the year are January and February, when mean temperatures range from minimums of 10°C to maximums of about 23°C. Winter tends to be cold with mean annual temperatures in the coldest months of June and July ranging from 1.5°C mean minimum to maximum temperatures of about 11°C (BOM 2018).

3.0 Ethno-historic Background

3.1 Ethno-historic Overview

The following provides a brief overview of the nature of pre-contact Aboriginal groupings, Aboriginal concepts of land ownership, and the relationship of both these to pre-contact Aboriginal land use in Australia. The purpose is to establish a basic framework of understanding regarding Aboriginal social organisation, within which the archaeology of the study area may be viewed. Such an understanding is an essential prerequisite to any archaeological research analysing the relationship between Aboriginal people and their environment.

The model of Aboriginal society divided into a series of tribes based on Tindale's 1974 publication is now generally considered to be defunct. However, it permeates current anthropological debate and a brief summary is therefore warranted. The tribe is described by the early ethnographers as having rights over a defined tract of land, that included control over entry to people from outside and the right to hunt and extract resources from within the bounds of that area (Keen 2010:46). Several contemporary researchers have argued that the concept of a tribe does not account for the complexities of social interaction and organisation found in Aboriginal society (e.g. Keen 2004). There has been a shift to attempt to describe Aboriginal society as multi layered and to explore interconnected relationships that operated within broad social groups.

In Australia the band is generally considered by anthropologists as the basic social and economic unit in pre-contact Australian Aboriginal society (Service 1966, Peterson 1975). The band is described as a small scale population, comprised of between two to six extended family units, or about 14 – 33 people, which together cooperate in the food quest (Service 1966; Keen 2004:106). The composition of this group (in terms of numbers) was not rigid; group size fluctuated in response to factors such as the availability of resources and visiting kin (Peterson 1976).

Individual bands occupied and exploited a specific 'range', or territory (Service 1966). The concept of a band's 'range' is not easily defined, and is therefore difficult to delineate. The ideal method of defining range would be to identify the outermost points of an area used by a group in order to demonstrate the total area in which that band operated. Yet, as Peterson (1986) points out, the kind of evidence needed to achieve this, (details of daily movements over several years) is not available for any group within Australia. Nor is such evidence likely to be discernible in the archaeological record. The practical alternative, both from an archaeological and an anthropological perspective, is to identify the base camps used over a period of time by a group. This provides a rough equivalent of a band's 'home range'.

Environmental Determinants of Social Organisation

Ecology is, according to Peterson (2008:186) a 'crucial variable' when assessing range. In cultures across the world it is impossible to separate natural landscapes from cultural landscapes (White 2003:188). From an archaeological perspective, it is

equally impossible to discuss economy and subsistence without reference to the environment.

As Sutton (2008:170) explains, WEH Stanner explored the connectedness of economy, environment and spirituality over forty years ago. Stanner's famous paper 'Aboriginal territorial organisation: estate, range, domain and regime' published in *Oceania* in 1965 was a benchmark as it provided a new framework within which to define and discuss Aboriginal land ownership (Peterson 2008:185). This framework separated concepts of land ownership from the land that people actually used. This was a fundamental shift that has influenced the last forty years of anthropological debate (Peterson 2008:185).

In coastal and riverine environments where a higher population density could be supported, compared to desert environments, people could lead more sedentary lives (Keen 2004:103). In these situations the social organisation of neighbouring groups could become individualised; whereas in more arid climates people relied on being able to traverse vast tracts of land to access food and water, requiring closer social relations with neighbouring people (Keen 2004:103).

This argument reflects Louis Binford's model of 'foragers' and 'collector' societies. Foragers are highly mobile groups that move regularly and as a whole group, to new locations in order to exploit resources. In contrast, collector societies may move less often but rely on individual members of a society venturing out beyond the camp site location in order to provide the group with resources to continue residing at the location (Keen 2004:104). Keen (2004:104) suggests that most Australian Aboriginal societies fall within Binford's 'collectors' model – forming home bases and voyaging out from these bases to exploit resources from the surrounding area, which could be very large. As Keen argues, availability of foods, food preferences, production techniques and methods of transport all affect the means by which Aboriginal people across Australia were able to access food resources at varying times of the year. These factors therefore greatly affected mobility; groups had to be able to mobilise and move to where the preferred, available and accessible foods were located (Keen 2004:23).

From an economic perspective, it was vital for Aboriginal people to be organised into bands, as this made groups more effective at surviving. Subsistence becomes more efficient and reliable if people are organised into groups that are larger than the nuclear family. This increases the number of 'producers' (people who can actively provide food for a group) and acts as a buffer against the sickness, injury or death of any one individual (Keen 2004:105). However, these groups never become too large, as increased numbers reduce the mobility of the band, as well as potentially leading to broader social disintegration (Keen 2004:106).

Keen (2004:126) suggests that seasonal mobility is also influenced by rainfall. For example, in Gippsland where there are clearly defined seasons, but steady year-round rainfall, people operated within a broad seasonal migration pattern. However, in the Western Desert where rainfall is much less reliable, there was a weaker

pattern of seasonal movement. Regular droughts brought on by the El Nino cycles and other more haphazard climatic events all influenced the seasonal movement based on food resources that Aboriginal people required (Keen 2004:79). This affected issues of range, ceremony and interactions with neighbouring groups (Keen 2004:79).

The above discussion demonstrates that the factors that influence selection of a 'home base' are varied. Access to fresh water is probably the most fundamental requirement, and will be common to all home base sites. Distance to food resources is the next consideration. As Keen (2004:104) notes it may be that home sites are better located adjacent to less transportable resources, rather than in areas where there is the highest abundance of food items. The distance that an individual collector can travel within a single day forms an important scope of the range of the home base, and therefore the size of the resource pool available. Keen (2004:104) suggests that in hunter-gatherer societies around the world, a distance of 20-30km is considered the maximum foraging distance from a home base. People could then establish smaller temporary camps away from the central home site to enable longer foraging journeys (Keen 2004:105).

Despite the difficulties faced in defining ranges, Peterson (1986) believes there is good evidence for supposing that bands are localised and generally have bounded and exclusive ranges. The most significant evidence is ethnographic accounts recording the elaborate rites of entry accorded to visitors when entering a bands range (see Peterson 1986). However, there is no evidence to suggest that members of a band actively defended the boundaries of these ranges (Peterson 1986). Rather, it appears that the boundaries of a group's 'range' were not necessarily clearly demarcated lines. Trigger describes these overlapping boundaries as 'zones of transition' (Trigger 2010:155).

Aspects of Aboriginal Social Organisation

Individual bands were by no means a social or cultural isolate, but rather interacted with each other in a variety of ways. Typically, these interactions involved visitations, marriage, ceremonies and trade. Through these interactions, links were established or re-affirmed between neighbouring bands. The result was the formation of a cluster of bands, wherein there was some sense of collective identity, often expressed in terms of possessing a common and distinctive language (White & Cane 1986). This group corresponds to the nineteenth and early twentieth century concept of a tribe.

Linguistic inheritance could be multi-layered. Trigger (1992:104) records how in some northern Australian societies most people were (a) multi-lingual and (b) adopted a primary linguistic label based on whether their present circumstances were aligned. This implies that linguistic affiliation was perhaps a less formal and more adaptive social mechanism. Trigger (1992:105) suggests that this undermines the concept of linguistic groups, which was a characteristic often used in the past to define tribal groups. Most people in pre-contact Aboriginal society were multi-lingual and marriages outside of the language group were common (Keen 2004:134).

Indeed, within some totemic groups several languages were spoken (Keen 2004:135).

Keen argues that a shared language did not necessarily indicate shared cosmic beliefs or social customs, nor did language or dialect clearly define social groups (Keen 2004:135). Rather, Keen suggests that broad social groups tended to define themselves more by location, with reference to the type of environment (coastal, hinterland etc.) or direction (northerners or southerners) (Keen 2004:135). Groups were also sometimes named after and therefore defined by, the name of the leader or a prominent person in that community (Keen 2004:135). Blundell (2003) discusses how the Wandjina rock art sites of the Kimberly formed the cultural and cosmic centres for the 'little countries' or 'dambina' which correlate with concept of an estate as used by anthropologists (Blundell 2003:162).

Keen (2004:170) presents a model of the complexities of Aboriginal society, where an individual's identity depended largely on context. In some situations, Keen argues, language was the defining factor, in another the broad region to which you claimed affinity, and in yet other circumstances it may be the totemic identity that was important. Interestingly, Keen (2004:170) suggests that identity was 'most clearly defined' in areas rich in resources, such as coastal zones, while people in more arid environments had less strongly applied rules governing identity. This reflects the imperative for desert people to be on solid relationships with their neighbours. The following section discusses issues of Aboriginal connection to the land in more detail.

Concepts of Aboriginal Land Ownership

The band was in essence a land using group, but not a land owning group. Land ownership was vested in 'the tribe' or 'corporate group' which is defined as a broad group of people that shared social characteristics, and was often tied to having rights over certain tracts of land, known as an 'estate' (Keen 2004:134; Peterson 1986).

It is uncertain whether clans within eastern Australia were strictly patrilineal (as is suggested in other parts of Australia), or whether membership was determined more on the basis of place of birth (White and Cane 1986). Keen (2004:136) argues that across Australia it was common for totems to be partifilial, where a child took their father's totem, and that this was strongly tied to land ownership. The totem was an important feature of Aboriginal society and was used to define individuals, small groups and larger groups (Keen 2004:135). This was by no means the only form of land connection across Australia; in some parts a person's place of birth determined which country they were tied to (Keen 2004:137).

The system of partifilial transition of land ownership concepts is reflected in Peterson's 1811 account of Bennelong's sense of ownership of Goat Island (Keen 2010:45). Patterson wrote that Bennelong had 'inherited' Goat Island from his father, and that he in turn had the right to pass it on to his companion By-gone (Keen 2010:45). This is supported by Eyre's 1845 observations about the hereditary transmission of Aboriginal land ownership (Keen 2010:46).

Where matrilineal systems operated (where a totem was passed from mother to child) it tended to cause people of the same totemic identity to be dispersed among several land based groups. In this way, matrilineal relations become important when determining marriage and other social ceremonies, but were not generally connected to land ownership (Keen 2004:137).

Ancestral law was the defining principle that controlled access to country and landmarks, including water sources (Keen 2004:299). Tied to this notion are concepts of cosmology, religion and the ongoing influence of the ancestors (Keen 2004:303). Keen suggests that: 'ancestral significance integrated country, resources and technologies into the all-encompassing framework of ancestral law, not only as a mode of control, but as a way of being.' (Keen 2004:303). Myers has also argued that ownership of territory was largely vested in knowledge of the 'stories, objects, and ritual associated with the mythological ancestors of the dreaming at a particular place (in Peterson 2008:192).

Ethnographic and anthropological research provides a context within which to view the archaeological record. The overview presented here reveals the complexities of Aboriginal societies across Australia. It indicates the interrelated nature of the environment, religion and social structure in pre-contact Aboriginal societies and has implications for discussions of the archaeological record.

3.2 Aboriginal Social Organisation in Tasmania

The discussions presented in Section 3.1 regarding concepts of Aboriginal social organisation and notions of land ownership should be taken into account when reviewing the following social structure described for Aboriginal society in Tasmania. Ryan (2012) explains that the terms 'nation' and 'clan' are the preferred terms used by the Tasmanian Aboriginal community in place of 'tribe' and 'band' respectively. This terminology has been adopted in the following discussion.

According to Jones (1974), the social organisation of Tasmanian Aboriginal society appears to have consisted of three social units, these being the hearth group, the clan and the nation. The hearth group was the basic family unit and would generally have consisted of a man and woman, their children, aged relatives and sometimes friends and other relatives. The size of hearth groups would generally range from between 2-8 individuals (Jones 1974; Plomley 1983). Plomley (1983) provides a description made by Peron of a hearth group he encountered at Port Cygnet.

'There were nine individuals in this family, and clearly they represented a hearth group, because Peron visited their campsite with its single hut. The group comprised an older man and wife, a younger man and wife, and five children, one a daughter (Oure-Oure) of the older man and wife, and the other four the children of the younger man and wife (Plomley 1983:168).

The clan (band) appears to have been the basic social unit and was comprised of a number of hearth groups (Jones 1974). Jones (1974:324-325) suggests that the band owned a territory and that the boundaries of this territory would coincide with well-marked geographic features such as rivers and lagoons. Whilst the band often

resided within its territory, it also foraged widely within the territories of other bands. Brown (1986:21) states that the band was led by a man, usually older than the others and who had a reputation as a formidable hunter and fighter. Brown also suggests that the band (as well as the hearth group) was ideally exogamous, with the wife usually moving to her husband's band and hearth group.

Each band was associated with a wider political unit, the nation. Jones (1974:328-329) describes the nation (tribe) as being:

'...that agglomeration of bands which lived in contiguous regions, spoke the same language or dialect, shared the same cultural traits, usually intermarried, had a similar pattern of seasonal movement, habitually met together for economic and other reasons, the pattern of whose peaceful relations were within the agglomeration and of whose enmities and military adventures were directed outside it. Such a tribe had a territory, consisting of the sum of the land owned by its constituent bands...The borders of a territory ranged from a sharp well defined line associated with a prominent geographic feature to a broad transition zone.'

According to Ryan (2012:11), the Aboriginal population of Tasmania was aligned within a broad framework of nine nations, with each nation comprising between six to fifteen clans (Ryan 2012:14). The mean population of each nation is estimated to have been between 350 and 470 people, with overall population estimates being in the order of between seven to ten thousand people prior to European occupation (Ryan 2012:14).

The study area falls within the north-eastern portion of the territory of the North Midlands Nation, as shown in Figure 7 (Ryan 2012:15). The boundary of the North Midlands Nation ran from approximately St Peters Pass to Quamby Bluff in the west, and then extended through the Deloraine district through to the west edge of the Tamar Valley, and along the north coast of Tasmania. From here it ran south-east along the Pipers River, through to Launceston, then eastwards along the South Esk River through to St Paul's Dome. In total, the North Midlands nation occupied an area of approximately of 6,750km², and incorporated around 160km of coastline (Ryan 2012:29).

The North Midlands Nation was comprised of at least three clans. These were the Leterremairrener (Port Dalrymple people) who were located around the east Tamar, the Panninher (Norfolk Plains people) located around the Norfolk Plains, and the Tyerrernotepanner (Stoney Creek or Campbell Town people) who were situated in the vicinity of Campbell Town. There was possibly a fourth clan around the York Town area, west of the Tamar, and a fifth around the Isis River (Ryan 2012:29). Each clan is thought to have been comprised of between 50-80 people, with the overall population of the North Midlands nation estimated at between 300-400 people (Ryan 2012:29).

The North Midlands nations were among the first to experience British invasion in northern Tasmania in 1804, and as such, insufficient information exists as to the

exact location of each clan. However, the clan most likely to have had rights over the land within which the study area is located is the Panninher clan who extensively utilized the plains areas surrounding Perth (Ryan 2012).

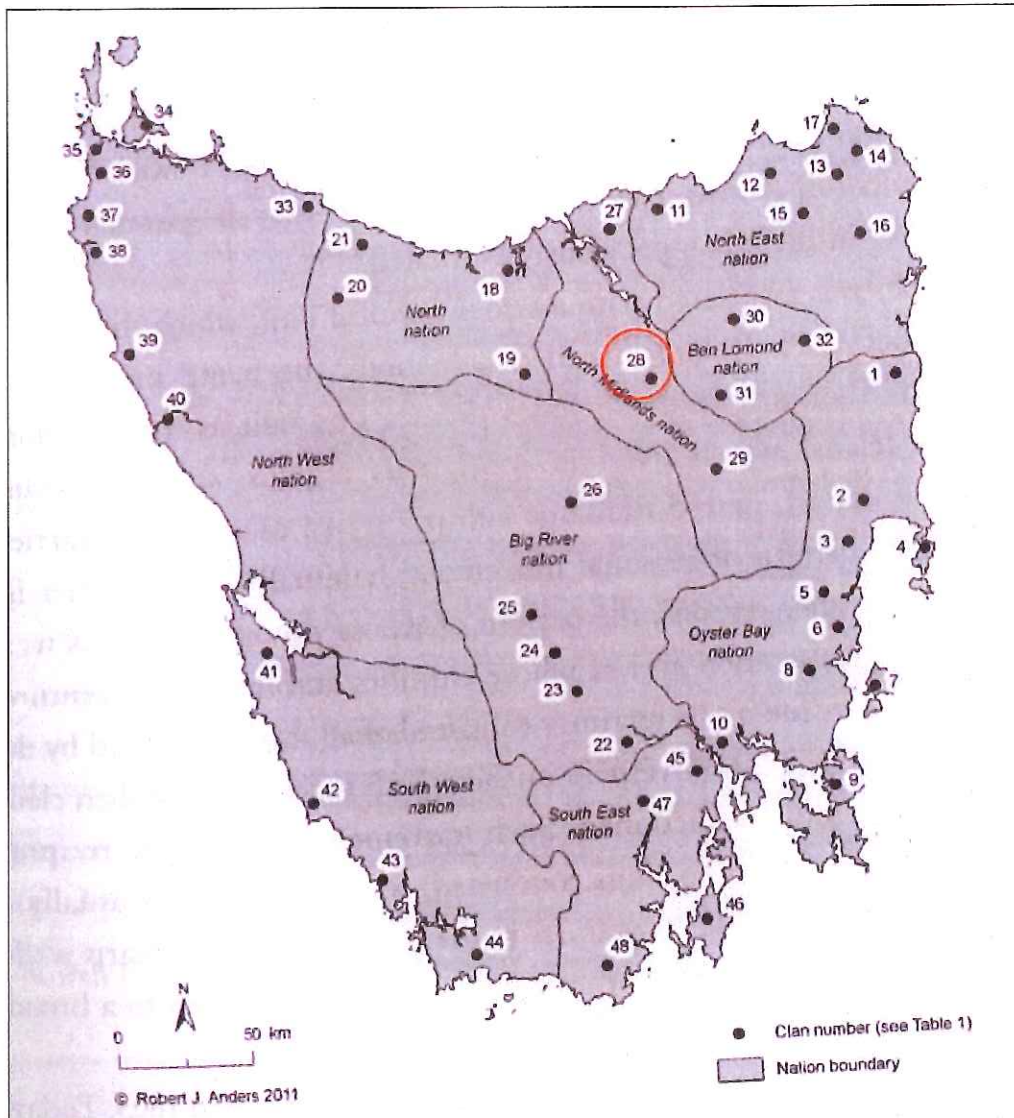


Figure 7: The Aboriginal Nations of Tasmania in relation to the study area (Ryan 2012:15)

The largest kangaroo hunting grounds in Tasmania lay in the heart of North Midland country at Campbell Town, Norfolk Plains and Launceston, together with the rich marine and bird life provided by the Tamar River. As such, the North Midland nation had extensive relations with neighbours of the North, North East, Big River, Ben Lomond and Oyster Bay nations (Ryan 2012:31). These connections in turn facilitated seasonal access of the North Midland nation to the east coast at Oyster Bay through negotiations with the Oyster Bay Nation (Ryan 2012:31) and the existence of other seasonal travel routes to the east venturing into the territory of the Ben Lomond Nation to exchange ochre (Ryan 2012:31). Other major ochre sources in Tasmania were in the Western Tiers, in the territory of the North Nation.

The Panninher (Norfolk Plains clan) are said to have spent the winter on the lower reaches of the west bank of the Tamar exploiting available shellfish and swan eggs, before returning to their own country to exploit the hunting grounds in spring (Ryan 2012:31). Seasonal movement to the Great Western Tiers to obtain ochre in autumn is also recorded (see Figure 8).

Very few available ethno-historic accounts exist, that relate to aspects the material culture of the North Midlands Nation. One description of the huts used by the Aboriginal people of the Midlands is provided by John Bass in 1799 at Port Dalrymple:

'Their huts, of which seven or eight were frequently found together like a little encampment, were constructed of bark torn in long strips from some neighbouring tree, after being divided transversely at the bottom, in such breadths as they judge their strength would be able to disengage from its adherence to the wood, and the connecting bark on each side. It is then broken in convenient lengths, and placed, slopingwise against the elbowing part of some dead branch that has fallen off from the distorted limbs of the gum tree; and a little grass is sometimes thrown over the top. But after all their labour, they have not ingenuity sufficient to place the slips of bark in such a manner as to preclude the free admission of rain'

(Collins 1971, as reported in Kee 1990:17).

In a diary entry dated 22/10/1831, Robinson provides a comparatively detailed description of the clothes and tool kits used by people of the North Midlands Nation:

'The costume of the native women is a mantle made of kangaroo skin. Their implements consist of a short stick eighteen inches long sharpened at the end similar to a chisel, and with this implement they bark the tree and use it in the same way a carpenter would use the same sort of tool. Instead of the mallet they use a stone. The wooden chisel is made to answer the purpose of a lever, hence we may call them mechanics. It is the business of the woman especially of the inland tribes to fetch wood for the fire. If the woman is married she carries her own and her husband's burden. Part of their luggage consists of a mull, a flat stone which the men use for the purpose of preparing the pomatum to dress their hair with. The woman also carried with her for this purpose a large quantity of ochre. It is the business of the women also to hunt and catch opossum and for this purpose they carry a rope which they make of the long cutting grass of the iris. They also hunt other small animals, look for eggs &c. They carry with them also a sharp stone with which the men make their spears and waddies. The men carry their spears and waddies, their only weapons except stones which they throw with great dexterity. It is the business of the men to hunt kangaroo. The men also wear a mantle of kangaroo skin' (Plomley 1966:531).

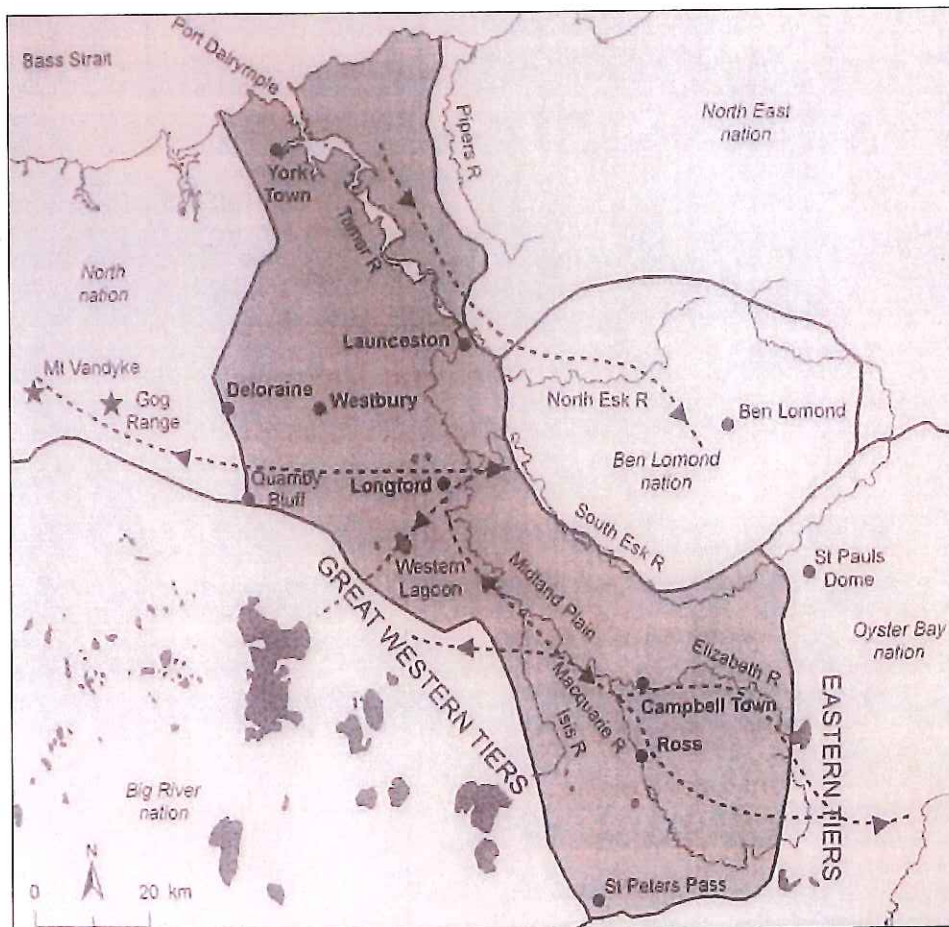


Figure 8: Settlement and movement patterns of the Midland Plain clans (Ryan 2012:30)

In an earlier diary entry dated 20/9/1831, Robinson describes that tea trees were procured to provide relatively straight timber with which spears were manufactured (Plomley 1966:215).

Robinson also records a number of instances of Aboriginal people in the Midlands using ochre for hair and body decoration. In one account, Robinson observes:

'Previous to setting off the natives ochred or painted themselves. It might appear ludicrous to civilised society to see people daub their hair with a thick substance of ochre and grease, but I observe that my natives at Campbell Town procured some soft red brick which they pound into dust mixing it with grease to anoint their heads. I have not yet ascertained their particular motive for this custom and it is particular to only a few tribes' (Plomley 1966:501).

In terms of food resources, Robinson provides a series of accounts in his diary entries of the range of foods eaten by the North Midlands Tribe. Birds and eggs appear to have formed a major component of the diet of the local inhabitants, with swans, ducks and red bills being some of the main species targeted (Plomley 1966: 217). A range of mammal species are also documented as having been hunted and eaten, including forester kangaroo, wallaby, kangaroo rat (possibly bandicoots), and

possums (Plomley 1966). In a diary entry dated 22/10/1831, Robinson provides an interesting account of a kangaroo hunt undertaken by Aboriginal men:

'...when the natives hunt...they surround the animal, and hence it is driven from one position to another till at length it becomes exhausted, when they rush upon it and seize the prey' (Plomley 1966:555-6).

Only a few plant foods are documented in the ethno-historic accounts as having been eaten. This includes a bulbous plant known as 'native bread' and a plant that has the appearance of asparagus that was found by the roots of peppermint trees (Plomley 1966). It is very likely that many more plant foods were eaten by the local Aboriginal population.

3.3 Culture Contact and Frontier Violence

The first recorded meeting between Europeans and the Aboriginal people of north east Tasmania was in 1773 when Tobias Furneaux sailed into, and named, the Bay of Fires for the smoke he saw along the coast (Kee 1987:15). A quarter of a century later Jean-Baptiste-Louis Clarke Theodore also recorded smoke on the north east coast (Plomley 1966, in Kee 1991:8). In 1800 Matthew Flinders observed smoke on the northern coast, but noted that the Furneaux Islands appeared uninhabited (Kee 1987:15). Bass accompanied Flinders on further voyages later in 1800 and he observed that while smoke was often visible from ships, the people ran into the bush at the approach of Europeans (Kee 1987:15).

In 1804 Lieutenant Colonel William Patterson founded the European settlement at George Town. This camp was short-lived, with the party moving within a few weeks to the west bank of the River where they established York Town. The Port Dalrymple (Launceston) settlement was established in 1806. Hence, the study area was impacted from the very earliest phase of European settlement of Tasmania. The Leterremairrener people would have been among those Aboriginal clans that bore the brunt of the contact period.

By the early nineteenth century sealers and whalers had established hunting grounds in the Bass Strait and inhabited islands and parts of the coast. In 1816 a sealer James Kelly met up to 300 people at George Rocks. Kelly traded culled seals with the Aboriginal people of the coast in exchange for kangaroo (Kee 1987:19).

While there are some suggestions that initial contact between Aboriginal people and the whalers and sealers may have been friendly, Ryan's research on the North Midland nation indicates that 'at least 300 were probably killed outright by the settlers between 1820 and 1830' (Ryan 2012:19) and by the time George Augustus Robinson was moving through the area in 1830 – 1831, the sealers had instilled widespread terror among the Aboriginal people (Kee 1987:16). The sealers typically abducted women to be wives and to work on the sealers camps, and Robinson recorded that people along the northern coast referred to the murder of Aboriginal people at all the places where the sealers camped (Kee 1987:16).

This violent contact between Aboriginal people and Europeans, especially sealers, along the north east coast had disastrous implications for the North Midlands nation. Apart from individual, emotional devastation, the loss of large numbers of women disrupted social organisation, as well as impacting on economic systems of gender-based division of labour (Kee 1987:16).

4.0 Background Archaeology

4.1 Overview of Tasmanian Archaeology

Chronology of Tasmanian Archaeology

Occupation of Tasmania has been established to 34 000 years BP when Tasmania was connected to the mainland as part of the greater Australian land mass. Parmerpar Rock shelter in central north Tasmania, just below Cradle Mountain was excavated by Richard Cosgrove and produced an occupation sequence spanning from 34 000 years BP through to a few hundred years ago (Mulvaney and Kamminga 1999:189). The excavation of Kutukina Cave in south west Tasmania by Don Ranson and Rhys Jones established Pleistocene settlement of Tasmania with radio carbon dates suggesting occupation to 20 000 years BP (Mulvaney and Kamminga 1999:182).

By 12 000 years BP Tasmania had become separated from mainland Australia by rising sea levels associated as with the end of the Last Glaciation (Kee 1987:12). The formation of the Bass Strait led to the effective isolation of Tasmania from mainland Australia. This resulted in the development of cultures and economies largely independent of mainland influences (Mulvaney and Kamminga 1999:339). Tasmanian sand dune systems began forming in this period as reduced rainfall and lower temperatures led to reduction in vegetation from 22 – 10 000 BP. During this period the coastal dunes and plains systems formed, supporting an abundance of resources (Kee 1987:14). Sea levels stabilised around 6 000 years ago and therefore midden sites on the current coastline are likely to be less than 6000 years old (Kee 1987:12).

Two caves excavated at Rocky Cape in northwest Tasmania by Rhys Jones established a chronology from 8000 years ago through to European contact (Mulvaney and Kamminga 1999:346). The stratified midden deposits are important evidence in two of the main debates in Tasmanian archaeology; the issue of why fish becomes absent from the diet around the Mid Holocene and the shift away from use of bone point technology. At Rocky Cape scale fish disappear from the midden between 3800 and 3400 years ago. Bone points and spatulas in the lower levels of the deposit indicate bone working technology that is phased out from around 5 500 years ago and does not reappear in the deposits at Rocky Cape. Stone tool technologies also differ between the earlier unifacially flaked pebbles and retouched flakes and after 5 500 years ago a shift to increased stone artefacts, featuring disc shaped core tools, small concave edged flakes and very small flakelets (Mulvaney and Kamminga 1999:348).

Early European observers including William Bligh and Robinson recorded that Aboriginal people across Tasmania did not eat fish and indeed were repulsed by the idea (Mulvaney and Kamminga 1999:354). The archaeological record reflects this abstinence, as noted above fish bones disappear from the Rocky Cape midden around 3 500 years ago and subsequent excavations around the state have shown that fish was avoided from this point through till European settlement. Jones

proposed that the avoidance of fish was a cultural phenomenon, noting that fish was not a major part of the diet but would have resulted in a certain level of increase hardship, mainly during winter.

Harry Allen argued that the shift away from eating fish was an adaptive economical decision based on falling water temperatures around 3500 years ago that meant fish required increasingly more energy to obtain, and that more efficient energy sources such as seals and shellfish became the economical response (Mulvaney and Kamminga 1999:354-355). While, according to Jones and Colley, methods such as tidal traps and baited boxes to hunt fish are not especially labour intensive measures (Mulvaney and Kamminga 1999:355). The issue of fish in the diet and culture of Tasmanian Aboriginal people remains as a major archaeological question.

From the Mid Holocene about 4000 years ago there is evidence for expansion into areas previously uninhabited, including the north coast hinterland (Mulvaney and Kamminga 1999:345). Lourandos suggested that this was related to the use of fire to open up more vegetated areas and easing access through them. There is also evidence for the emergence of regional exchange systems in the Mid Holocene, notably through the appearance of spongelite chert at various locations (Mulvaney and Kamminga 1999:346). Along the north-west coast, abalone and crayfish appear in to become introduced to the marine economy at this time (Mulvaney and Kamminga 1999:346).

Archaeological Evidence of Material Culture

Tasmanian material culture differs from that of the mainland largely through the absence of several tool types including spear throwers, boomerang, shields, fishing equipment, hatchets, adzes and grinding stones (Mulvaney and Kamminga 1999:343). There is evidence of some ground stone tools and Mulvaney and Kamminga (1999:343) suggest that any absence must have a 'cultural bias' rather than reflecting a lack of technical knowledge.

The material culture observed by the early European settlers was gender differentiated. Men are recorded using long wooden hunting spears up to three meters long and heavy wooden clubs. Women's toolkits included digging sticks, wooden clubs, a wooden wedge used to strip bark from trees and also in shellfish gathering. It also features bags made from skin, kelp and woven plant fibres (Mulvaney and Kamminga 1999:343). The stone tool assemblage across Tasmania appears to have been based on sometimes retouched and shaped flakes, cores and pebbles (Mulvaney and Kamminga 1999:343). Blade production does not seem to have been practiced in Tasmania (Mulvaney and Kamminga 1999:344).

Bone points are known from the Rocky Cape excavations dating back to 8 000 years ago but missing from the assemblage after 3 500 years ago (Mulvaney and Kamminga 1999:355). One bone point was excavated post 3 500 years BP. Sandra Bowdler proposed that bone points were related to making fish nets and that the disappearance of bone point technology is directly related to the shift away from eating fish that also occurred at this time (Mulvaney and Kamminga 1999:355).

However, Sarah Colley's investigations suggest that there is no evidence that fish were caught using nets. Jones proposed that bone points were used for piercing skins used for clothing and that the discontinuation of the technology reflects changes in how skin garments were made (Mulvaney and Kamminga 1999:355).

4.2 Previous Archaeological Investigations in the Tasmanian Midlands

A number of regional archaeological investigations have been undertaken in the Northern Midlands region over the past three decades. The most comprehensive, and pertinent investigations are those of Kee (1990) and Jackman (Entura 2011). The following provides an overview of these two studies

Kee (1990)

In 1990 Kee implemented the Midlands Regional Aboriginal archaeological site investigation, which was funded through the National Estate Grants Program. The primary objectives of the study were primarily to establish (on the basis of literary and field research) a predictive model of site location for the Midlands Region, and secondly to carry out a limited archaeological excavation with the aim of providing a temporal context for the information generated for the study.

As part of the study, Kee (1990) surveyed 72km within the Midlands area. This survey resulted in the identification of 236 Aboriginal sites. This brought the total number of known Aboriginal sites in the Midlands to 350. The vast majority of these sites are classified as isolated artefacts or artefact scatters. The exception is the coastal fringes in the midlands where shell midden sites tend to predominate. Stone quarries and suitable stone sources for procurement were identified in many locations throughout the Midlands, and a small number of rock shelters were also identified (Kee 1990).

As part of the analysis of the distribution of sites throughout the Midlands, Kee (1990) divided the Midlands into seven separate landscape divisions. These are Aeolian lunettes, coastal dunes and beaches, estuaries, lakes (uplands and lowlands), lowland hills and plains, upland hills and plains and rivers. The highest number of sites were identified in the Aeolian lunettes and coastal dunes, accounting for around 50% of the total number of sites recorded in the Midlands. Between 20 and 30 Aboriginal sites were recorded in each of the other five landscape divisions. Kee (1990) is of the opinion that the observed pattern of distribution accurately reflects true differences or variations in site densities throughout these different landscape divisions, and is not merely a product of skewed visibility or survey coverage.

Kee (1990) also noted a distinct difference in the distribution of site types within the Midlands Region, which she believes is also suggestive of differences in occupation patterns throughout the region. For example, the sites recorded around the margins of Lake Dulverton comprise mostly artefact scatters and rock shelters. Some of these sites are quite large (in terms of artefact numbers), and suggest intensive occupation. In contrast, the sites associated with the Aeolian lunettes were mostly small campsites located adjacent to lagoons, and are interpreted as being the

product of short term visitations to the area by small groups of people exploiting the resources of these lagoons and the associated hinterland areas.

One of the features of Kee's (1990) investigations is that the vast majority of sites identified as part of the field survey were recorded within ploughed farm paddocks, where the surface visibility is improved and the soils have been churned. This pattern of site location highlights the importance of good surface visibility in identifying sites during field surveys, and demonstrates how varying conditions of surface visibility can potentially skew the results of survey investigations. Kee (1990) does not really adequately address this factor in her assessment. It is plausible that the factor of surface visibility variations could be a major contributor to the pattern of site distribution observed for the Midlands, with site densities being highest in the Aeolian dunes and coastal areas where surface visibility is improved and lowest in the Riverine and Uplands areas where surface visibility is poor. The only way to adequately determine how accurate the perceived pattern of site distribution is in the Midlands region would be through extensive sub-surface investigations within the various landscape divisions.

The summary interpretation provided by Kee (1990) for the observed archaeological record of the Midlands Region is that the areas with observed higher site and artefact densities correlate with areas where there is an increase in available resources, making these areas attractive for human habitation, and facilitating prolonged periods of occupation. Those areas with lower site and artefact densities also correlate with areas of decreased resource availability, resulting in shorter, less frequent occupation of these areas by small groups of people.

Taking into account historic records for the region, Kee (1990) presents a seasonal model of occupation for the Midlands Region. This model involves the movement of Aboriginal people around inland resource rich zones such as lagoons and lakes in the spring and early summer months, with summer time spent on the north coast areas. It is suggested that the winter months may have been spent in the inland parts of the Uplands where there was good soil drainage.

Entura (2011)

More recently, Jackman (Entura archaeologist) undertook a comprehensive survey of the Midlands for the Midlands Water Scheme (2011). The survey by Entura (2011) covered an extensive area, with over 130km of survey transects across the Central Highlands and Midlands. The survey recorded 136 Aboriginal heritage sites that demonstrate the nature of past Aboriginal use of these regions.

Based on analysis of the 48 sites recorded by Jackman in the Midlands as part of the Midlands Water Scheme survey, Entura archaeologist Greg Jackman suggested several potential site distribution patterns (Entura 2011:43). In the Midlands, Jackman argues that the dominant site type will be Artefact Scatters and Isolated Artefacts. Open Artefact Scatters may be large and there is potential for stratified sites to occur. Other site types include quarries and stone procurement sites and

rock shelters and rock overhangs with associated archaeological deposits (Entura 2011:49).

Jackman suggests that open sites are likely to be closely correlated with permanent watercourses, with the majority of open sites recorded by Jackman situated within 500m of water. Moreover, large Artefact Scatters are most likely to be located along the margins of lakes, lagoons and floodplains where a range of other plant and terrestrial resources were available (Entura 2011:49). Occupation sites, such as artefact scatters, were often found to be located on benched terraces or low rises. Aeolian sand banks bordering lagoons and rivers have increased potential to contain archaeological deposits, as these provide elevated, well drained camp sites with close proximity to fresh water (Entura 2011:49).

Jackman noted that concentrations of sites also often occur in small, sheltered valleys at the foot of the various ranges, including Black Tier, south of Tunbridge (Entura 2011:50). This reflects the choice of sheltered camp sites along pathways used by groups of Aboriginal people moving between seasonal resource zones along ethnographically documented pathways.

One such clustering of sites occurs at the Salt Pan Plains and Kitty's Creek area at the foot of the Black Tier. At the gap between Salt Pan Plains and Kitty's Creek, there are a series of small artefact scatters and isolated artefacts. Jackman suggests that this may indicate that people regularly passed through this gap when travelling between the Central Tiers and the Midlands (Entura 2011:43). Jackman records this area as being of high archaeological sensitivity (Entura 2011:53). Jackman also suggests that the name Black Tier may be a reference to Aboriginal people living in this area at the time of European settlement, however, there is no documented historical basis to this tempting assertion (Entura 2011:43).

Quarry sites in the Midlands tend to target chert and hornfels outcrops occurring at the contact points of Jurassic dolerite and Permo-Triassic mudstone and siltstone deposits (Entura 2011:49). Chert quarries occur in outcrops of Tertiary claystone (Entura 2011:50).

4.3 Previous Archaeological Investigations in the Vicinity of the Study Area

A number of small archaeological/cultural heritage assessments have been undertaken in the area around Perth and Evandale. The majority of these studies have been undertaken as part of impact assessments associated with proposed residential developments and small scale infrastructure projects. The following provides a review of those studies for which reports were available.

A number of areas were surveyed along the Midland Highway for proposed overtaking lanes, including localities south of Woolmers Lane, North of Epping, Cleveland, Symmons Plains and South of Epping. However, given the disturbed context of many of these areas due to the initial construction of the highway, no Aboriginal sites were identified (Ross and Scotney 1990). A survey of the intersection between the Midland Hwy and Arthur St in Perth also failed to identify

any sites (Searle 1995), as did an assessment undertaken prior to the construction of the bypass road from Breadalbane roundabout to the South Esk River at Perth (Summers 2002). These areas are all located between 3-5km to the west of the current study area.

Investigations for the establishment of a large storage lagoon (500 x 350m) in an area 2kms to the south of Perth and within close proximity to the South Esk River also failed to produce any sites. This was largely attributed to high levels of historic disturbance of the landscape through agricultural activities (Stanton 2002). Heritage surveys have also been undertaken for proposed dam sites at Turkey Nest Creek, Native Point (Graham 2000), an in-stream dam site on the property of Mountford, located to the north of Perth (Graham 2004) and along Powranna Rd, Cressy (355 and 302 megalitre) farm dam sites; no sites were identified (Graham 2007a, 2007b) in any of these localities. Again, these areas are located to the west of the current study area.

CHMA (2013) carried out an Aboriginal heritage assessment of the proposed Perth to Breadalbane Bypass Project (to the north-west of the current study area). In the course of the field survey assessment, only one Aboriginal site was identified within the study area corridor. The site (TASI 11897) is classified as an isolated artefact which was located on a graded vehicle track, approximately 1km north of the township of Perth and 100m west of the Midland Highway (CHMA 2013:49). In addition, one Potential Archaeological Deposit (PAD) was identified within the study area corridor (PAD1). The PAD area which measures 100m x 90m encompasses the lower section of the spine of a small spur line that runs in a north-east to south-west direction down from the south-west side slopes of Gibbet Hill. The spur overlooks low lying flood plains to the south-west, and terminates 40m north-east of an ephemeral creek line that drains these flood plains. Based on predictive modelling, it is anticipated that low-moderate densities of artefacts may be present within this area (CHMA 2013:49). CHMA (2013:53-54) was of the opinion that the available evidence indicated that site and artefact densities within the road corridor study area are likely to be low. The most likely site types that may be present would be small artefact scatters and isolated artefacts which would probably be representative of occasional foraging or short duration camping.

CHMA (2014a) was engaged by TasWater to undertake an assessment of a proposed Mains Water Pipeline project at North Perth (just to the north-west of the study area). CHMA (2014a:45) identified one Aboriginal site during the survey. The site corresponds (both in terms of location and description) with the previously registered site TASI 1711. Site TASI 1711 is classified as an Aboriginal stone quarry site with an associated scatter of stone artefacts. The site is located along the margins of Flinty Creek, immediately to the north of the junction with the South Esk River. CHMA (2014a:45) recorded a scatter of stone artefacts along a 260m length of Flinty Creek, between grid references E515444 N5398752 and E515415 N5399010 (GDA 94). At least 15 stone artefacts were identified within this area, with all of these artefacts being situated within the creek bed of Flinty Creek, or within 5m of the creek bed. CHMA (2014a:45) noted that surface visibility along the margins of Flinty Creek

was typically very poor due to thick vegetation cover, averaging around 5%. As a consequence, it was not possible to accurately determine the spatial extent of artefact material associated with site 1711, particularly how far out from the creek bed artefact material was distributed. Besides TASI 1711, CHMA (2014a) reported that no other Aboriginal heritage sites or specific areas of potential archaeological sensitivity were identified along the proposed pipeline route easement options.

Also in 2014, CHMA was engaged by State Growth to undertake an Aboriginal heritage assessment for the proposed Perth Southern and Western Bypass Project (5km to the north-west of the current study area). The field survey assessment resulted in the identification of two Aboriginal sites (AH13020 and AH13021), with both sites being classified as isolated artefacts (CHMA 2014b:2). In addition, two Potential Archaeological Deposits (PADs) were identified within the study area corridor (PAD1 and PAD2). PAD1 was located in the western portion of the study area corridor, and encompassed the spine of a prominent spur line that runs in a north-west to south-east direction down from a series of hills that fringe the western edge of the study area corridor. PAD2 encompassed an elevated and level terrace area on the western margins of the South Esk River. The terrace is situated approximately 100m to the west of the edge of the River, and 100m south of Midland Highway. Based on predictive modelling, it is anticipated that moderate densities of artefacts may be present across these two PAD areas (CHMA 2014b:2).

Most recently, CHMA (2015) carried out the original survey assessment for the NEIS project. The field survey assessment resulted in the identification of nine Aboriginal sites.

Six of the recorded Aboriginal sites were located within or immediately adjacent to the distribution pipeline corridor (sites (AH13113 to AH13118). Three of these sites (AH13113, AH13115 and AH13117) were classified as isolated artefacts. Sites AH13114, AH13116 and AH13118 were classified as small artefact scatters, each comprising between two and four surface artefacts. There was quite a distinct pattern of site distribution noted for these sites, with five of the six recorded sites being located elevated and well drained areas, within 200m of a water course. The only site that was situated over 200m from a water course was site AH13117 (an isolated artefact) which was identified on the flat spine of a prominent spur line. The general impression generated from the field survey was that site and artefact densities along the distribution pipeline corridor was quite low, with sites tending to be situated on elevated landscape features in close proximity to water courses.

The other three recorded Aboriginal sites (AH13110, AH13111 and AH13112) were situated within the bounds of the proposed Dalness Dam footprint. Site AH13110 is classified as a site complex that comprises 19 separate isolated artefacts and small artefact scatters (NEIS1-NEIS19) that are located within an area measuring approximately 850m (north-south) x 250m (east-west). Because of the close spatial grouping of these isolated artefacts and artefact scatters, and the fact that they all occur within the same landscape setting (a small valley system), they were classified as being part of the one broad site complex. The site complex is located within a

small north-south orientated valley system which is drained by an unnamed ephemeral creek line. The 19 individual site features are all located around the northern portion of the valley system, around the head of the valley. The sites were typically situated within 200m of the creek line.

Site AH13111 is classified as an isolated artefact, with site AH13112 being an artefact scatter comprising two surface artefacts. Both sites were located within the same valley system as site AH13110. However, given that these sites are located several hundred metres south of AH13110, they have been recorded as separate site entities.

The general impression generated from the field survey of the Dalness Dam site and Borrow Pit footprint was that this valley system, and in particular the northern portion of the valley system (where site complex AH13110 is situated) was the focus of a moderate level of Aboriginal activity. The activity seems to have been predominantly concentrated along the valley floor, within 100m-200m of the creek line.

4.4 Registered Aboriginal Sites in the Vicinity of the Study Area

As part of Stage 1 of the present assessment a search was carried out of Aboriginal Heritage Register (AHR) to determine the extent of registered Aboriginal heritage sites within and in the general vicinity of the proposed Evandale subdivision project.

The search shows that there are a total of 10 registered Aboriginal sites that are situated within a 5km radius of the study area (search results by Cindy Thomas from AHT on the 1-6-2018). Of these 10 sites, five sites are classified as isolated artefacts, and five sites are classified as artefact scatters. None of these sites are situated either within or in the immediate vicinity of the study area boundaries. The nearest site is AH13114 (an artefact scatter) which is situated around 1km to the north. Table 1 provides the summary details for these 10 sites, with Figure 9 showing the location of the sites in relation to the study area boundaries.

Table 1: Summary details for Registered Aboriginal sites located within an approximate 5km radius of the proposed Evandale Residential Subdivision (Based on information generated from the AHR search dated 1-6-2018)

AH Number	Site Type	Locality	Grid Reference Easting (GDA94)	Grid Reference Northing (GDA94)
164	Artefact Scatter	Evandale	519712	5397783
10312	Isolated Artefact	Nile	525560	5392140
13111	Isolated Artefact	White Hills	526968	5403119
13112	Artefact Scatter	Evandale	526784	5402619
13113	Isolated Artefact	Evandale	525990	5400610
13114	Artefact Scatter	Evandale	523111	5399776
13115	Isolated Artefact	Western Junction	519286	5400317
13116	Artefact Scatter	Western Junction	519155	5400563
13117	Isolated Artefact	Evandale	519973	5400010
13118	Artefact Scatter	Relbia	518820	5402783

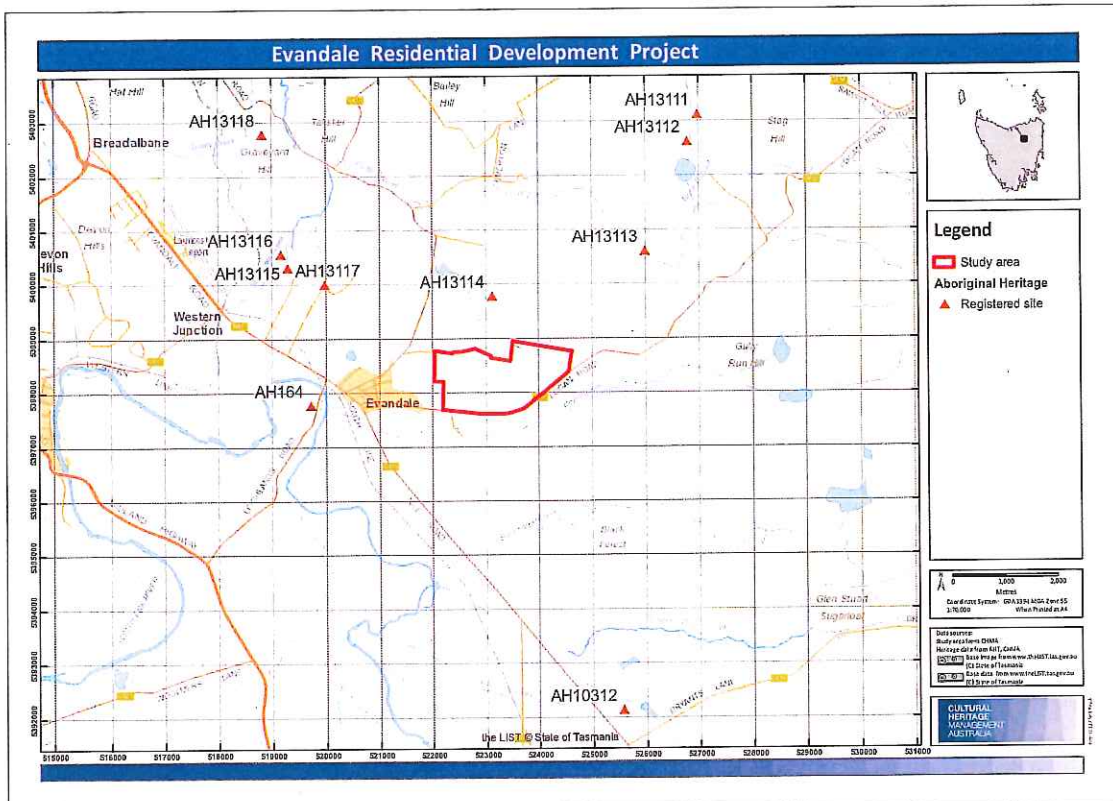


Figure 9: Registered Aboriginal sites within an approximate 5km radius of the proposed Evandale Residential Subdivision (Based on information generated from the AHR search dated 1-6-2018)

5.0 Predictive Modelling

5.1 Introduction to Predictive Modelling

Predictive modelling, in an archaeological context, is a fairly straightforward concept and has been utilised by archaeologists in Australia for a number of years as a tool for undertaking research into Aboriginal heritage sites. In summary, predictive modelling involves the collation of information generated from previous archaeological research in a given region, and using this information to establish patterns of Aboriginal site distributions within the landscape of that particular region. On the basis of perceived patterns of site distribution, archaeologists can then make predictive statements regarding the potential for various Aboriginal site types to occur within certain landscape settings, and can make preliminary assessments regarding the potential archaeological sensitivity of landscape types within a given region.

5.2 Predictive Models; Strengths and Weaknesses

It should be acknowledged that most, if not all predictive models have a number of potential inherent weaknesses, which may serve to limit their value. These include, but may not be limited to the following:

- 1) The accuracy of a predictive model is directly influenced by the quality and quantity of available site data and information for a given region. The more data available and the greater the quality of that data, the more likely it is that an accurate predictive model can be developed.
- 2) Predictive modelling works very well for certain types, most particularly isolated artefacts and artefact scatters, and to a lesser extent scarred trees. For other site types it is far more difficult to accurately establish distribution patterns and therefore make predictive modelling statements. Unfortunately, these site types are generally the rarer site types (in terms of frequency of occurrence) and are therefore generally the most significant sites.
- 3) Predictive modelling (unless it is very sophisticated and detailed) will generally not take into account micro-landscape features within a given area. These micro features may include (but is certainly not limited to) slight elevations in the landscape (such as small terraces) or small soaks or drainage depressions that may have held water. These micro features have been previously demonstrated to occasionally be focal points for Aboriginal activity.
- 4) Predictive modelling to a large extent is often predicated on the presence of watercourses. However, in some instances the alignment of these watercourses has changed considerably over time. As a consequence, the present alignment of a given watercourse may be substantially different to its alignment in the past. The consequence of this for predictive modelling (if these ancient water courses are not taken into account) is that predicted patterns of site distributions may be greatly skewed.

5.3 A Predictive Model of Site Type Distribution for the Study Area

The findings of previous archaeological investigations undertaken in the general vicinity of the study area indicates that the most likely site types that will be encountered during the current assessment will be artefact scatters and isolated artefacts. The following provides a definition for the site types likely to be encountered in the study area and a general predictive statement for their distribution.

Artefact Scatters and Isolated artefacts

Definition

Isolated artefacts are defined as single stone artefacts. Where isolated finds are closer than 50 linear metres to each other they should generally be recorded as an artefact scatter. Artefact scatters are usually identified as a scatter of stone artefacts lying on the ground surface. For the purposes of this project, artefact scatters are defined as at least 2 artefacts within 50 linear metres of each other. Artefacts spread beyond this can be best defined as isolated finds.

It is recognised that this definition, while useful in most instances, should not be strictly prescriptive. On some large landscape features for example, sites may be defined more broadly. In other instances, only a single artefact may be visible, but there is a strong indication that others may be present in the nearby sediments. In such cases it is best to define the site as an Isolated Find/Potential Archaeological Deposit (PAD).

Artefact scatters can vary in size from two artefacts to several thousand, and may be representative of a range of activities, from sporadic foraging through to intensive camping activity. In rare instances, campsites which were used over a long period of time may contain stratified deposits, where several layers of occupation are buried one on top of another.

Predictive Statement

Previous archaeological research in the region has identified the following pattern of distribution for stone artefacts.

- The majority of artefact scatters are located in close proximity to a water course, on relatively level and well drained ground.
- Larger open artefact scatters (representing more intensive activity, such as regular camp areas), tend to be located on level, elevated landscape features, close to (within 500m) major water courses such as the South Esk River. The most common areas are the elevated basal slopes of hills, the level spines of spurs (around the termination point of the spur), or on elevated sand bodies;
- Site and artefact densities are also comparatively high on the spines of major ridge lines. These ridge lines are thought to have been utilised as favoured travelling routes through the landscape, and these sites are generally assumed to be representative of this activity;
- Site and artefact densities on the lower lying flood plains of water courses tend to be comparatively lower. This may be reflective of the

fact these low lying areas were less favoured as camp locations, due to such factors as rising damp and vulnerability to flooding;

- Site and artefact densities also tend to be comparatively lower in areas away from water courses;
- Site and artefact densities are comparatively lower moderate to steeply sloping terrain: and
- Isolated artefacts may be found distributed across any landscape and this is the site type most likely to occur within the study area.

Using this broad regional patterning as a basis, it could be expected that site and artefact densities within the study area footprint would be low to very low. This is based on the fact that the study area is located over 1km from the nearest major water course (the South Esk River), and there are no other permanent or semi-permanent water courses that are situated within or in the immediate vicinity of the study area. Previous research in the region has shown that site densities in this type of landscape setting, away from the resource rich major river valley systems and other water permanent sources such as lagoons are typically sparse, reflecting more sporadic seasonal hunting and gathering activity.

6.0 Survey Coverage of the Study Area

Survey Coverage

Survey coverage refers to the estimated portion of a study area that has actually been visually inspected during a field survey.

The proposed residential subdivision footprint encompasses an area of approximately 246ha. The field team walked a total of 28.4km of survey transects across this area, with the average width of each transects being 10m. The transects were aligned to cover all of the landscape units that occur within the study area.

Figure 11 shows the survey transects walked by the field team.

Surface Visibility

Surface Visibility refers to the extent to which the actual soils of the ground surface are available for inspection. There are a number of factors that can affect surface visibility, including vegetation cover, surface water and the presence introduced gravels or materials.

Surface visibility across the Evandale subdivision study area ranged between 20-50%, with the estimated average being 30%. This is in the low to medium range (see Figure 10 for visibility guidelines). The main impediment to surface visibility was vegetation cover (see Plates 10 and 11).

There were the occasional stock tracks and stock erosion scalds, vehicle tracks and areas of sparser vegetation cover that provided discreet locales of improved surface visibility (see Plates 12-14). In order to increase the effective survey coverage within the study area, all areas where there were improved conditions of visibility were inspected.

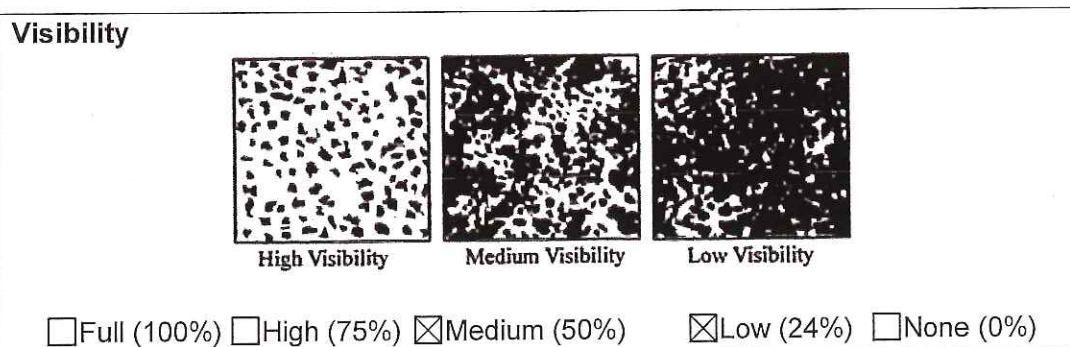


Figure 10: Guidelines for the estimation of surface visibility

Effective Coverage

Variations in both survey coverage and surface visibility have a direct bearing on the ability of a field team to detect Aboriginal heritage sites, particularly site types such as isolated artefacts and artefact scatters. The combination of survey coverage and surface visibility is referred to as effective survey coverage.

Table 2 presents the estimated effective survey coverage achieved during the course of the survey assessment of the Evandale study area footprint. The level of effective coverage is estimated to have been 85 200m². This level of effective coverage is deemed to be sufficient for the purposes of generating a reasonable impression as to the extent, nature and distribution of Aboriginal heritage sites across the study area.

Table 2: Effective Survey Coverage achieved within the Evandale Residential Subdivision study area

Total Area Surveyed	Estimated Surface Visibility	Effective Survey Coverage
28 400m x 10m = 284 000m ²	30%	85 200 m ²



Plate 10: View north across the study area showing typical levels of surface visibility across the farm paddocks



Plate 11: View east across the southern portion of the study area showing surface visibility of around 30%



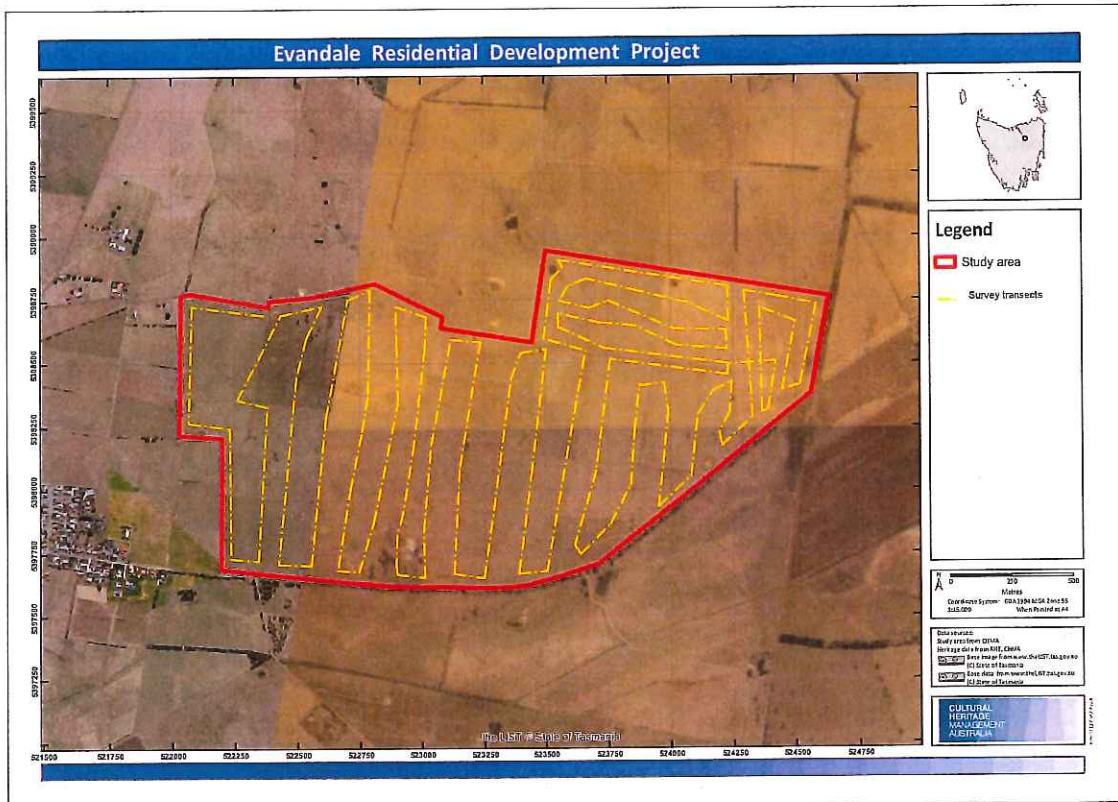
Plate 12: View west showing a graded track through the northern portion of the study area providing a transect of improved surface visibility



Plate 13: view west along a farm track running along the north boundary of the study area providing improved surface visibility



Plate 14; View east across a farm dam in the central portion of the study area, with erosion scalds providing improved visibility



7.0 Survey Results and Discussion

No Aboriginal sites were identified during the field survey assessment of the Evandale Residential Subdivision footprint. As noted in section 4.4 of this report, the search of the AHR undertaken for this project shows that there are no registered Aboriginal sites that are located within or in the immediate vicinity of the study area boundaries.

As described in section 6 of the report, surface visibility across the study area was generally in the low to medium range (averaging 30%). Given these constraints, it can't be stated with absolute certainty that there are no undetected Aboriginal heritage sites present in the study area. With this acknowledged, the survey assessment still did achieve effective coverage of 85 200m², with the field team having walked 28.4km of survey transects. This level of effective coverage is deemed to be sufficient for the purposes of generating a reasonable impression as to the extent, nature and distribution of Aboriginal heritage sites across the study area. The negative survey results can therefore be taken as a reasonably accurate indication that site and artefact densities across the study area are likely to be very low, reflecting sporadic activity.

As noted in section 2,4 of this report, the native vegetation across virtually the entire study area has been cleared as part of past farming practices, and repeatedly ploughed. Any sites located within cleared agricultural areas will necessarily have been adversely impacted by agricultural and development activities, unavoidably compromising the integrity of any cultural sites retained within these areas. The extent to which these sites have been impacted will range from total obliteration to dramatic movement in spatial and temporal context. As such, any sites located within these kinds of disturbed environments are always compromised in their archaeological integrity. There is very little potential for in situ sites to occur within the study area.

The field survey was able to confirm that there are no stone resources within the study area that would be suitable for stone artefact manufacturing. The stone bedrock across the study area comprises non-marine sequences of gravel, sand, silt, clay and regolith, none of which is in any way suited for artefact manufacturing. Additionally, there are no stone outcrops occurring anywhere across the study area, so there is no possibility of Aboriginal rock shelters or rock art sites occurring in the study area.

The explanation as to why Aboriginal activity within the study area was likely to be sporadic is most probably linked directly to the topographic setting of the study area and local resource availability. The study area is located on gently undulating terrain, over 1km away from the nearest major water course (the South Esk River), and there are no other permanent or semi-permanent water courses that are situated within or in the immediate vicinity of the study area.

Food and water resources within this type of landscape setting would have been significantly more limited compared with the resource rich river valley systems, or lagoon fringes. Given the limited availability of food, water and stone resources, there would have no great incentive for Aboriginal people to have focused their activities specifically in this area. Instead, Aboriginal activity is most likely to be focused along the larger river valley systems which were probably also utilised as a traveling route through the Northern Midlands region. The observed pattern of Aboriginal site distribution noted for the general surrounds of the study region supports this contention, with the vast majority of recorded Aboriginal sites being clustered within the larger river valley systems (see section 4).

8.0 Consultation with Aboriginal Communities and Statement of Aboriginal Significance

The designated Aboriginal Heritage Officer (AHO) for this project is Vernon Graham. One of the primary roles of the Aboriginal Heritage Officer is to consult with Aboriginal community groups. The main purpose of this consultation process is:

- to advise Aboriginal community groups of the details of the project,
- to convey the findings of the Aboriginal heritage assessment,
- to document the Aboriginal social values attributed to Aboriginal heritage resources in the study area,
- to discuss potential management strategies for Aboriginal heritage sites, and
- to document the views and concerns expressed by the Aboriginal community representatives.

Aboriginal Heritage Tasmania (AHT) has recently advised that there have been some changes to the accepted approach to Aboriginal community consultation, based on recommendations made by the AHC on 28 April 2017. These changes relate to cases where the AHC consider it may be sufficient for a Consulting Archaeologist (CA) or Aboriginal Heritage Officer (AHO) to consult only with the Aboriginal Heritage Council.

The Council recommended that consultation with an Aboriginal community organisation is not required for a proposed project when:
There are less than 10 isolated artefacts that are not associated with any other nearby heritage; or
The impact of the project on Aboriginal heritage:

- is not significant; or
- will not destroy the heritage; or
- affects only part of the outer approximately 20% of a buffer around a registered site

The CA and AHO will need to demonstrate in Aboriginal heritage reports including map outputs:

- that the proposed impact on the Aboriginal heritage within the project area is not significant and why;
- that the project activity will not destroy the heritage;
- that the proposed impact to the site buffer is not adjacent to a significant component of the registered site polygon.

No Aboriginal heritage sites or specific areas of elevated Aboriginal heritage sensitivity were identified during the survey assessment of the Evandale Residential subdivision study area. The search of the AHR undertaken for this project shows that there are no registered Aboriginal sites that are located within or in the immediate vicinity of the study area boundaries.

On the basis of the above, it is clear that the proposed project will not impact on any known Aboriginal heritage sites, and there is a very low potential to impact undetected Aboriginal heritage. For this reason, the decision has been made not to distribute this report for Aboriginal community consultation. The report has been provided to AHT for review.

Vernon has provided a statement of significance for the cultural values encompassed within the study area as a whole. This statement is presented below.

Statement of Cultural/Social Significance by Vernon Graham

Aboriginal heritage/relics are not renewable. Hence any cultural heritage values provide a direct link to past occupation undertaken by traditional indigenous ancestors to the region of the project proposal. This provides a story or link for the Aboriginal community today, and facilitates the connection to social cultural heritage values, ethno history /story and the relationship pertaining to country. This is an integral part of regaining knowledge so it can be encapsulated and retained by the both individual Aboriginal people and for the Aboriginal community collectively.

We did not identify any Aboriginal sites during our survey of the Evandale residential development area. I understand that the AHR search results shows that there are no registered Aboriginal site located within a 1km radius of the study area. On this basis I am satisfied that the subdivision proposal will not impact on known Aboriginal sites.

Even if the site of the project proposal contains no evidence of Aboriginal heritage there is always the cultural resources (flora, fauna, aquaculture or any other resource values that the earth may offer) and the living landscape, which highlight the high significance to the Aboriginal cultural heritage values to the country. In this instance the study area encompasses farm land that has been virtually entirely cleared of native vegetation. As a consequence, any bush food resources that may once have been present in this area are completely gone. Overall, I believe that this residential development will have a very minimal impact on Aboriginal heritage resources.

9.0 Statutory Controls and Legislative Requirements

The following provides an overview of the relevant State and Federal legislation that applies for Aboriginal heritage within the state of Tasmania. .

9.1 State Legislation

In Tasmania, the *Aboriginal Heritage Act 1975* (the Act) is the primary Act for the treatment of Aboriginal cultural heritage. The Act is administered by the Minister for Environment, Parks and Heritage through Aboriginal Heritage Tasmania (AHT) in the Department of Primary Industries, Parks, Water and the Environment (DPIPWE). AHT is the regulating body for Aboriginal heritage in Tasmania and '[n]o fees apply for any application to AHT for advice, guidance, lodgement or permit application'.

The Act applies to 'relics' which are any object, place and/or site that is of significance to the Aboriginal people of Tasmania (as defined in section 2(3) of the Act). The Act defines what legally constitutes unacceptable impacts on relics and a process to approve impacts when there is no better option. Aboriginal relics are protected under the Act and it is illegal to destroy, damage, deface, conceal or otherwise interfere with a relic, unless in accordance with the terms of a permit granted by the Minister. 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 (section 2(4) qualifies and excludes 'objects made, or likely to have been made, for purposes of sale').

It should be noted that with regard to the discovery of suspected human skeletal remains, the *Coroners Act 1995* takes precedence. The *Coroners Act 1995* comes into effect initially upon the discovery of human remains, however once determined to be Aboriginal the *Aboriginal Relics Act* overrides the *Coroners Act*.

In August 2017, the Act was substantively amended and the title changed from the *Aboriginal Relics Act 1975*. As a result, the AHT *Guidelines to the Aboriginal Heritage Assessment Process* were replaced by the *Aboriginal Heritage Standards and Procedures*. The Standards and Procedures are named in the statutory *Guidelines* of the Act issued by the Minister under section 21A of the Act. Other amendments include:

- An obligation to fully review the Act within three years.
- Increases in maximum penalties for unlawful interference or damage to an Aboriginal relic. For example, maximum penalties (for deliberate acts) are 10,000 penalty units (currently \$1.57 million) for bodies corporate other than small business entities and 5,000 penalty units (currently \$785,000) for individuals or small business entities; for reckless or negligent offences, the maximum penalties are 2,000 and 1,000 penalty units respectively (currently \$314,000 and \$157,000). Lesser offences are also defined in sections 10, 12, 17 and 18.
- Prosecution timeframes have been extended from six months to two years.
- The establishment of a statutory Aboriginal Heritage Council to advise the Minister.

Section 21(1) specifies the relevant defence as follows: "It is a defence to a prosecution for an offence under section 9 or 14 if, in relation to the section of the Act which the defendant is alleged to have contravened, it is proved ... that, in so far as is practicable ... the defendant complied with the guidelines".

9.2 Commonwealth Legislation

There are also a number of Federal Legislative Acts that pertain to cultural heritage. The main Acts being; *The Australian Heritage Council Act 2003*, *The Aboriginal and Torres Strait Islander Heritage Protection Act 1987* and the *Environment Protection and Biodiversity Conservation Act 1999*

Australian Heritage Council Act 2003 (Comm)

The *Australian Heritage Council Act 2003* defines the heritage advisory boards and relevant lists, with the Act's Consequential and Transitional Provisions repealing the *Australian Heritage Commission Act 1975*. The *Australian Heritage Council Act*, like the *Australian Heritage Commission Act*, does not provide legislative protection regarding the conservation of heritage items in Australia, but has compiled a list of items recognised as possessing heritage significance to the Australian community. The Register of the National Estate, managed by the Australian Heritage Council, applies no legal constraints on heritage items included on this list.

The Aboriginal and Torres Strait Islander Heritage Protection Act 1987.

This Federal Act is administered by the Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC) with the Commonwealth having jurisdiction. The Act was passed to provide protection for the Aboriginal heritage, in circumstances where it could be demonstrated that such protection was not available at a state level. In certain instances, the Act overrides relevant state and territory provisions.

The major purpose of the Act is to preserve and protect from injury and desecration, areas and objects of significance to Aborigines and Islanders. The Act enables immediate and direct action for protection of threatened areas and objects by a declaration from the Commonwealth minister or authorised officers. The Act must be invoked by, or on behalf of an Aboriginal or Torres Strait Islander or organisation.

Any Aboriginal or Torres Strait Islander person or organization may apply to the Commonwealth Minister for a temporary or permanent 'Stop Order' for protection of threatened areas or objects of significant indigenous cultural heritage.

The Commonwealth Act 'overrides' State legislation if the Commonwealth Minister is of the opinion that the State legislation (or undertaken process) is insufficient to protect the threatened areas or objects. Thus, in the event that an application is made to the Commonwealth Minister for a Stop Order, the Commonwealth Minister will, as a matter of course, contact the relevant State Agency to ascertain what protection is being imposed by the State and/or what mitigation procedures have been proposed by the landuser/developer.

In addition to the threat of a 'Stop Order' being imposed, the Act also provides for the following:

- If the Federal Court, on application from the Commonwealth Minister, is satisfied that a person has engaged or is proposing to engage in conduct that breaches the 'Stop Order', it may grant an injunction preventing or stopping such a breach (s.26). Penalties for breach of a Court Order can be substantial and may include a term of imprisonment;
- If a person contravenes a declaration in relation to a significant Aboriginal area, penalties for an individual are a fine up to \$10,000.00 and/or 5 years gaol and for a Corporation a fine up to \$50,000.00 (s.22);
- If the contravention is in relation to a significant Aboriginal object, the penalties are \$5,000.00 and/or 2 years gaol and \$25,000.00 respectively (s.22);
- In addition, offences under s.22 are considered 'indictable' offences that also attract an individual fine of \$2,000 and/or 12 months gaol or, for a Corporation, a fine of \$10,000.00 (s.23). Section 23 also includes attempts, inciting, urging and/or being an accessory after the fact within the definition of 'indictable' offences in this regard.

The Commonwealth Act is presently under review by Parliament and it is generally accepted that any new Commonwealth Act will be even more restrictive than the current legislation.

Environment Protection and Biodiversity Conservation Act 1999 (Comm)

This Act was amended, through the Environment and Heritage Legislation Amendment Act (No1) 2003 to provide protection for cultural heritage sites, in addition to the existing aim of protecting environmental areas and sites of national significance. The Act also promotes the ecologically sustainable use of natural resources, biodiversity and the incorporation of community consultation and knowledge.

The 2003 amendments to the *Environment Protection and Biodiversity Conservation Act 1999* have resulted in the inclusion of indigenous and non-Indigenous heritage sites and areas. These heritage items are defined as:

'indigenous heritage value of a place means a heritage value of the place that is of significance to indigenous persons in accordance with their practices, observances, customs, traditions, beliefs or history;

Items identified under this legislation are given the same penalty as actions taken against environmentally sensitive sites. Specific to cultural heritage sites are §324A-324ZB.

Environment and Heritage Legislation Amendment Act (No1) 2003 (Comm)

In addition to the above amendments to the *Environment Protection and Biodiversity Conservation Act 1999* to include provisions for the protection and conservation of heritage, the Act also enables the identification and subsequent listing of items for the Commonwealth and National Heritage Lists. The Act establishes the *National Heritage List*, which enables the inclusion of all heritage, natural, Indigenous and

non-Indigenous, and the *Commonwealth Heritage List*, which enables listing of sites nationally and internationally that are significant and governed by Australia.

In addition to the *Aboriginal and Torres Strait Islander Heritage Protection Act 1987*, amendments made to the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* enables the identification and subsequent listing of indigenous heritage values on the Commonwealth and/or National Heritage Lists (ss. 341D & 324D respectively). Substantial penalties (and, in some instances, gaol sentences) can be imposed on any person who damages items on the National or Commonwealth Heritage Lists (ss. 495 & 497) or provides false or misleading information in relation to certain matters under the Act (ss.488-490). In addition, the wrongdoer may be required to make good any loss or damage suffered due to their actions or omissions (s.500).

10.0 Aboriginal Cultural Heritage Management Plan

Heritage management options and recommendations provided in this report are made on the basis of the following criteria:

- Consultation with Vernon Graham (Aboriginal Heritage Officer);
- Background research into the extant archaeological and ethno-historic record for the study area and the surrounding region.
- The results of the investigation as documented in this report; and
- The legal and procedural requirements as specified in the *Aboriginal Relics Act 1975* (The Act);

Recommendation 1

No Aboriginal heritage sites or specific areas of elevated Aboriginal heritage sensitivity were identified along the survey of the Evandale Residential Subdivision footprint. The search of the AHR undertaken for this project shows that there are no registered Aboriginal sites that are located within or in the immediate vicinity of the study area boundaries. On the basis of the above, it is clear that the proposed subdivision project will not impact on any known Aboriginal heritage sites, and there is a very low potential to impact undetected Aboriginal heritage. It is therefore advised there are no Aboriginal heritage constraints, or legal impediments to the project proceeding.

Recommendation 2

It is assessed that there is generally a low to very low potential for undetected Aboriginal heritage sites to occur within the study area boundaries. However, if, during the course of the proposed development works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see section 11). A copy of the Unanticipated Discovery Plan (UDP) should be kept on site during all ground disturbance and construction work. All construction personnel should be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

Recommendation 3

Copies of this report should be submitted to Aboriginal Heritage Tasmania (AHT) for review and comment.

11.0 Unanticipated Discovery Plan

The following section describes the proposed method for dealing with unanticipated discoveries of Aboriginal sites and objects. The plan provides guidance to the proponent so that they may meet their obligations with respect to heritage in accordance with the *Aboriginal Heritage Act 1975* and the *Coroners Act 1995*.

Please Note: There are two different processes presented for the mitigation of these unanticipated discoveries. The first process applies for the discovery of all cultural heritage sites or features, with the exception of skeletal remains (burials). The second process applies exclusively to the discovery of skeletal remains (burials).

Discovery of Cultural Heritage Items

Section 14 (1) of the *Aboriginal Heritage Act 1975* states that "*Except as otherwise stated in this Act, no person shall, otherwise than in accordance with the terms of a Permit granted by the Minister on the recommendation of the Director – destroy, damage, deface, conceal or otherwise interfere with a relic.*"

Accordingly, the following processes should be implemented if a suspected relic is encountered.

Step 1

If any person believes that they have discovered or uncovered Aboriginal cultural heritage materials, the individual should notify any machinery operators that are working in the general vicinity of the area that earth disturbance works should stop immediately.

Step 2

A buffer protection zone of 10m x 10m should be established around the suspected cultural heritage site or items. No unauthorised entry or earth disturbance will be allowed within this 'archaeological zone' until such time as the suspected cultural heritage items have been assessed, and appropriate mitigation measures have been carried out.

Step 3

Aboriginal Heritage Tasmania (AHT) in Hobart (ph 1300 487 045) should be contacted immediately and informed of the discovery. AHT will make necessary arrangements for the further assessment of the discovery. Based on the findings of the assessment, appropriate management recommendations should be developed for the cultural heritage find.

Discovery of Skeletal Material

Step 1

Under no circumstances should the suspected skeletal remains be touched or disturbed. If these are human remains, then this area potentially is a crime scene. Tampering with a crime scene is a criminal offence.

Step 2

Any person discovering suspected skeletal remains should notify machinery operators that are working in the general vicinity of the area that earth disturbing works should stop immediately. Remember health and safety requirements when approaching machinery operators.

Step 3

A buffer protection zone of 50m x 50m should be established around the suspected skeletal remains. No unauthorised entry or earth disturbance will be allowed with this buffer zone until such time as the suspected skeletal remains have been assessed.

Step 4

The relevant authorities (police) will be contacted and informed of the discovery.

Step 5

Should the skeletal remains be suspected to be of Aboriginal origin, then Section 23 of the Coroners Act 1995 will apply. This is as follows:

- 1) The Attorney General may approve an Aboriginal organisation for the purposes of this section.
- 2) If, at any stage after a death is reported under section 19(1), a coroner suspects that any human remains relating to that death may be Aboriginal remains, the coroner must refer the matter to an Aboriginal organisation approved by the Attorney General (In this instance TALSC).
- 3) If a coroner refers a matter to an Aboriginal organisation approved by the Attorney-General –
 - (a) The coroner must not carry out any investigations or perform any duties or functions under this Act in respect of the remains; and
 - (b) The Aboriginal organisation must, as soon as practicable after the matter is referred to it, investigate the remains and prepare a report for the coroner.
- 4) If the Aboriginal organisation in its report to the coroner advises that the remains are Aboriginal remains, the jurisdiction of the coroner under this Act in respect of the remains ceases and this Act does not apply to the remains. In this instance the *Aboriginal Heritage Act 1975* will apply, and relevant Permits will need to be obtained before any further actions can be taken.
- 5) If the Aboriginal organisation in its report to the coroner advises that the remains are not Aboriginal remains, the coroner may resume the investigation in respect of the remains.

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Glossary of Terms

Aboriginal Archaeological Site

A site is defined as any evidence (archaeological features and/or artefacts) indicating past Aboriginal activity, and occurring within a context or place relating to that activity. The criteria for formally identifying a site in Australia vary between States and Territories.

Artefact

A portable object that has been humanly made or modified (see also stone artefact).

Assemblage (lithic)

A collection of complete and fragmentary stone artefacts and manuports obtained from an archaeological site, either by collecting artefacts scattered on the ground surface, or by controlled excavation.

Broken Flake

A flake with two or more breakages, but retaining its area of break initiation.

Chert

A highly siliceous rock type that is formed biogenically from the compaction and precipitation of the silica skeletons of diatoms. Normally there is a high percentage of cryptocrystalline quartz. Like chalcedony, chert was valued by Aboriginal people as a stone material for manufacturing stone tools. The rock type often breaks by conchoidal (shell like) fracture, providing flakes that have hard, durable edges.

Cobble

Water worn stones that have a diameter greater than 64mm (about the size of a tennis ball) and less than 256mm (size of a basketball).

Core

A piece of stone, often a pebble or cobble, but also quarried stone, from which flakes have been struck for the purpose of making stone tools.

Core Fragments

A piece of core, without obvious evidence of being a large primary flake.

Cortex

The surface of a piece of stone that has been weathered by chemical and/or physical means.

Debitage

The commonly used term referring to the stone refuse discarded from knapping. The manufacturing of a single implement may result in the generation of a large number of pieces of debitage in an archaeological deposit.

Flake (general definition)

A piece of stone detached from a nucleus such as a core. A complete or substantially complete flake of lithic material usually shows evidence of hard indenter initiation, or occasional bending initiation. The most common type of flake is the 'conchoidal flake'. The flake's primary fracture surface (the ventral or inside surface) exhibits features such as fracture initiation, bulb of force, and undulations and lances that indicate the direction of the fracture front.

Flake fragment

An artefact that does not have areas of fracture initiation, but which displays sufficient fracture surface attributes to allow identification as a stone artefact fragment.

Flake portion (broken flake)

The proximal portion of a flake retaining the area of flake initiation, or a distal portion of a flake that retains the flake termination point.

Flake scraper

A flake with retouch along at least one margin. The character of the retouch strongly suggests shaping or rejuvenation of a cutting edge.

Nodules

Regular or irregular cemented masses or nodules within the soil. Also referred to as concretions and buckshot gravel. Cementing agents may be iron and/or manganese oxides, calcium carbonate, gypsum etc. Normally formed in situ and commonly indicative of seasonal waterlogging or a fluctuating chemical environment in the soil such as; oxidation and reduction, or saturation and evaporation. Nodules can be redistributed by erosion. (See also 'concretion').

Pebble

By geological definition, a waterworn stone less than 64 mm in diameter (about the size of a tennis ball). Archaeologists often refer to waterworn stones larger than this as pebbles though technically they are cobbles.

Quartz

A mineral composed of crystalline silica. Quartz is a very stable mineral that does not alter chemically during weathering or metamorphism. Quartz is abundantly common and was used by Aboriginal people throughout Australia to make light-duty cutting tools. Despite the often unpredictable nature of fracture in quartz, the flakes often have sharp cutting edges.

Quartzite

A hard silica rich stone formed in sandstone that has been recrystallised by heat (metaquartzite) or strengthened by slow infilling of silica in the voids between the sand grains (Orthoquartzite).

Retouch (on stone tools)

An area of flake scars on an artefact resulting from intentional shaping, resharpening, or rejuvenation after breakage or blunting of a cutting edge. In resharpening a cutting edge the retouch is invariably found only on one side (see also 'indeterminate retouched piece', 'retouch flake' etc).

Scraper

A general group of stone artefacts, usually flakes but also cores, with one or more retouched edges thought to have been used in a range of different cutting and scraping activities. A flake scraper is a flake with retouch along at least one margin, but not qualifying for attribution to a more specific implement category. Flake scrapers sometimes also exhibit use-wear on the retouched or another edge.

Silcrete

A hard, fine grained siliceous stone with flaking properties similar to quartzite and chert. It is formed by the cementing and/or replacement of bedrock, weathering deposits, unconsolidated sediments, soil or other material, by a low temperature physico-chemical process. Silcrete is essentially composed of quartz grains cemented by microcrystalline silica. The clasts in silcrete are most often quartz grains but may be chert or chalcedony or some other hard mineral particle. The mechanical properties and texture of silcrete are equivalent to the range exhibited by chert at the fine-grained end of the scale and with quartzite at the coarse-grained end of the scale. Silcrete was used by Aboriginal people throughout Australia for making stone tools.

Site Integrity

The degree to which post-depositional disturbance of cultural material has occurred at a site.

Stone Artefact

A piece (or fragment) of stone showing evidence of intentional human modification.

Stone procurement site

A place where stone materials is obtained by Aboriginal people for the purpose of manufacturing stone artefacts. In Australia, stone procurement sites range on a continuum from pebble beds in water courses (where there may be little or no evidence of human activity) to extensively quarried stone outcrops, with evidence of pits and concentrations of hammerstones and a thick layer of knapping debris.

Stone tool

A piece of flaked or ground stone used in an activity, or fashioned for use as a tool. A synonym of stone tool is 'implement'. This term is often used by archaeologists to describe a flake tool fashioned by delicate flaking (retouch).

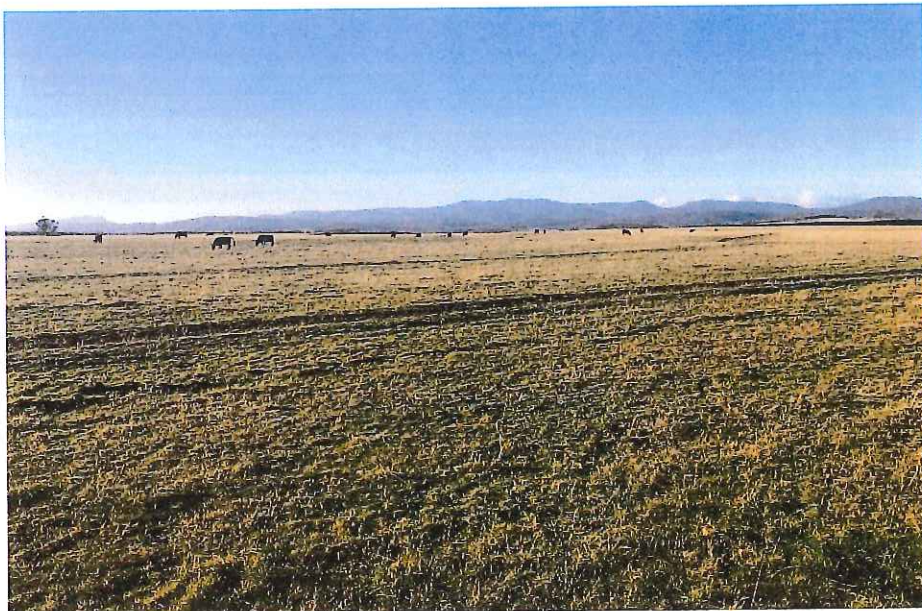
Use wear

Macroscopic and microscopic damage to the surfaces of stone tools, resulting from its use. Major use-wear forms are edge fractures, use-polish and smoothing, abrasion.

Traders In Purple

Agricultural Assessment of the Proposed Ridgeside Lane Development

December 2018



Consultants for business, agriculture and environment



Consultants for business, agriculture and environment

Macquarie Franklin was formed in April 2011 by the merger of two Tasmanian based consulting firms - Agricultural Resource Management (ARM) and Davey & Maynard.

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1 Purpose

This report has been undertaken on behalf of the proponent (Traders In Purple) and will accompany an application to the Northern Midlands Council seeking approval to undertake the Ridgeside Lane development, on the Queenscliff and Mew properties east of Evandale.

This document reports on the land capability of the subject properties and an assessment of how the proposal may impact on the agricultural land use activity of the property in question and that of adjacent properties.

1.1 Land Capability

The currently recognised reference for identifying land capability is based on the class definitions and methodology described in the Land Classification Handbook, Second Edition, C.J Grose, 1999, Department of Primary Industries, Water and Environment, Tasmania.

Most agricultural land in Tasmania has been classified by the Department of Primary Industries and Water at a scale of 1:100,000, according to its ability to withstand degradation. A scale of 1 to 7 has been developed with Class 1 being the most resilient to degradation processes and Class 7 the least. Class 1, 2 and 3 is collectively termed "prime agricultural land". For planning purposes, a scale of 1:100,000 is often unsuitable and a re-assessment is required at a scale of 1:25,000 or 1:10,000. Factors influencing capability include elevation, slope, climate, soil type, rooting depth, salinity, rockiness and susceptibility to wind, water erosion and flooding.

In providing my opinion, I wish to advise that I possess a B.App.Sci.(hort) and am a member of the Australian Institute of Agriculture. I have over 20 years experience in the agricultural industry in Tasmania. I am skilled to undertake agricultural and development assessments as well as land capability studies. I have previously been engaged by property owners, independent planners, and surveyors to undertake assessments within the Burnie, Brighton, Central Coast, Circular Head, Clarence, Georgetown, Kentish, Huon, Latrobe, Launceston, Meander Valley, Northern Midlands, Southern Midlands and Waratah-Wynyard municipalities. Most of these studies have involved the assessment of land for development purposes for potential conflict with the Protection of Agricultural Land Policy (PAL Policy) and Planning Schemes.

1.2 Compliance with the State Policy on the Protection of Agricultural Land (PAL) 2009.

The amended Policy became effective from 3rd September 2009. It fosters the sustainable development of agriculture in Tasmania by minimising conflict or interference from other land uses as well as non-agricultural use or development on agricultural land that precludes the return of that land to agriculture.

For the purposes of the Policy;

Agricultural land is defined as *all land that is in agricultural use or has the potential for agricultural use that has not been zoned or developed for another use or would not be unduly restricted for agricultural use by its size, shape and proximity to adjoining non-agricultural uses.*

Agricultural use means *use of the land for propagating, cultivating and harvesting plants or for the keeping and breeding of animals, excluding domestic animals and pets. It includes the handling and packing or storing of produce for dispatch to processors. It includes controlled environment agriculture and plantation forestry.*

Land capability Classes 1, 2 and 3 are collectively defined as prime agricultural land based on the class definitions and methodology from the Land Classification Handbook, Second Edition, C.J Grose, 1999, Department of Primary Industries, Water and Environment, Tasmania.

It is noted that where there is a discrepancy between the Central Coast Planning Scheme and PAL, Clause 13 (1) of the State Policies and Projects Act 1993 states *"Where there is an inconsistency between a provision of a State Policy and a provision of a planning scheme or an interim order in force at the time when the State Policy comes into operation, the provision of the planning scheme or interim order is void to the extent of the inconsistency"*. In other words, where there is such an inconsistency, the State Policy will take precedent.

2 Property details

2.1 Location

The subject properties where the Ridgeside Lane development is proposed are located east of Evandale on Logan Road. Figure 1.

Table 1; property details

Property Name	Title Reference	Property ID	Address	Hectares (Approx)
Queenscliff	1067731/1	1898289	211 Logan Road	99
The Mews	101154/1	189529	Logan Road	100
	145763/2	2688486	98 Ridgeside Lane	46



Figure 1: Property location (source The LIST)

2.2 Queenscliff Property

2.2.1 Location and size

The Queenscliff property is located approximately 350m east of Evandale on the northern side of Logan Road, and covers an area of roughly 99 hectares.

2.2.2 Physical resources

The Queenscliff property is located on flat and very gently undulating ground with a northerly aspect, it is entirely covered by degraded and semi improved pasture land with no areas of bushland and/or remanent vegetation present.

The property is highly constrained for water resources, and currently is limited a number of stock water dams, with a combined nominal capacity of approximately 1.5ML.

The property has acquired a 20 ML irrigation water allocation.

No soil salinity, sodicity or acid sulphate soils have been identified on the property.

2.2.3 Land capability

The original land capability assessment of the area was undertaken by DPIF at a scale of 1:100,000 and reported in their South Esk report in 1996, and on the subject of this property, DPIF identified the property was covered by Class 4 land, and no prime agricultural land was identified.

A detailed assessment by Macquarie Franklin of the property confirmed that the land is consistently covered by Class 4 land, and it is not covered by any prime agricultural land (land capability rating ≤ 3).

Class 4 land is described as follows:

Land well suited to grazing but which is limited to occasional cropping or to a very restricted range of crops. The length of cropping phase and/or range of crops are constrained by severe limitation of erosion, wetness, soils or climate. Major conservation treatments and/or careful management are required to minimise degradation.

Cropping rotations should be restricted to one to two years out of ten in a rotation with pasture or equivalent to avoid damage to the soil resource. In some areas longer cropping phases may be possible but the versatility of the land is very limited.

See Appendix 1, Figure 5 for the land capability map of the property.

See Appendix 2, Table 5 for the detailed land capability assessment.

2.2.4 Agricultural land use suitability

2.2.4.1 Current land use activity

This property has historically and is currently been used for dryland pastoral use, that being for cattle and sheep production.

The pastoral productivity of the property is limited by the annual rainfall (approximately 650mm/year) and land capability, and is capable of growing 7,000-8000 kg dry matter of pasture per hectare per

year (kg DM/ha/yr) and this is equivalent to utilising 4,000-5,000 kg DM/ha/year at a grazing efficiency of 65%.

Based on the pasture productivity of the property it would be reasonable to consider it has an annual carrying capacity of approximately 15-18 dry sheep equivalents per hectare per year (DSE/ha/year), for a total carrying capacity of approximately 1,400-1,700 DSE/year.

It is important to note that due to variable rainfall, both total rainfall and frequency of rainfall events the carrying capacity can flex by +/-15-25% on a seasonal and annual basis.

2.2.4.2 Future land use activity

The crops considered most suitable for this land are based on broadacre crops, such as cereals, hemp, canola and grass seed production, and it is possible to consider this land could be cropped on a frequency of 1-2 times in 10 years.

More intensive cropping options could be possible, such as vegetables (root crops – potatoes, carrots, brassicas etc...) however the opportunity to engage in these enterprises would only be possible on a 1 on 10 year rotation, and limited to the Class 4s land.

Horticultural crops, such as viticulture, cherries and hazelnuts ranges may be considered possible for areas of the property, although it is very much enterprise dependant. Modelled enterprises suitability maps are shown in Appendix 4.

It is important to note that extensive studies and detailed assessments, both on the production and marketing of horticultural commodities would be important to undertake before any investment was made.

Based on the quantum of irrigation water that the property has invested in, 20ML, the scale and intensity of any irrigated cropping (broadacre, vegetable and/or perennial horticulture) are highly restricted.

The amount water typically used in irrigated broadacre cropping is typically 2 ML/ha (potential of 10 hectares), vegetable cropping requires 3-5 ML/ha (potential for 6-8 hectares of crop) and perennial horticulture uses between 3-4 ML/ha (potential for 4-6 hectares of plantings).

2.2.5 Adjacent land use activity

The land adjacent to the Queenscliff property have been traditionally been predominantly used for pastoral land use activity, that being beef and sheep grazing, with dryland and irrigated broadacre cropping activities on the properties to the south and further to the east.

Further to the north in the White Hills and Relbia area a number of vineyards are present.

2.3 The Mews Property

2.3.1 Location and size

The Mews property is located approximately 700m east of Evandale to the nearest westerly point of the property, although the majority of the land over 1,800m east of Evandale, and on the northern side of Logan Road, and covers an area of roughly 146 hectares.

2.3.2 Physical resources

The Mews property is located on flat and very gently undulating ground with a northerly aspect, it is entirely covered by degraded and semi improved pasture land with no areas of bushland and/or remanent vegetation present.

The property is highly constrained for water resources, and currently is limited a number of stock water dams, with a combined nominal capacity of approximately 2ML.

The property has acquired a 20 ML irrigation water allocation.

No soil salinity, sodicity or acid sulphate soils have been identified on the property.

2.3.3 Land capability

The original land capability assessment of the area was undertaken by DPIF at a scale of 1:100,000 and reported in their South Esk report in 1996, and on the subject of this property, DPIF identified the properties were covered by Class 4 land, and no prime agricultural land was identified.

A detailed assessment by Macquarie Franklin of the property confirmed that the land is consistently covered by Class 4 land, it is not covered by any prime agricultural land (land capability rating ≤ 3).

Class 4 land is described as follows:

Land well suited to grazing but which is limited to occasional cropping or to a very restricted range of crops. The length of cropping phase and/or range of crops are constrained by severe limitation of erosion, wetness, soils or climate. Major conservation treatments and/or careful management are required to minimise degradation.

Cropping rotations should be restricted to one to two years out of ten in a rotation with pasture or equivalent to avoid damage to the soil resource. In some areas longer cropping phases may be possible but the versatility of the land is very limited.

See Appendix 1, Figure 5 for the land capability map of the property.

See Appendix 3, Table 6 for the detailed land capability assessment.

2.3.4 Agricultural land use suitability

2.3.4.1 Current land use activity

This property has historically and is currently been used for dryland pastoral use, that being for cattle and sheep production.

The pastoral productivity of the property is limited by the annual rainfall (approximately 650mm/year) and land capability, and is capable of growing 7,000-8000 kg dry matter of pasture per hectare per

year (kg DM/ha/yr) and this is equivalent to utilising 4,000-5,000 kg DM/ha/year at a grazing efficiency of 65%.

Based on the pasture productivity of the property it would be reasonable to consider it has an annual carrying capacity of 15-18 dry sheep equivalents per hectare per year (DSE/ha/year), for a total carrying capacity of approximately 2,100-2,600 DSE/year.

It is important to note that due to variable rainfall, both total rainfall and frequency of rainfall events the carrying capacity can flex by +/-15-25% on a seasonal and annual basis.

2.3.4.2 Future land use activity

The crops considered most suitable for this land are based on broadacre crops, such as cereals, hemp, canola and grass seed production, and it is possible to consider this land could be cropped on a frequency of 1-2 times in 10 years.

More intensive cropping options could be possible, such as vegetables (root crops – potatoes, carrots, brassicas etc...) however the opportunity to engage in these enterprises would only be possible on a 1 on 10 year rotation, and limited to the Class 4s land.

Horticultural crops, such as viticulture, cherries and hazelnuts ranges may be considered possible for parts or extensive areas of the property, although it is very much enterprise dependant. Modelled enterprises suitability maps are shown in Appendix 4.

It is important to note that extensive studies and detailed assessments, both on the production and marketing of horticultural commodities would be important to undertake before any investment was made.

Based on the quantum of irrigation water that the property has invested in, 20ML, the scale and intensity of any irrigated cropping (broadacre, vegetable and/or perennial horticulture) are highly restricted.

The amount water typically used in irrigated broadacre cropping is typically 2 ML/ha (potential of 10 hectares), vegetable cropping requires 3-5 ML/ha (potential for 6-8 hectares of crop) and perennial horticulture uses between 3-4 ML/ha (potential for 4-6 hectares of plantings).

2.3.5 Adjacent land use activity

The land adjacent to the Mews property have been traditionally been predominantly used for pastoral land use activity, that being beef and sheep grazing, with irrigated broadacre cropping activities on the properties to the south and further to the east.

Further to the north in the White Hills and Relbia area a number of vineyards are present.



Figure 2; southerly view across the Queenscliff property

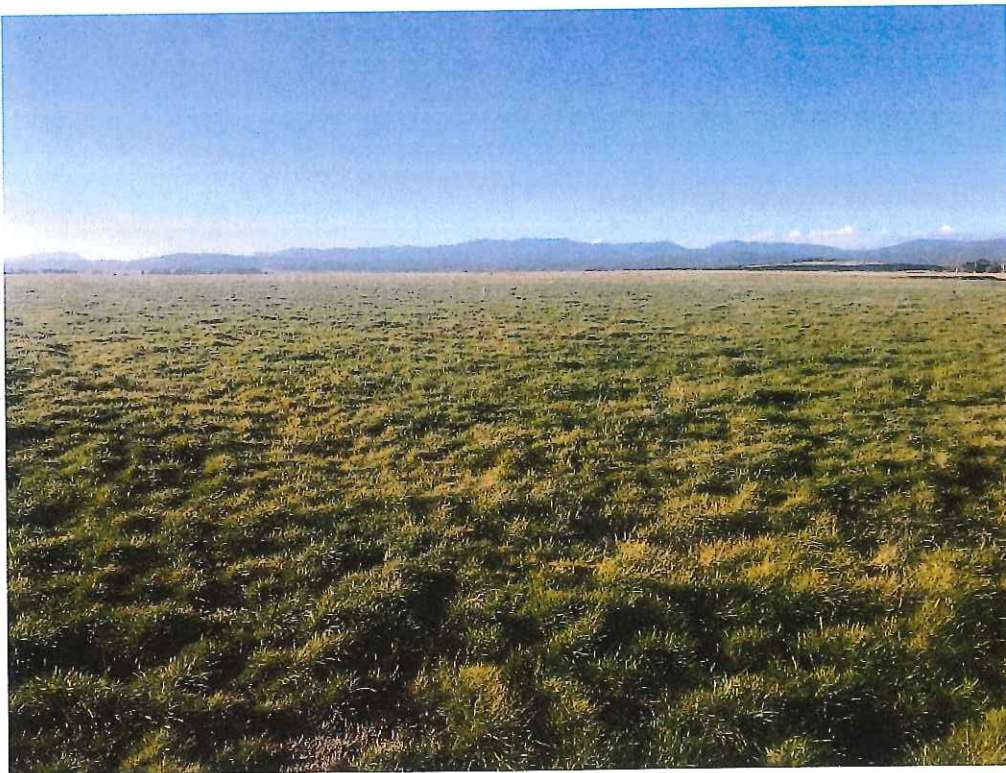


Figure 3; northerly view across the Mews property



Figure 4; Brickendon soil type present throughout the Queenscliff and Mews properties

3 Proposed development

The proposed development for the Queenscliff and Mew properties is an extensive and broad development, and fully outlined in the Ridgeside Lane Development Proposal.

Please refer to the Ridgeside Lane Development Proposal for complete and full details on the proposed development.

A layout of the proposed development is attached in Appendix 5.