Hypoxis vaginata (sheathing yellowstar) TSPA: Rare

Hypoxis vaginata occurs in moist grassy environments including unimproved pastures. An estimated 2,200 plants were documented within the study area growing in both native forest and pasture situations. The period of observation for this species is quite narrow as sites that were present in October were not found in November. It is possible that a significantly higher number of plants may be observed within the study area in different seasons, however no further detailed surveys for this species are considered warranted in this case. A permit to 'take' this species may be required.

Hypoxis vaginata **(sheathing yellowstar) and typical habitat (right)**

Siloxerus multiflorus (small wrinklewort) TSPA: Rare

Siloxerus multiflorus was found on rock plates and rocky areas within dry grassy forest immediately adjacent to the study area. A total of 280 plants were documented however this is an approximation only as the plants are very small and numbers are difficult estimate. No immediate impacts to sites supporting this species are anticipated.

Siloxerus multiflorus **(small wrinklewort) and typical habitat (right)**

***Triptilodiscus pygmaeus* (dwarf sunray) TSPA: Vulnerable**

Triptilodiscus pygmaeus occurs in grasslands, grassy woodlands and rockplates. Approximately 420 plants were documented throughout the study area in native forest and well as sites managed for grazing (as pictured below). The distribution of records within the study area suggests it may be difficult to avoid some sites which support the species however every effort should be made to do so. A permit to 'take' this species may be required.

***Triptilodiscus pygmaeus* (dwarf sunray) and typical habitat (right)**

***Tricoryne elatior* (yellow rush lily) TSPA: Vulnerable**

Tricoryne elatior occurs in grasslands and open woodlands in the Midlands. It is estimated that approximately 240 plants are present within and immediately adjacent to the study area in the general area surrounding 'Gibbet Hill'. If works can be avoided from the Gibbet Hill area it may be possible to avoid removing any of these plants all together. If not, then a permit to 'take' this species will be required.

***Tricoryne elatior* (yellow rush lily) and typical grassy habitat (right)**

***Vittadinia burbidgeae* (smooth new-holland-daisy) [State 'rare']**

Vittadinia burbidgeae occurs in grasslands of the Midlands and Northern Midlands. Approximately 230 plants were recorded within the study area from the Gibbet Hill area. Again, if works are avoided from the 'Gibbet Hill Cutting' area then it may be possible to avoid impacting any records of this species. If not, then a permit to 'take' this species will be required. [A record of *Vittadinia cuneata var.cuneata* (fuzzy new-holland-daisy) is also known from the area near Gibbet Hill however this species was not identified within the study area. All *Vittadinia* specimens observed within the study area were hairless and therefore attributed to *Vittadinia burbidgeae*].

***Vittadinia burbidgeae* (smooth new-holland-daisy)**

3.3 Weeds

The following declared weeds which are listed under the Tasmanian *Weed Management Act 1999* were identified within the study area:

- Blackberry (*Rubus fruticosus*)
- Broom (*Genista monspessulana*)
- Fennel (*Foeniculum vulgare*)
- Gorse (*Ulex europaeus*)
- Ragwort (*Senecio jacobaea*)
- Spanish Heath (*Erica lusitanica*)
- Slender Thistle (*Cardus spp*)

3.4 Threatened Fauna

Table 3. Threatened fauna known within 5 km of the study area				
Species	Status TSPA/EPBCA	Breeding Range	Habitat Descriptions and Observations	Significant Habitat Present
Australian Grayling *Prototroctes maraena*	vulnerable/ VULNERABLE	Potential	All streams and rivers in their lower to middle reaches. Areas above permanent barriers (e.g. Prosser River dam, weirs) that prevent fish migration are not potential habitat. **No suitable habitat within the study area.**	**NO**
Eastern Barred Bandicoot *Perameles gunnii*	-/ VULNERABLE	Core	Open vegetation types including woodlands and open forests with a grassy understorey, native and exotic grasslands, particularly in landscapes with a mosaic of agricultural land and remnant bushland **Species observed within the study area. Suitable habitat present.**	**YES**
Green & Gold Frog *Litoria raniformis*	vulnerable/ VULNERABLE	Core	Permanent and temporary waterbodies, usually with vegetation in or around them. Potential habitat includes features such as natural lagoons, permanently or seasonally inundated swamps and wetlands, farm dams, irrigation channels, artificial water-holding sites such as old quarries, slow-flowing stretches of streams and rivers and drainage features. **Species and habitat observed within and adjacent to the study area.**	**YES**
Green-lined Ground Beetle *Catadromus lacordairei*	vulnerable/ -	Potential	Open, grassy/sedgy, low altitude grasslands and woodlands associated with wetlands and low-lying plains or flats adjacent to rivers/streams. Key habitat elements that need to be present include sheltering sites such as patches of stones, coarse woody debris and/or cracked soils. The species is a highly active and mobile flyer that often comes to ground close to water sources and is rarely found further	**NO**

			than 250 m from such a source. **Potential habitat present within study area.**	
Grey Goshawk *Accipiter novahollandiae*	endangered/ -	Potential	Native forest with mature elements below 600 m altitude, particularly along watercourses. FPA's *Fauna Technical Note 12* can be used as a guide in the identification of grey goshawk habitat **No suitable habitat within the study area.**	**NO**
Masked Owl *Tyto novaehollandiae castanops*	endgangered/ VULNERABLE	Core	Trees with large hollows (≥15 cm entrance diameter). In terms of using mapping layers, potential habitat is considered to be all areas with at least 20% mature eucalypt crown cover (PI-type mature density class 'a', 'b', or 'c'). From on-ground surveys this is areas with at least 8 trees per hectare over 100 cm dbh. **Potential habitat present within study area.**	**YES**
Spotted-tailed Quoll *Dasyurus maculatus*	rare/ VULNERABLE	Potential	Coastal scrub, riparian areas, rainforest, wet forest, damp forest, dry forest and blackwood swamp forest (mature and regrowth), particularly where structurally complex areas are present, and includes remnant patches in cleared agricultural land . **Potential habitat present within study area.**	**NO**
Swan Galaxias *Galaxias fontanus*	endangered/ ENDANGERED	Potential	Slow to moderately fast flowing streams containing permanent water (even when not flowing), which have good in-stream cover from overhanging banks and/or logs, and shade from overhanging vegetation. A population can only be maintained where barriers have prevented establishment of trout and redfin perch. The nature of these barriers is variable and can include permanent natural structures such as waterfalls and chutes and also low flow-dependent features such as marshes, ephemeral water-losing and remnant channels, and braided channel floodplain features	**NO**

			No suitable habitat within the study area.	
Tasmanian Devil *Sarcophilus harrisii*	endangered/ ENDANGERED	Potential	All terrestrial native habitats, forestry plantations and pasture. Devils require shelter (e.g. dense vegetation, hollow logs, burrows or caves) and hunting habitat (open understorey mixed with patches of dense vegetation) within their home range (4-27 km^2). **Potential habitat present within study area.**	**NO**
Tussock Skink *Pseudomoia pagenstecheri*	vulnerable/ -	Potential	Grassland and grassy woodland (including rough pasture with paddock trees), generally with a greater than 20% cover of native grass species, especially where medium to tall tussocks are present. **Potential habitat present within study area.**	**NO**
Wedge-tailed Eagle *Aquila audax fleayi*	endangered/ ENDANGERED	Potential	*Potential foraging* habitat is a wide variety of forest (including areas subject to native forest silviculture) and non-forest habitats. *Potential nesting* habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest. Nest trees are usually amongst the largest in a locality. They are generally in sheltered positions on leeward slopes, between the lower and mid sections of a slope and with the top of the tree usually lower than the ground level of the top of the ridge **Potential foraging habitat present only.**	**NO**
White-bellied Sea Eagle *Haliaeetus leucogaster*	VULNERABLE/ -	Potential	*Potential foraging* habitat. Potential foraging habitat is any large waterbody (including sea coasts, estuaries, wide rivers, lakes, impoundments and even large farm dams) supporting prey items (fish). *Potential nesting* habitat is tall eucalypt trees in large tracts (usually more than 10 ha) of eucalypt or mixed forest within 5 km of the coast (nearest coast including	**NO**

			shores, bays, inlets and peninsulas), large rivers (Class 1), lakes or complexes of large farm dams. Scattered trees along river banks or pasture land may also be used. The species nests and forages mainly near the coast but will also live near rivers, lakes and farm dams **Potential foraging habitat present only.**	

Eastern Barred Bandicoot

The study area falls within the core range of the Eastern Barred Bandicoot (*Perameles gunnii*) and supports optimal breeding habitat for the species with mosaics of open grassy woodland, native forest remnants and agricultural land. The species was observed at one location within the study area and evidence of suspected bandicoot diggings were observed at various locations. The species is not listed under Tasmanian threatened species legislation however it is recognised as Vulnerable under the *EPBC Act 1999.* (it is considered a distinct subspecies from the mainland barred bandicoots and therefore only occurs in Tasmania)

Eastern Barred Bandicoot (left) and suspected bandicoot diggings (right) observed from within the study area

Green and Gold Frog

The study area falls within the core range of the Green & Gold Frog (*Litoria raniformis*). Within and adjacent to the study area are numerous farm dams with varying degrees of suitability for the species ranging from high quality to unsuitable. Green & Gold Frogs were observed at three locations close to the study area and are likely to disperse throughout the study area at various times using the network of connecting drainage channels. A detailed account of habitat values and survey data for this species is provided in FPA (2014). The Green and Gold Frog is recognised as vulnerable under both the *TSP Act 1995* and the *EPBC Act 1999*.

Green & Gold Frog identified immediately adjacent to the study area on 'Rathmolyn Farm'

Masked Owl

The study area falls within the core range of the Masked Owl (*Tyto novaehollandiae castanops*) and supports optimal foraging habitat with some potential nesting habitat. Trees greater than one metre in diameter within the study area or those supporting obvious hollows were noted as important to the species. The distribution of such trees was mapped and can be seen in Appendix 4. The Masked Owl is recognised as Endangered under the *TSP Act 1995* and Vulnerable under the *EPBC Act 1999*.

Tasmanian Masked Owl (photograph by Deane Lewis)

4. Discussion and Management Recommendations

Vegetation

The study area supports largely non-threatened and 'non-priority' vegetation types in terms of their conservation status apart from the two small pockets (0.2 ha and 0.08 ha) of *E.ovata* forest and woodland (DOV) which are present in the south western corner (Appendix 2). This vegetation type is recognised under Schedule 3A of the *Nature Conservation Act 2002* as a threatened forest community and as such requires some careful consideration.

In term of the ecological condition of these forest patches they are in a considerably degraded state with heavy infestations of gorse in the understorey and ongoing disturbance from cattle grazing. Whilst they are degraded patches they are very much remnants of a forest community that was once much more widespread and so it is recommended that disturbance to these patches be avoided if at all possible. If disturbance to these patches is unavoidable then consideration should be given to identifying a suitable area for planting a small *E.ovata* offset at least the size of what is removed. Seedlings planted under this scenario would ideally be germinated from locally sourced seed and would be planted into a wet or poorly drained site that favours *E.ovata.*

Threatened Flora

A total of 11 State listed threatened flora species were identified within the study area. Two of these species (*Tricoryne elatior* and *Triptilodiscus pygmaeus*) are recognised as 'vulnerable' under the Tasmanian *Threatened Species Protection Act 1995* whilst the remaining nine species (*Aphelia gracilis, Aphelia pumilio, Arthropodium stictum, Brunonia australis, Caesia calliantha, Haloragis heterohpylla, Hypoxis vaginata, Siloxerus multiflorus* and *Vittadinia burbidgeae*) are recognised as 'rare'. It is recommended that direct impacts to threatened flora be minimised in the early planning phase of this project simply by avoiding as many known threatened flora sites as possible, particularly the higher priority species *Tricoryne elatior* and *Triptilodiscus pygmaeus* (refer to Appendix 3). It seems inevitable however, that regardless of the final alignment that is determined for this project that some direct impacts to threatened flora will be anticipated and that a permit to remove some threatened species will need to be obtained from DPIPWE. The exact extent of impacts on threatened flora, however cannot be determined until further detailed designs of the proposed project footprint are established. Applying for and obtaining a threatened flora permit however should not be particularly onerous or time consuming, provided that impacts to the 'vulnerable' listed species are maintained at an absolute minimum.

Threatened Fauna

Eastern Barred Bandicoot

The proposed project stands to have a number of potential impacts on this species including the loss of habitat, fragmentation of habitat, creating barriers to dispersal and increased mortality from increased numbers of roadkill. These impacts however are unlikely to constitute a significant impact overall on the species and therefore a referral under the *EPBC Act 1999* is not recommended. Mitigation measures for eastern barred bandicoot that should be considered in the final design include the following:

- Maximise use of the existing highway alignment to reduce the extent of habitat loss and fragmentation.
- Implement designated fauna underpasses at various points along the alignment to enable dispersal of individuals between areas of otherwise continuous habitat east and west of the highway. This should include complimentary fencing or barrier construction either side of the underpass running parallel to the highway so as to 'funnel' species through at these designated points.

Green & Gold Frog

The proposed project stands to have a number of potential impacts on this species including disturbance to breeding habitat, creating barriers to dispersal and increased roadkill. It seems apparent that for the most part the project can be designed in a manner which completely avoids directly impacting waterbodies. There is one small pond of moderate quality in the northern end of the study area (labelled number 3 in Appendix 4) which may be difficult to avoid and it is anticipated that a number of drainage channels (mostly dam overflows which drain out through the pasture areas during the wetter months) will also be crossed and require some form of culvert or pipe. Mitigation measures for green and gold frog that should be considered in the final design include the following:

- Avoid disturbance to breeding habitat by implementing a buffer of at least 30 m around all important waterbodies (Appendix 4)
- Enable the species to disperse throughout the landscape by implementing frog underpasses at locations where the highway bisects a drainage line and a pipe or culvert is required.

At this point a designated 'impact assessment' for green and gold frog has not be carried out to determine whether a referral under the EPBC Act should be initiated. It is the opinion of the author however that if direct impacts to breeding habitat (waterbodies with aquatic vegetation) are avoided and a deliberate and considered approach to drainage channels is taken that a referral would not be necessary. As a minimum it may be precautionary for DIER to at least submit preliminary documentation on the matter to the Commonwealth with the aim of achieving a 'not controlled action' or 'not controlled action – particular manner' (scenario where the proposed action is not likely to be significant if undertaken in a particular manner and approval is not required).

Masked Owl

The project stands to potentially impact this species through the removal of potential nesting trees, loss of foraging habitat (minimal loss) and increased mortality from roadkill. The primary mitigation measure which is considered practicable in this case is to avoid removing important masked owl habitat tress (as identified in Appendix 4).

Weeds

There are extensive areas infested with declared weeds within the study area (Appendix 2) as well as additional scattered occurrences. It is recommended that a dedicated weed management plan be developed and implemented during the lifecycle of the project and then monitored for at least 3 years post-construction.

5. References

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Appendix 1

Vascular Plant Species List
Status codes
i – introduced species
d – declared weed under the *Weed Management Act 1999*
t – listed under *the Tasmanian Threatened Species Protection Act 1995*

Family/Species Name	Common name	Status
ADIANTACEAE		
Cheilanthes austrotenuifolia	green rockfern	
AMARYLLYDACEAE		
Leucojum aestivum	snowflakes	
APIACEAE		
Foeniculum vulgare	fennel	
ASTERACEAE		
Arctotheca calendula	capeweed	
Cardus pycnocephalus	slender thistle	
Chrysanthemum monilifera	boneseed	
Chrysocephalum semipapposum	clustered everlasting	
Centipedia elatinoides	spreading sneezeweed	
Euchiton collinus	common cottonleaf	
Leontodon taraxacoides	hairy hawkbit	
Leptorhynchos squamatus	scaly buttons	
Millotia tenuifolia	soft bowflower	
Scorzonera laciniata	scorzonera	
Senecio quadridentatus	cotton fireweed	
Siloxerus multiflorus	small wrinklewort	
Triptilodiscus pygmaeus	dwarf sunray	
Vittadinia burbidgeae	smooth new-holland-daisy	
ASPHODELACEAE		
Bulbine glauca	bluish bulbine-lily	
BORAGINACEAE		
Cynoglossum suaveolens	sweet houndstongue	
Myosotis laxa	lesser forgetmenot	
BRASSICACEAE		
Hirschfeldia incana	hoary mustard	
Lepidium africanum	common peppercress	
Nasturtium officianale	two-row watercress	
BRUNONIACEAE		
Brunonia australis	blue pincushion	
CACTACEAE		
Opuntia spp.	prickly pear	
CARYOPHYLLACEAE		
Silene gallica	french catchfly	

Appendix 1 (continued)

Stellaria media	garden chickweed
CASUARINACEAE	
Allocasuarina verticillata	drooping sheoak
CENTROLEPIDACEAE	
Aphelia gracilis	slender fanwort
Aphelia pumilio	dwarf fanwort
Centrolepis aristata	pointed bristlewort
Centrolepis strigosa	hairy bristlewort
CLUSIACEAE	
Hypericum gramineum	small st Johns-wort
COLCHIACEAE	
Burchardia umbellata	milkmaids
Wurmbea dioica	early nancy
CRASSULACEAE	
Crassula closiana	purple stonecrop
Crassula sieberiana	rock stonecrop
CYPERACEAE	
Carex appressa	tall sedge
Cyperus eragrostis	drain flatsedge
Isolepis levynsiana	flatsedge
Isolepis marginata	little clubsedge
Schoenus apogon	common bodsedge
DILLENIACEA	
Hibbertia procumbens	spreading guineaflower
DIPSACEAECEAE	
Dipsacus fullonum	wild teasel
DROSERACEAE	
Drosera peltata subsp. *peltata*	pale sundew
EPACRIDACEAE	
Lissanthe strigosa	peachberry heath
ERICACEAE	
Erica lusitanica	Spanish heath
EUPHORBIACEAE	
Poranthera microphylla	small poranthera
FABACEAE	
Daviesia latifolia	hop bitterpea
Bossiaea prostrata	creeping bossia
Cytisus scoparius	broom
Kennedia prostrata	running postman
Lotus corniculatus	common birdsfoot-trefoil
Platylobium triangulare	arrow flatpea

Appendix 1 (continued)

Trifolium campestre	hop cover
Ulex europaeus	gorse
GENTIANACEAE	
Centarium erythraea	common centaury
GERANIACEAE	
Pelargonium australe	southern storksbill
Geranium potentilloides	mountain cranesbill
GOODENIACEAE	
Goodenia lanata	trailing native-primrose
HALORAGACEAE	
Gonocarpus tetragynus	common raspwort
Gonocarpus teucrioides	forest raspwort
Haloragis heterophylla	variable raspwort
Myriophyllum pedunculatum var *pedunculatum*	matted watermilfoil
HEMEROCALLIDACEAE	
Caesia calliantha	blue grasslily
Dianella tasmanica	forest flaxlily
Thelionema umbellata	cluster lily
Tricoryne elatior	yellow rushlily
HYPOXIDACEAE	
Hypoxis vaginata	sheathing yellowstar
IRIDACEAE	
Diplarrena moraea	white flag-iris
JUNCACEAE	
Juncus australis	southern rush
Juncus bufonis	toad rush
Juncus pallidus	pale rush
Juncus spp.	pin rush species
LAMIACEAE	
Prunella vulgaris	selfheal
LAXMANNIACAE	
Arthropodium strictum	chocolate lily
Arthropodium milleflorum	pale vanilla-lily
Chamaescilla corymbosa	blue stars
Thysanotus patersonii	twining fringelily
LINACEAE	
Linum marginale	native flax
LOMANDRACEAE	
Lomandra longifolia	sagg
Lomandra nana	dwarf mat-rush
MIMOSACEAE	

Appendix 1 (continued)

Acacia dealbata	silver wattle
Acacia longifolia subsp. *sophorae*	coast wattle
Acacia mearnsii	black wattle
MYRTACEAE	
Eucalyptus amygdalina	black peppermint
Eucalyptus globulus	blue gum
Eucalyptus ovata	black gum
Eucalyptus viminalis	white gum
MYOPORACEAE	
Myoporum parvifolium	creeping boobialla
ORCHIDACEAE	
Microtis unifolia	common onion-orchid
Thelymitra spp.	sun orchid
Chiloglottis spp.	bird orchid
OXALIDACEAE	
Oxalis articulat	bent woodsorrel
Oxalis corniculata	yellow woodsorrel
Oxalis perennans	grassland woodsorrel
PAPAVERACEAE	
Eschscholzia californica	californian poppy
PITTOSPORACEAE	
Bursaria spinosa	prickly box
PLANTAGINACEAE	
Plantago lanceolata	ribwort plantain
Plantago hispida	hairy plantain
Plantago varia	variable plantain
POACEAE	
Agrostis spp.	browntop
Anthoxanthum odoratum	sweet vernal
Austrodanthonia caespitosa	common wallabygrass
Austrostipa pubinodis	tall speargrass
Austrostipa stuposa	corkscrew speargrass
Briza maxima	greater quaking-grass
Briza minor	lesser quaking-grass
Dactylis glomerata	cocksfoot
Ehrharta stipoides	weeping grass
Holcus lanatus	yorkshire fog
Poa labillaredierei	silver tussockgrass
Poa rodwayi	velvet tussockgrass
Themeda triandra	kangaroo grass
POLYGALACEAE	
Comesperma volubile	blue lovecreeper
POLYGONACEAE	
Acetosella vulgaris	sheeps sorrel

Appendix 1 (continued)

Rumex crispus	curled dock
PROTEACEAE	
Banksia marginata	silver banksia
Lomatia tinctoria	guitarplant
RANUNCULACEAE	
Clematis aristata	mountain clematis
Ranunculus sp.	buttercup
ROSACEAE	
Acaena novae-zelandiae	common buzzy
Cotoneaster pannosus	velvet cotoneaster
Crataegus monogyna	hawthorn
Rosa rubignosa	sweet briar
Rubus fruticosus	blackberry
Rubus parvifolia	native raspberry
Sanguisorba minor	salad burnett
RUBIACEAE	
Asperula conferta	common woodruff
Opercularia ovata	broadleaf stinkweed
SALICACEAE	
Poplus alba	white poplar
Salix spp	willow
SANTALACEAE	
Exocarpus cupressiformis	native cherry
SAPINDACEAE	
Dodonaea viscosa	broadleaf hopbush
SCROPHULARIACEAE	
Parentucellia latifolia	broadleaf glandweed
Parentucellia viscosa	yellow glandweed
Veronica gracilis	slender speedwell
THYMELEACEAE	
Pimelea humilis	dwarf riceflower
VIOLACEAE	
Melicytus dentatus	spiky violetbush
Viola hederacea	ivyleaf violet

Appendix 5 – Threatened Flora GPS positions

easting	northing	ID	lat	lon	species	number_of
513874	5398409	83	-41.56587132000	147.16640250000	Aphelia gracilis	500
514254	5400487	179	-41.54714900000	147.17091710000	Aphelia gracilis	10
514656	5401377	197	-41.53912350000	147.17571170000	Aphelia gracilis	5
514189	5400886	4	-41.54355451000	147.17011990000	Aphelia pumilio	50
514188	5400893	5	-41.54348938000	147.17010910000	Aphelia pumilio	20
514173	5400989	43	-41.54263040000	147.16992550000	Aphelia pumilio	50
514225	5400987	49	-41.54264356000	147.17055480000	Aphelia pumilio	30
514210	5400935	51	-41.54311236000	147.17037770000	Aphelia pumilio	50
514662	5401388	315	-41.53902065000	147.17578610000	Arthropodium strictum	5
514524	5401227	57	-41.54047826000	147.17412750000	Arthropodium strictum	4
514525	5401237	58	-41.54038455000	147.17414920000	Arthropodium strictum	5
514530	5401241	59	-41.54034717000	147.17419850000	Arthropodium strictum	2
514533	5401247	60	-41.54029503000	147.17423890000	Arthropodium strictum	2
514537	5401253	61	-41.54023821000	147.17428980000	Arthropodium strictum	12
514548	5401277	62	-41.54002857000	147.17442400000	Arthropodium strictum	5
514562	5401293	63	-41.53988499000	147.17458180000	Arthropodium strictum	4
514568	5401302	64	-41.53979547000	147.17466080000	Arthropodium strictum	5
514574	5401316	65	-41.53967570000	147.17472470000	Arthropodium strictum	20
514597	5401354	66	-41.53933212000	147.17500950000	Arthropodium strictum	10
514613	5401374	67	-41.53915350000	147.17519520000	Arthropodium strictum	20
513667	5398962	85	-41.56088945000	147.16390610000	Arthropodium strictum	80
513769	5399105	89	-41.55959873000	147.16513430000	Arthropodium strictum	20
513772	5399116	90	-41.55950602000	147.16516200000	Arthropodium strictum	50
513770	5399127	91	-41.55940603000	147.16514550000	Arthropodium strictum	40
513790	5399130	92	-41.55938029000	147.16537620000	Arthropodium strictum	50
513789	5399120	94	-41.55946570000	147.16536280000	Arthropodium strictum	30
513794	5399119	95	-41.55947316000	147.16542680000	Arthropodium strictum	50
513831	5399105	96	-41.55960367000	147.16587550000	Arthropodium strictum	50
513855	5399102	97	-41.55963141000	147.16615680000	Arthropodium strictum	100
513753	5399414	99	-41.55681954000	147.16492940000	Arthropodium strictum	150
513807	5399402	100	-41.55692875000	147.16557500000	Arthropodium strictum	150
514426	5400984	104	-41.54267030000	147.17295920000	Arthropodium strictum	3
514476	5401102	108	-41.54160236000	147.17355900000	Arthropodium strictum	5
514499	5401151	109	-41.54116449000	147.17383800000	Arthropodium strictum	30
514502	5401183	111	-41.54087381000	147.17386450000	Arthropodium strictum	5
513842	5398730	112	-41.56298267000	147.16601420000	Arthropodium strictum	13
513774	5399103	113	-41.55961884000	147.16518620000	Arthropodium strictum	3
513772	5399109	114	-41.55956369000	147.16516540000	Arthropodium strictum	2
513858	5399483	115	-41.55619333000	147.16618400000	Arthropodium strictum	30
513858	5399487	116	-41.55615988000	147.16618780000	Arthropodium strictum	20
513859	5399490	117	-41.55612920000	147.16619780000	Arthropodium strictum	50
514256	5400562	118	-41.54647367000	147.17093130000	Arthropodium strictum	10
514255	5400570	119	-41.54639974000	147.17092750000	Arthropodium strictum	10
514260	5400578	120	-41.54632682000	147.17097780000	Arthropodium strictum	10
514267	5400600	121	-41.54612540000	147.17106090000	Arthropodium strictum	5
514279	5400634	122	-41.54582474000	147.17121130000	Arthropodium strictum	1
514320	5400754	123	-41.54473686000	147.17169330000	Arthropodium strictum	175
514341	5400826	124	-41.54409380000	147.17194920000	Arthropodium strictum	175

514894	5401636	125	-41.53678469000	147.17855740000	Arthropodium strictum	5
514889	5401637	126	-41.53678050000	147.17850360000	Arthropodium strictum	10
514882	5401637	127	-41.53677975000	147.17841060000	Arthropodium strictum	10
514865	5401627	128	-41.53686365000	147.17821540000	Arthropodium strictum	5
514860	5401623	129	-41.53690238000	147.17815550000	Arthropodium strictum	10
514860	5401622	130	-41.53691210000	147.17814630000	Arthropodium strictum	10
514840	5401612	131	-41.53700162000	147.17790530000	Arthropodium strictum	5
514838	5401609	132	-41.53702768000	147.17788450000	Arthropodium strictum	10
514705	5401506	133	-41.53795917000	147.17629900000	Arthropodium strictum	10
514672	5401457	134	-41.53840198000	147.17589500000	Arthropodium strictum	20
514662	5401448	135	-41.53847951000	147.17578670000	Arthropodium strictum	10
514660	5401444	136	-41.53852335000	147.17576020000	Arthropodium strictum	10
514627	5401402	137	-41.53889735000	147.17536680000	Arthropodium strictum	10
514624	5401392	138	-41.53898712000	147.17533280000	Arthropodium strictum	20
514615	5401377	141	-41.53912484000	147.17521710000	Arthropodium strictum	20
514566	5401296	147	-41.53985364000	147.17463420000	Arthropodium strictum	20
514512	5401207	149	-41.54065495000	147.17398400000	Arthropodium strictum	20
514305	5400657	150	-41.54561863000	147.17151440000	Arthropodium strictum	10
514297	5400642	151	-41.54575224000	147.17142570000	Arthropodium strictum	20
514284	5400598	152	-41.54614678000	147.17126680000	Arthropodium strictum	8
514282	5400587	153	-41.54624409000	147.17124790000	Arthropodium strictum	10
514278	5400578	154	-41.54632657000	147.17119380000	Arthropodium strictum	40
514271	5400554	155	-41.54654165000	147.17111320000	Arthropodium strictum	9
514188	5400315	156	-41.54869747000	147.17012450000	Arthropodium strictum	5
514184	5400304	157	-41.54879202000	147.17007920000	Arthropodium strictum	20
514174	5400282	158	-41.54899428000	147.16995620000	Arthropodium strictum	20
514160	5400243	159	-41.54934674000	147.16978830000	Arthropodium strictum	7
514150	5400214	160	-41.54960314000	147.16967580000	Arthropodium strictum	150
514108	5400098	162	-41.55065163000	147.16917260000	Arthropodium strictum	150
514010	5399825	163	-41.55311130000	147.16800660000	Arthropodium strictum	10
513846	5399391	164	-41.55702498000	147.16604350000	Arthropodium strictum	20
513842	5399384	165	-41.55708491000	147.16600010000	Arthropodium strictum	10
514568	5400380	178	-41.54810328000	147.17467520000	Arthropodium strictum	6
514347	5400765	180	-41.54463778000	147.17201740000	Arthropodium strictum	5
514379	5400857	181	-41.54380755000	147.17240270000	Arthropodium strictum	5
514382	5400871	182	-41.54368216000	147.17244370000	Arthropodium strictum	5
514384	5400879	183	-41.54361209000	147.17245690000	Arthropodium strictum	15
514168	5400641	184	-41.54576054000	147.16987760000	Arthropodium strictum	8
514531	5401217	185	-41.54057021000	147.17421810000	Arthropodium strictum	5
514570	5401293	188	-41.53988021000	147.17467700000	Arthropodium strictum	8
514618	5401369	192	-41.53919139000	147.17525290000	Arthropodium strictum	15
514627	5401387	195	-41.53902970000	147.17536500000	Arthropodium strictum	20
514636	5401389	196	-41.53901562000	147.17547530000	Arthropodium strictum	5
514664	5401442	198	-41.53853953000	147.17580680000	Arthropodium strictum	20
513862	5398209	199	-41.56766916000	147.16627030000	Arthropodium strictum	10
513877	5398317	202	-41.56669878000	147.16644030000	Arthropodium strictum	5
513934	5398354	203	-41.56636183000	147.16712850000	Arthropodium strictum	5
513930	5398352	204	-41.56638203000	147.16707910000	Arthropodium strictum	10
514168	5400931	205	0.00000000000	0.00000000000	Arthropodium strictum	1000
514115	5400955	206	0.00000000000	0.00000000000	Arthropodium strictum	1000
514152	5401010	207	0.00000000000	0.00000000000	Arthropodium strictum	1000

514143	5400983	208	0.00000000000	0.00000000000	Arthropodium strictum	1000
514219	5400917	209	0.00000000000	0.00000000000	Arthropodium strictum	1000
514364	5401128	210	0.00000000000	0.00000000000	Arthropodium strictum	1000
514370	5401053	211	0.00000000000	0.00000000000	Arthropodium strictum	1000
514317	5400989	212	0.00000000000	0.00000000000	Arthropodium strictum	1000
514331	5400924	213	0.00000000000	0.00000000000	Arthropodium strictum	1000
514319	5400848	214	0.00000000000	0.00000000000	Arthropodium strictum	1000
514238	5400814	215	0.00000000000	0.00000000000	Arthropodium strictum	1000
514248	5400776	216	0.00000000000	0.00000000000	Arthropodium strictum	1000
514214	5400793	217	0.00000000000	0.00000000000	Arthropodium strictum	1000
514174	5400790	218	0.00000000000	0.00000000000	Arthropodium strictum	1000
514179	5400865	219	0.00000000000	0.00000000000	Arthropodium strictum	1000
513923	5398396	220	0.00000000000	0.00000000000	Arthropodium strictum	500
513917	5398427	221	0.00000000000	0.00000000000	Arthropodium strictum	500
514529	5401218	307	-41.54055638000	147.17419190000	Brunonia australis	10
514562	5401234	311	-41.54041423000	147.17459080000	Brunonia australis	2
514617	5401382	139	-41.53907429000	147.17523910000	Brunonia australis	4
514615	5401377	140	-41.53912484000	147.17521710000	Brunonia australis	20
514602	5401358	142	-41.53929155000	147.17506050000	Brunonia australis	40
514598	5401347	143	-41.53939272000	147.17501530000	Brunonia australis	50
514597	5401343	144	-41.53942860000	147.17499920000	Brunonia australis	20
514593	5401339	145	-41.53946523000	147.17495070000	Brunonia australis	20
514573	5401313	146	-41.53969724000	147.17471480000	Brunonia australis	40
514557	5401281	148	-41.53999102000	147.17453000000	Brunonia australis	30
514553	5401261	186	-41.54017014000	147.17447870000	Brunonia australis	20
514559	5401276	187	-41.54003612000	147.17455390000	Brunonia australis	7
514592	5401328	189	-41.53956145000	147.17494490000	Brunonia australis	15
514599	5401346	190	-41.53940328000	147.17503220000	Brunonia australis	20
514619	5401374	193	-41.53914822000	147.17527240000	Brunonia australis	20
514624	5401377	194	-41.53912266000	147.17532160000	Brunonia australis	40
513808	5399116	283	-41.55950694000	147.16559950000	Caesia calliantha	3
513832	5399107	285	-41.55958674000	147.16587980000	Caesia calliantha	2
513910	5399089	291	-41.55974901000	147.16682330000	Caesia calliantha	1
514523	5401213	306	-41.54060265000	147.17412590000	Caesia calliantha	1
514540	5401215	309	-41.54058765000	147.17432280000	Caesia calliantha	2
514394	5401090	342	-41.54171426000	147.17257370000	Caesia calliantha	3
514383	5401055	345	-41.54202456000	147.17244090000	Caesia calliantha	1
514250	5400847	350	-41.54390479000	147.17085330000	Caesia calliantha	12
514242	5400838	351	-41.54398793000	147.17076380000	Caesia calliantha	50
514249	5400833	352	-41.54402666000	147.17083980000	Caesia calliantha	20
514242	5400817	353	-41.54417267000	147.17075520000	Caesia calliantha	20
514246	5400804	354	-41.54429404000	147.17081260000	Caesia calliantha	20
514224	5400793	355	-41.54439387000	147.17054340000	Caesia calliantha	40
514211	5400784	356	-41.54447299000	147.17038720000	Caesia calliantha	30
514200	5400764	357	-41.54464826000	147.17026200000	Caesia calliantha	20
513914	5398386	82	-41.56607450000	147.16688620000	Caesia calliantha	5
514502	5401156	110	-41.54111420000	147.17387350000	Caesia calliantha	5
514147	5400208	161	-41.54966558000	147.16963110000	Caesia calliantha	5
514617	5401371	191	-41.53917924000	147.17524810000	Caesia calliantha	2
514451	5401026	105	-41.54228792000	147.17326760000	Haloragis heterophylla	20
514455	5401038	106	-41.54218289000	147.17330390000	Haloragis heterophylla	50

514474	5401098	107	-41.54163782000	147.17353070000	Haloragis heterophylla	10
513869	5398266	200	-41.56716163000	147.16635210000	Haloragis heterophylla	100
513872	5398277	201	-41.56705837000	147.16638180000	Haloragis heterophylla	100
514175	5400848	1	-41.54389850000	147.16995700000	Hypoxis vaginata	100
514190	5400851	2	-41.54387193000	147.17013370000	Hypoxis vaginata	50
514195	5400884	3	-41.54357412000	147.17019260000	Hypoxis vaginata	50
514177	5400854	6	-41.54383907000	147.16997880000	Hypoxis vaginata	10
514138	5400816	7	-41.54418935000	147.16951150000	Hypoxis vaginata	50
514149	5400811	8	-41.54422992000	147.16964600000	Hypoxis vaginata	50
514159	5400807	9	-41.54426663000	147.16976750000	Hypoxis vaginata	100
514168	5400775	10	-41.54455748000	147.16987940000	Hypoxis vaginata	50
514164	5400768	11	-41.54461876000	147.16983220000	Hypoxis vaginata	50
514172	5400765	12	-41.54464147000	147.16991840000	Hypoxis vaginata	50
514159	5400762	13	-41.54467525000	147.16976850000	Hypoxis vaginata	100
514188	5400755	14	-41.54473535000	147.17011250000	Hypoxis vaginata	100
514190	5400754	15	-41.54474407000	147.17013660000	Hypoxis vaginata	50
514217	5400756	16	-41.54472839000	147.17046440000	Hypoxis vaginata	25
514232	5400760	17	-41.54468740000	147.17064700000	Hypoxis vaginata	100
514231	5400782	18	-41.54449118000	147.17062830000	Hypoxis vaginata	50
514284	5400779	19	-41.54451859000	147.17126400000	Hypoxis vaginata	50
514258	5400825	20	-41.54409857000	147.17095120000	Hypoxis vaginata	150
514279	5400815	21	-41.54419036000	147.17120840000	Hypoxis vaginata	20
514321	5400818	22	-41.54416462000	147.17171010000	Hypoxis vaginata	50
514374	5401027	30	-41.54228314000	147.17233410000	Hypoxis vaginata	50
514402	5401072	33	-41.54187310000	147.17267800000	Hypoxis vaginata	200
514371	5401099	34	-41.54163069000	147.17229710000	Hypoxis vaginata	50
514367	5401083	35	-41.54177260000	147.17224880000	Hypoxis vaginata	50
514352	5401089	36	-41.54172633000	147.17206860000	Hypoxis vaginata	30
514285	5401087	37	-41.54173731000	147.17126550000	Hypoxis vaginata	5
514277	5401065	38	-41.54193831000	147.17116910000	Hypoxis vaginata	10
514263	5401050	39	-41.54207661000	147.17101300000	Hypoxis vaginata	100
514263	5401016	40	-41.54238565000	147.17100950000	Hypoxis vaginata	100
514242	5400988	41	-41.54263602000	147.17075940000	Hypoxis vaginata	50
514214	5401003	46	-41.54249570000	147.17042240000	Hypoxis vaginata	50
514223	5400991	47	-41.54261070000	147.17053250000	Hypoxis vaginata	50
514223	5400940	50	-41.54306224000	147.17052670000	Hypoxis vaginata	50
514203	5400898	52	-41.54344906000	147.17029060000	Hypoxis vaginata	50
514443	5401206	53	-41.54066878000	147.17316380000	Hypoxis vaginata	50
514426	5401159	54	-41.54108813000	147.17295920000	Hypoxis vaginata	50
514416	5401133	55	-41.54132039000	147.17283660000	Hypoxis vaginata	30
514379	5401128	56	-41.54136633000	147.17239590000	Hypoxis vaginata	20
513741	5399113	75	-41.55953427000	147.16479310000	Hypoxis vaginata	3
513757	5398976	76	-41.56076448000	147.16498820000	Hypoxis vaginata	5
513764	5398920	77	-41.56126765000	147.16507710000	Hypoxis vaginata	25
513777	5398907	78	-41.56138290000	147.16522550000	Hypoxis vaginata	50
513680	5398957	79	-41.56093773000	147.16406170000	Hypoxis vaginata	30
513754	5399304	80	-41.55781397000	147.16494290000	Hypoxis vaginata	50
513806	5399427	81	-41.55670471000	147.16556950000	Hypoxis vaginata	50
513772	5399422	101	-41.55674326000	147.16515560000	Hypoxis vaginata	3
514173	5400989	42	-41.54263040000	147.16992550000	Siloxerus multiflorus	50
514184	5400997	44	-41.54255714000	147.17005590000	Siloxerus multiflorus	100

514195	5401005	45	-41.54247953000	147.17018950000	Siloxerus multiflorus	100
514225	5400987	48	-41.54264356000	147.17055480000	Siloxerus multiflorus	30
513788	5399108	277	-41.55957702000	147.16535810000	Tricoryne elatior	1
513787	5399136	278	-41.55932263000	147.16534150000	Tricoryne elatior	5
513788	5399127	279	-41.55940636000	147.16535380000	Tricoryne elatior	10
513787	5399122	280	-41.55944651000	147.16533890000	Tricoryne elatior	10
513794	5399119	281	-41.55947610000	147.16542450000	Tricoryne elatior	10
513800	5399118	282	-41.55948289000	147.16549900000	Tricoryne elatior	5
513808	5399116	283	-41.55950694000	147.16559950000	Tricoryne elatior	20
513810	5399115	284	-41.55951189000	147.16561850000	Tricoryne elatior	10
513832	5399107	285	-41.55958674000	147.16587980000	Tricoryne elatior	10
513842	5399104	286	-41.55960778000	147.16599990000	Tricoryne elatior	20
513859	5399102	287	-41.55962756000	147.16620730000	Tricoryne elatior	20
513871	5399098	288	-41.55966385000	147.16635720000	Tricoryne elatior	20
513905	5399093	289	-41.55971280000	147.16676290000	Tricoryne elatior	1
513925	5399085	290	-41.55978472000	147.16699650000	Tricoryne elatior	20
513814	5399103	292	-41.55962312000	147.16566300000	Tricoryne elatior	2
513771	5399128	293	-41.55939563000	147.16515290000	Tricoryne elatior	10
513769	5399118	294	-41.55948909000	147.16513390000	Tricoryne elatior	20
513622	5398957	84	-41.56093958000	147.16337520000	Triptilodiscus pygmaeus	150
513801	5399100	98	-41.55964323000	147.16551010000	Triptilodiscus pygmaeus	50
513801	5399420	102	-41.55676304000	147.16550990000	Triptilodiscus pygmaeus	30
513801	5399429	103	-41.55668585000	147.16550670000	Triptilodiscus pygmaeus	10
514150	5400925	169	-41.54320045000	147.16965520000	Triptilodiscus pygmaeus	20
514264	5400830	170	-41.54405993000	147.17102900000	Triptilodiscus pygmaeus	30
514369	5401092	171	-41.54169565000	147.17227460000	Triptilodiscus pygmaeus	8
514198	5401012	172	-41.54242211000	147.17023200000	Triptilodiscus pygmaeus	20
514182	5400996	173	-41.54256527000	147.17003890000	Triptilodiscus pygmaeus	10
514161	5401017	174	-41.54237249000	147.16978410000	Triptilodiscus pygmaeus	20
514159	5401019	175	-41.54236017000	147.16975810000	Triptilodiscus pygmaeus	40
514156	5401019	176	-41.54235413000	147.16972510000	Triptilodiscus pygmaeus	20
514153	5401019	177	-41.54235413000	147.16969190000	Triptilodiscus pygmaeus	10
513781	5399090	68	-41.55973728000	147.16527150000	Vittadinia burbidgeae	15
513787	5399095	69	-41.55969629000	147.16534490000	Vittadinia burbidgeae	50
513789	5399091	70	-41.55973032000	147.16537260000	Vittadinia burbidgeae	30
513788	5399095	71	-41.55968925000	147.16535220000	Vittadinia burbidgeae	20
513778	5399018	72	-41.56038696000	147.16523950000	Vittadinia burbidgeae	8
513780	5398999	73	-41.56055912000	147.16525760000	Vittadinia burbidgeae	1
513784	5398968	74	-41.56083522000	147.16531300000	Vittadinia burbidgeae	25
513782	5398966	86	-41.56085559000	147.16529330000	Vittadinia burbidgeae	20
513780	5398992	87	-41.56062232000	147.16526070000	Vittadinia burbidgeae	3
513777	5399017	88	-41.56039744000	147.16522140000	Vittadinia burbidgeae	15
513789	5399120	93	-41.55946570000	147.16536280000	Vittadinia burbidgeae	30
513785	5399072	166	-41.55990341000	147.16531610000	Vittadinia burbidgeae	6
513786	5399057	167	-41.56003383000	147.16533910000	Vittadinia burbidgeae	3
513794	5399009	168	-41.56046449000	147.16543220000	Vittadinia burbidgeae	4

Appendix 6 – Masked Owl Habitat Tree Locations

easting	northing	ID	lat	lon	species	dia_cm
514467	5401072	299	-41.54186966000	147.17345560000	E.viminalis	146
514477	5401104	300	-41.54158627000	147.17356570000	E.amygdalina	117
514484	5401072	301	-41.54187729000	147.17365860000	E.viminalis	136
514503	5401096	302	-41.54165466000	147.17388560000	E.amygdalina	144
514504	5401114	303	-41.54149516000	147.17389640000	E.viminalis	113
514489	5401132	304	-41.54133632000	147.17371050000	E.amygdalina	105
514512	514512	305	-41.54075528000	147.17399160000	E.viminalis	102
514525	5401219	308	-41.54054523000	147.17414250000	E.amygdalina	148
514538	5401234	310	-41.54041448000	147.17429740000	E.amygdalina	146
514597	5401320	312	-41.53963605000	147.17501070000	E.viminalis	111
514630	5401383	313	-41.53906482000	147.17540180000	E.amygdalina	113
514665	5401388	314	-41.53902166000	147.17581450000	E.amygdalina	114
514650	5401421	316	-41.53872611000	147.17563950000	E.viminalis	130
514673	5401442	318	-41.53854070000	147.17591770000	E.viminalis	109
514716	5401502	319	-41.53799202000	147.17642330000	E.viminalis	106
514727	5401511	320	-41.53791131000	147.17655640000	E.viminalis	124
514733	5401522	321	-41.53781927000	147.17662610000	E.amygdalina	107
514741	5401543	323	-41.53762230000	147.17672880000	E.viminalis	110
514794	5401587	324	-41.53722516000	147.17736160000	E.viminalis	102
514901	5401630	326	-41.53683901000	147.17864140000	E.viminalis	106
515017	5401673	328	-41.53645168000	147.18002940000	E.viminalis	106
515021	5401674	329	-41.53644347000	147.18007840000	E.viminalis	122
515027	5401694	330	-41.53625705000	147.18015490000	E.viminalis	105
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514379	5401125	341	-41.54140019000	147.17239910000	E.amygdalina	120
514274	5400860	349	-41.54378668000	147.17114030000	E.ovata	141
514156	5400701	358	-41.54521965000	147.16973840000	E.ovata	120
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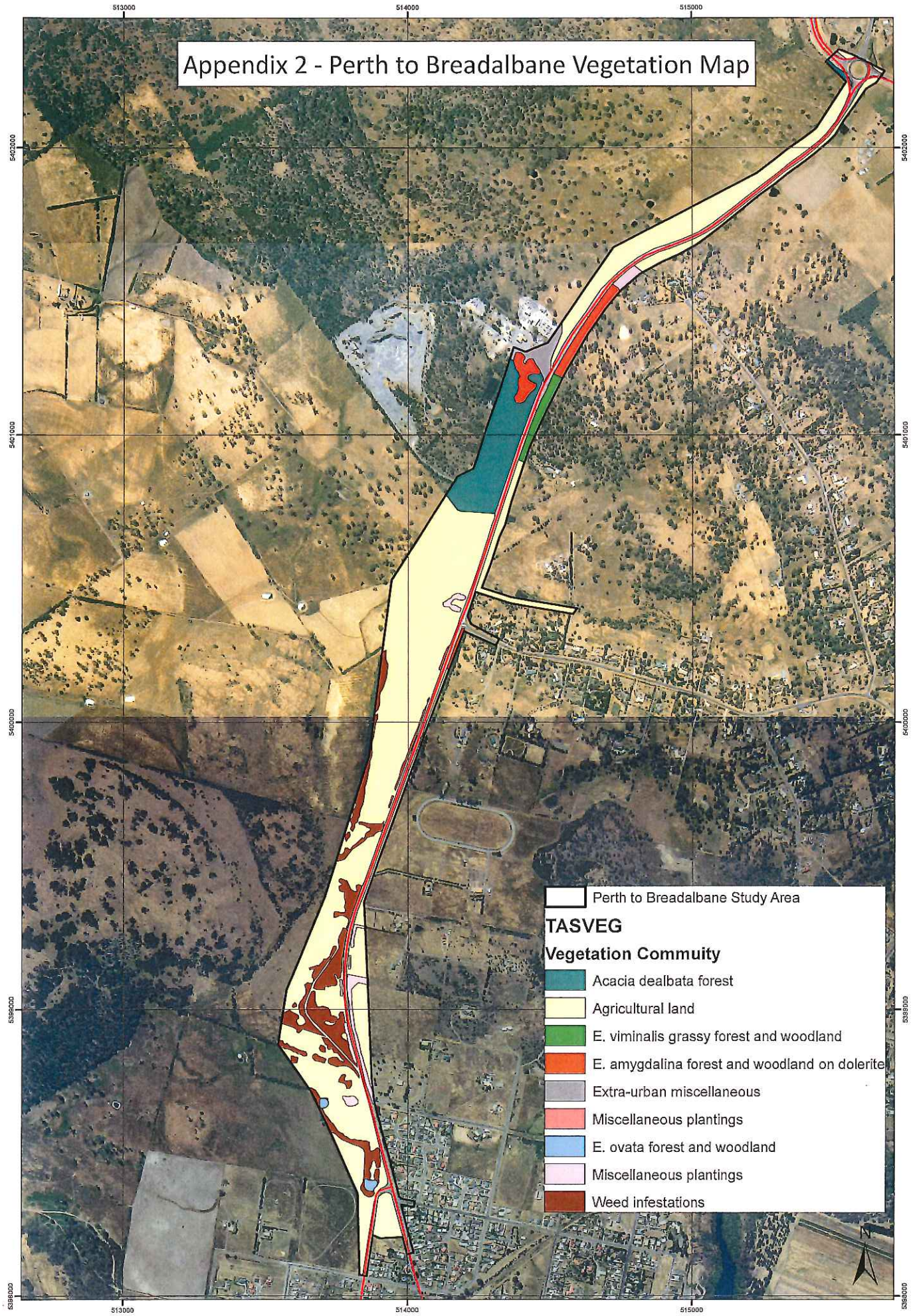
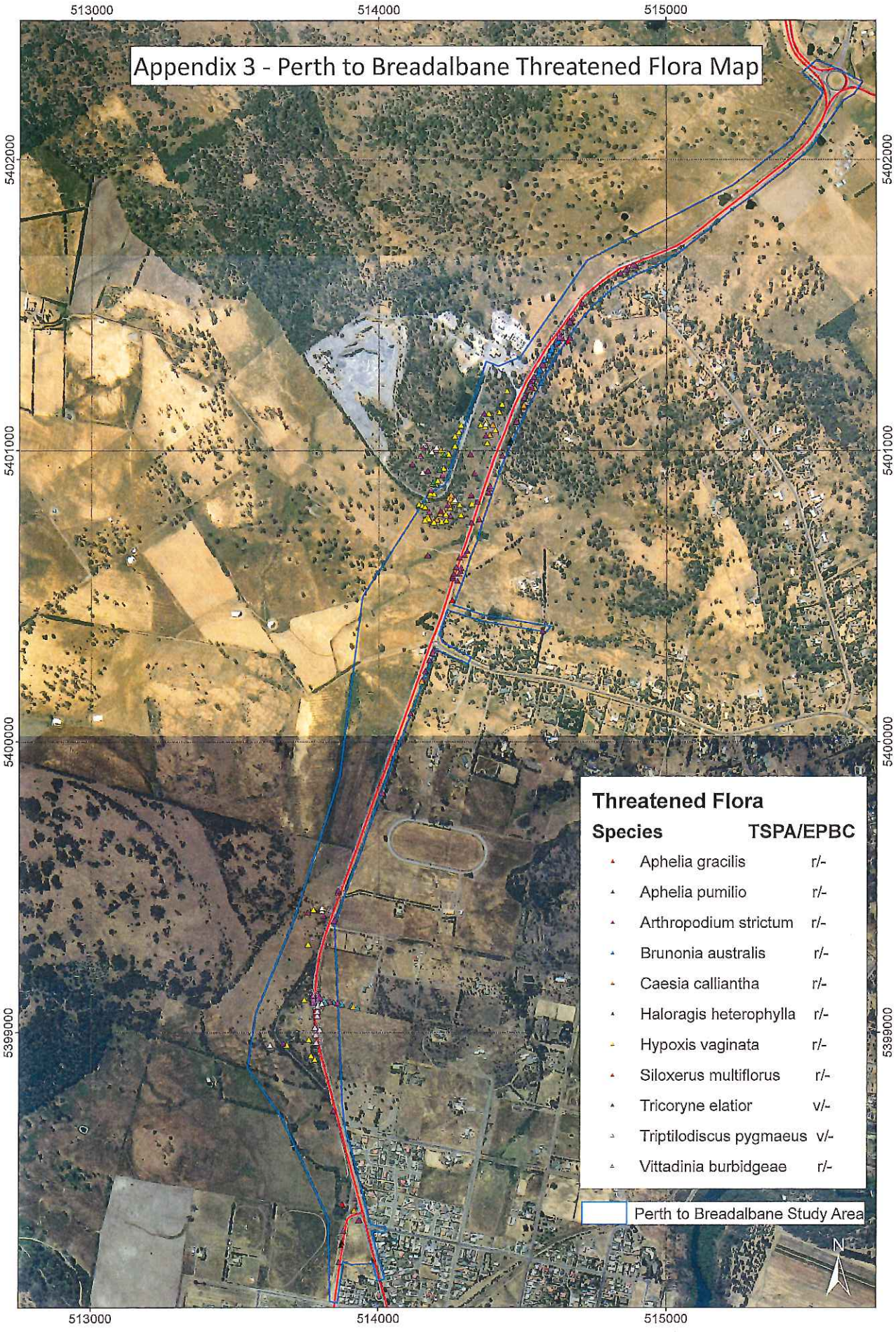
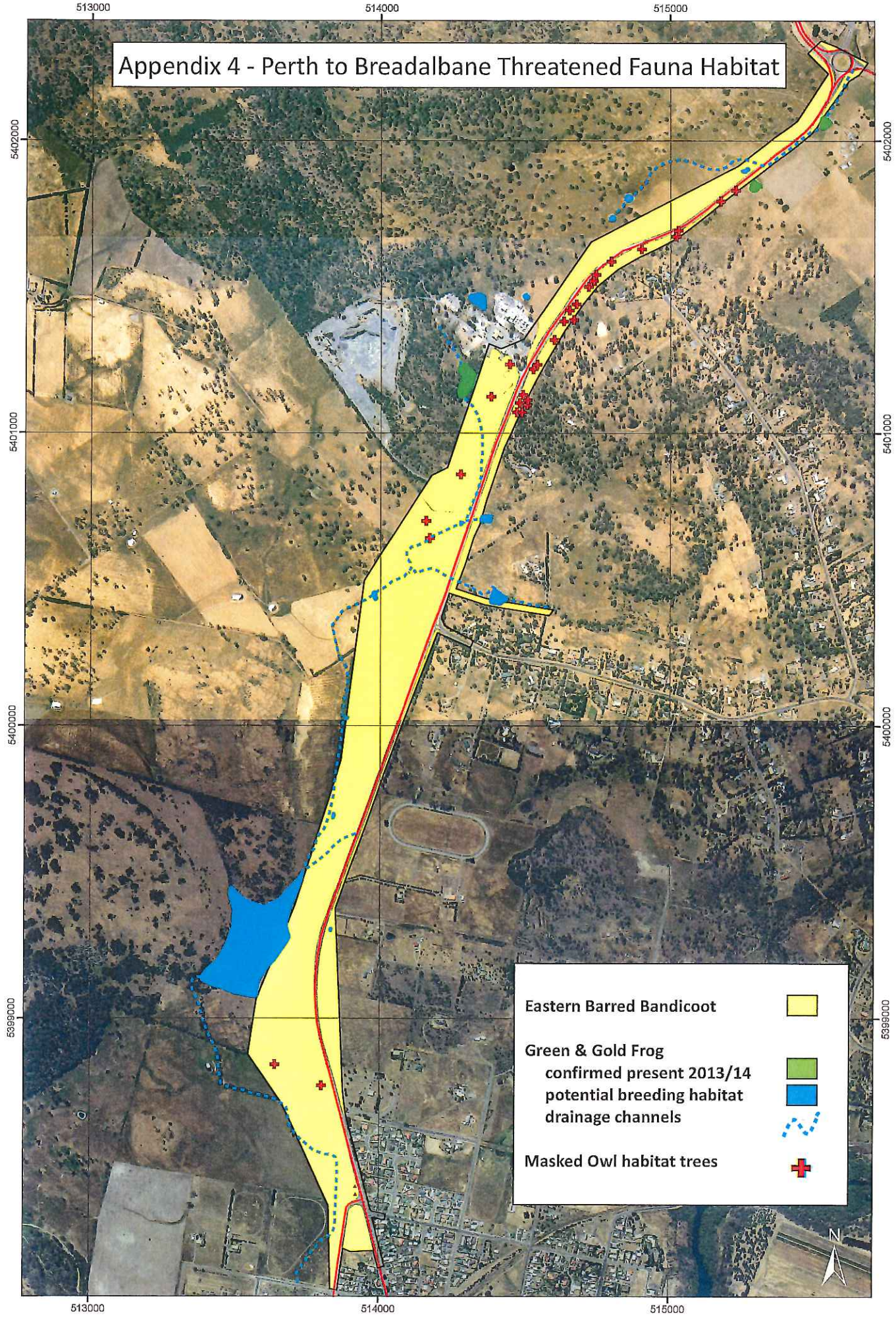
513799	5398770	367	-41.56261931000	147.16550030000	E.ovata	160


Appendix 2 - Perth to Breadalbane Vegetation Map
513000
514000
515000
5402000
5401000
5400000
5399000
5398000
Perth to Breadalbane Study Area
TASVEG
Vegetation Commuity
Acacia dealbata forest
Agricultural land
E. viminalis grassy forest and woodland
E. amygdalina forest and woodland on dolerite
Extra-urban miscellaneous
Miscellaneous plantings
E. ovata forest and woodland
Miscellaneous plantings
Weed infestations


Appendix 3 - Perth to Breadalbane Threatened Flora Map
513000
514000
515000
5402000
5401000
5400000
5399000
Threatened Flora
Species
TSPA/EPBC
Aphelia gracilis r/-
Aphelia pumilio r/-
Arthropodium strictum r/-
Brunonia australis r/-
Caesia calliantha r/-
Haloragis heterophylla r/-
Hypoxis vaginata r/-
Siloxerus multiflorus r/-
Tricoryne elatior v/-
Triptilodiscus pygmaeus v/-
Vittadinia burbidgeae r/-
Perth to Breadalbane Study Area
N


Appendix 4 - Perth to Breadalbane Threatened Fauna Habitat
513000
514000
515000
5402000
5401000
5400000
5399000
Eastern Barred Bandicoot
Green & Gold Frog
confirmed present 2013/14
potential breeding habitat
drainage channels
Masked Owl habitat trees
N

PERTH TO BREADALBANE DUPLICATION

COMPLIANCE STATEMENT UNDER THE BIODIVERSITY CODE OF THE *NORTHERN MIDLANDS INTERIM PLANNING SCHEME 2013*

Statement prepared by Environmental Consulting Options Tasmania for the

Department of State Growth

July 2015

CITATION

This report can be cited as: Environmental Consulting Options Tasmania (ECOtas) (2015). *Perth to Breadalbane Duplication: Compliance Statement under the Biodiversity Code of the Northern Midlands Interim Planning Scheme 2013.* Statement prepared by Environmental Consulting Options Tasmania for the Department of State Growth, Hobart.

Please note: the blank pages in this document are deliberate to facilitate double-sided printing.

Purpose of this document

The purpose of this document is to demonstrate how the project will comply with the Biodiversity Code under the *Northern Midlands Interim Planning Scheme 2013*.

Purpose and application of the Biodiversity Code

The purpose of the Biodiversity Code is stated at Section E8.1, as follows:

> "E8.1 Purpose of the Biodiversity Code
>
> E8.1.1
>
> The purpose of this provision is to:
>
> a) protect, conserve and enhance the region's biodiversity in consideration of the extent, condition and connectivity of critical habitats and priority vegetation communities, and the number and status of vulnerable and threatened species; and
>
> b) ensure that development is carried out in a manner that assists the protection of biodiversity by:
>
> i) minimising vegetation and habitat loss or degradation; and
>
> ii) appropriately locating buildings and works; and
>
> iii) offsetting the loss of vegetation through protection of other areas where appropriate".

Under these statements, it is noted that the *Scheme* (either within the Biodiversity Code or elsewhere) does not define the terms "critical habitats", "priority vegetation communities" or "vulnerable and threatened species".

"Critical habitat" has a specific meaning under the Tasmanian *Threatened Species Protection Act 1995* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. It is reasonably assumed that the Scheme did not intend to refer to these legal meanings rather a more generic "meaning". However, it is confirmed that the project area does not include any areas of "habitat" defined under either of these Acts as "critical".

It is also assumed that "priority vegetation communities" is intended to refer to the definition of "threatened vegetation" referred to in the *Scheme* (but not within the Biodiversity Code), as follows:

> "a threatened native vegetation community that is listed in Schedule 3A of the *Nature Conservation Act 2002* or a threatened native ecological community that is listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)".

In relation to "threatened vegetation types", assessments have indicated that there are two small patches (0.2 ha and 0.08 ha) of the threatened forest community "*Eucalyptus ovata* forest and woodland" (TASVEG code: DOV) present within the project area but that these patches represent considerably degraded small remnants of this forest type. Note that no vegetation types listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* have been identified from the project area.

"Threatened species" are usually taken to refer to flora and fauna species listed on schedules of the Tasmanian *Threatened Species Protection Act 1995* (as rare, vulnerable, endangered and presumed extinct) and/or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (as Vulnerable, Endangered, Critically Endangered and Extinct).

In relation to threatened flora species, assessments have indicated the presence of several State-listed species (no Commonwealth-listed species), as follows:

- *Aphelia gracilis* (slender fanwort) (rare);
- *Aphelia pumilio* (dwarf fanwort) (rare);
- *Arthropodium strictum* (chocolate lily) (rare - has been recommended for delisting);
- *Brunonia australis* (blue pincushion) (rare);
- *Caesia calliantha* (blue grass lily) (rare);
- *Haloragis heterophylla* (variable raspwort) (vulnerable - has been recommended for downlisting to rare);
- *Hypoxis vaginata* (sheathing yellowstar) (rare);
- *Siloxerus multiflorus* (small wrinklewort) (rare);
- *Tricoryne elatior* (yellow rush lily) (vulnerable);
- *Triptilodiscus pygmaeus* (dwarf sunray) (vulnerable); and
- *Vittadinia burbidgeae* (smooth new-holland daisy) (rare);

In relation to threatened fauna species, assessments have indicated the presence (or potential presence) of three State-listed species and Commonwealth-listed species, as follows (see more detailed reports on why the presence of other species are not further considered):

- *Perameles gunnii* subsp. *gunnii* (eastern barred bandicoot) (-/Vulnerable);
- *Litoria raniformis* (green and golden fog) (vulnerable/Vulnerable); and
- *Tyto novaehollandiae* subsp. *castanops* (masked owl) (endangered/Vulnerable).

The application of the Biodiversity Code is stated at Section E8.2, as follows:

> "E8.2 Application of this Code
>
> E8.2.1 This code applies to use or development of land:
>
> a) within the area identified as priority habitat on the planning scheme maps; or
>
> b) for the removal of native vegetation.

The Biodiversity Code defines a "priority habitat" as:

> "the areas identified on the planning scheme maps as priority habitat".

None of the project area is shown as priority habitat on the planning scheme overlay maps, such that clause E8.2.1(a) has no application in relation to the project area.

Clause E8.2.1(b) has application as the project will involve removal of native vegetation.

"Native vegetation" is defined in the *Scheme* as:

> "plants that are indigenous to Tasmania including trees, shrubs, herbs and grasses that have not been planted for domestic or commercial purposes".

Development Standards under the Biodiversity Code

Under Section E8.6.1 (Habitat and vegetation management), the objective is:

"To ensure that:

a) vegetation identified as having conservation value as habitat has priority for protection and is appropriately managed to protect those values; and

b) the representation and connectivity of vegetation communities is given appropriate protection when considering the impacts of use and development".

The Acceptable Solution (A2) is:

"A2. Clearance or disturbance of native vegetation is in accordance with a certified Forest Practices Plan".

The project is exempt from the requirements of a Forest Practices Plan under the Tasmanian *Forest Practices Regulations 2007*, so the Acceptable Solution has no application. Under the Regulations, a Forest Practices Plan is not required in certain specific circumstances, as stated below:

"4. Circumstances in which forest practices plan, &c., not required

For the purpose of section 17(6) of the Act, the following circumstances are prescribed:

(d) the harvesting of timber or the clearing of trees on any land, or the clearance and conversion of a threatened native vegetation community on any land, for one or more of the following purposes:

(iv) the construction and maintenance of public roads".

where a "public road" means:

"public road means–

(a) a State highway within the meaning of section 3 of the *Roads and Jetties Act 1935*; and

(b) a subsidiary road within the meaning of section 3 of the *Roads and Jetties Act 1935*; and

(c) a country road within the meaning of section 3 of the *Roads and Jetties Act 1935*; and

(d) a highway under local management within the meaning of section 4(6) of the *Local Government (Highways) Act 1982*".

The Performance Criteria (P2) are as follows:

P2. Clearance or disturbance of native vegetation must be consistent with the purpose of this Code and not unduly compromise the representation of species or vegetation communities of significance in the bioregion having regard to the:

a) quality and extent of the vegetation or habitat affected by the proposal, including the maintenance of species diversity and its value as a wildlife corridor; and

b) means of removal; and

c) value of riparian vegetation in protecting habitat values; and

d) impacts of siting of development (including effluent disposal) and vegetation clearance or excavations, in proximity to habitat or vegetation; and

e) need for and adequacy of proposed vegetation or habitat management; and

f) conservation outcomes and long-term security of any offset in accordance with the General Offset Principles for the RMPS, Department of Primary Industries, Parks, Water and Environment.

The *Scheme* (either within the Biodiversity Code or elsewhere) does not define the terms "clearance" or "disturbance" but this is taken to refer to the clearance and conversion of native vegetation to a non-native vegetation use ("clearance") or the temporary/permanent modification of native vegetation but where it is retained as native vegetation ("disturbance").

The *Scheme* (either within the Biodiversity Code or elsewhere) does not define the phrase "species or vegetation communities of significance" but this is taken to refer to vegetation types and flora and fauna species listed as threatened on State and/or Commonwealth legislation (see definitions provided in preceding sections).

Performance Criterion P2, unlike Performance Criterion P1, does not include reference to a "flora and fauna report prepared flora and fauna report prepared by a suitably qualified person". Such a report would normally provide detailed recommendations on the appropriate management of biodiversity values regarded as having conservation significance.

For the record, the *Scheme* (either within the Biodiversity Code or elsewhere) does not define the term "suitably qualified person" so this is assumed to refer to any reasonable test of the concept.

The Biodiversity Code defines a "flora and fauna report as":

"a report prepared by a suitably qualified person that must include:

a) a survey of the site identifying the extent, condition and connectivity of the habitat; and

b) an assessment of the value of the habitat to contribute to the conservation and protection of species of significance in the bioregion; and

c) an assessment of the full range of the impact that the proposed use or development will have on those values; and any mitigation or additional measures that should be incorporated to protect or enhance the values of the habitat."

While such a report is not formally required under Performance Criterion P2, it is reasonable to demonstrate that the principle of the requirement has been met for this project. Assessments of the project area have been undertaken by several highly qualified ecologists (all of whom meet the intent of "suitably qualified"), as identified in the following reports.

- *Assessment of Potential Impact on Ecological Values of Proposed Perth to Breadalbane Bypass and Associated Connectors, Tasmania. Report by Environmental Consulting Options Tasmania (ECOtas) for the Department of State Growth, 31 January 2015* (ECOtas 2015);
- *Green and Gold Frog Survey – Perth to Breadalbane. Report by the Forest Practices Authority for the Department of State Growth* (FPA 2014);
- *Perth to Breadalbane Ecological Assessment Report. Report prepared by the Forest Practices Authority for the Department of State Growth* (DIER 2014);
- *Perth to Breadalbane Ecological Assessment Report. Report prepared by the Forest Practices Authority for the Department of State Growth* – updated to include extension area in north (DIER 2015); and
- *Green and Gold Frog (*Litoria raniformis*) Management Guideline June 2015. Document prepared by GHD (Simon Lukies) for the Department of State Growth* (DSG 2015).

These assessments wholly comply with the recently released DPIPWE's revised *Guidelines for Natural Values Surveys - Terrestrial Development Proposals* (DPIPWE 2015).

These assessments have indicated that the key biodiversity values that need to be managed in relation to the project are the presence (and potential presence) of threatened flora and fauna. The Department of State Growth has determined, through specialist advice, that the project will not require referral under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. The Department of State Growth will comply fully with any permit conditions issued under the Tasmanian *Threatened Species Protection Act 1995*. In my opinion, the project will not compromise the representation of species or vegetation communities of significance at a regional level.

PERTH TO BREADALBANE LINK
WEED & DISEASE MANAGEMENT GUIDELINES

Department of State Growth

July 2015

CITATION

This report can be cited as: Department of State Growth (2015). *Perth to Breadalbane Link: Weed & Disease Management Guidelines.* Department of State Growth, Hobart.

AUTHORSHIP

Report: Mark Wapstra (Environmental Consulting Options Tasmania) in conjunction with officers of the Department of State Growth (Jillian Jones).

Field assessments: Mark Wapstra (Environmental Consulting Options Tasmania), Tim Leaman (Forest Practices Authority) and officers of the Department of State Growth (Troy Crystal).

Base data for mapping: TasMap, Department of State Growth

Digital and aerial photography: Mark Wapstra, GoogleEarth, TheList

ACKNOWLEDGEMENTS

This Weed & Disease Management Guideline is structured on the template provided in *Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania* (DPIPWE 2015).

Please note: the blank pages in this document are deliberate to facilitate double-sided printing.

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1.0 Glossary of terms used in this WDMG

DSG	Department of State Growth
DPIPWE	Department of Primary, Industries, Parks, Water & Environment
EPA	Environment Protection Agency
FPA	Forest Practices Authority
NVA	DPIPWE's *Natural Values Atlas*
WDMG	Weed & Disease Management Guidelines (this document)
WoNS	Weed of National Significance

2.0 INTRODUCTION

The Department of State Growth is upgrading the Midland Highway between Perth and Breadalbane in northern Tasmania. The duplication of this section of the Midland Highway forms part of a broader strategy to improve the safety and efficiency of the National Transport corridor. The Midland Highway between Perth and Breadalbane is both a critical freight connection and major passenger transport link.

The study area of this project is based largely on State Growth's 'Perth to Breadalbane' concept design report which was submitted under the 2012 Federal Governments 'Nation Building 2' major transport funding program.

2.1 Purpose and Scope

The purpose of the Weed & Disease Management Guidelines (WDMG) is to detail requirements for the management of weeds associated with the construction of the Perth to Breadalbane Link. The WDMG identifies site specific mitigation measures and environmental controls for weed management to ensure weeds and diseases are effectively managed during works and into the future. The WDMG identifies measures to control, eradicate and prevent the spread of declared weeds and environmental weeds.

2.2 Background, aims and objectives

This WDMG aims to provide a detailed methodology for mitigating and managing impacts associated with the presence, emergence and spread of weeds, throughout the project.

The objectives of the WDMG are to:

- document the distribution of weeds declared under the Tasmanian *Weed Management Act 1999*;
- document the distribution of significant, non-declared, environmental and agricultural weed species;
- document the presence and distribution of pathogens;
- provide control measures for identified weeds and pathogens and prevent new weeds and pathogens from establishing and spreading; and
- establish an ongoing monitoring and control program for weeds and pathogens into the future for the site.

2.3 Location and site description

The project site is located on the Midland Highway (A0087) between Youl Main Road in Perth and Breadalbane, see Figure 1 below. The area is dominated largely by agricultural land however there are patches of native forest and roadside remnant vegetation and considerable weed infestations.

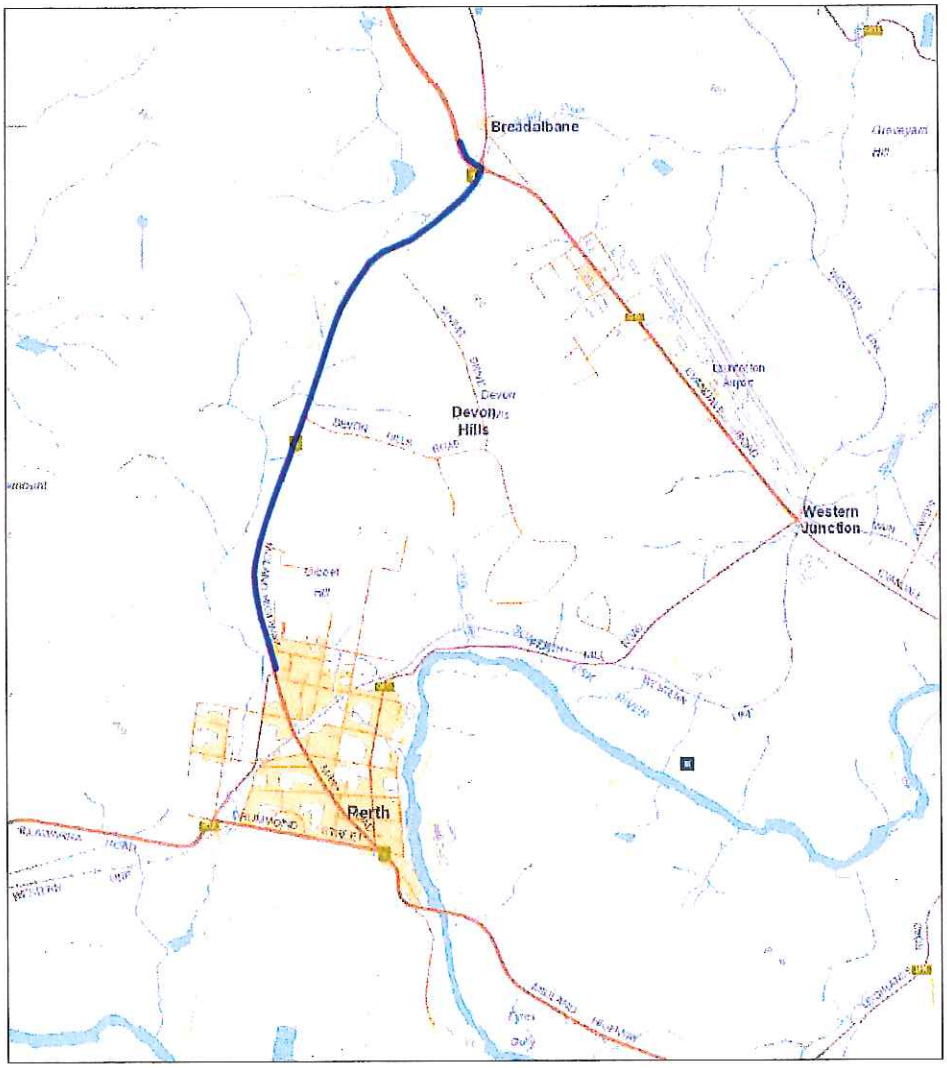

Figure 1. Perth to Breadalbane Project Location.

Weed species were identified within the project study area as part of flora investigation in 2013 and 2015. Figures 2 and 3 identify the original study area and then expanded study area following the design review in 2015.

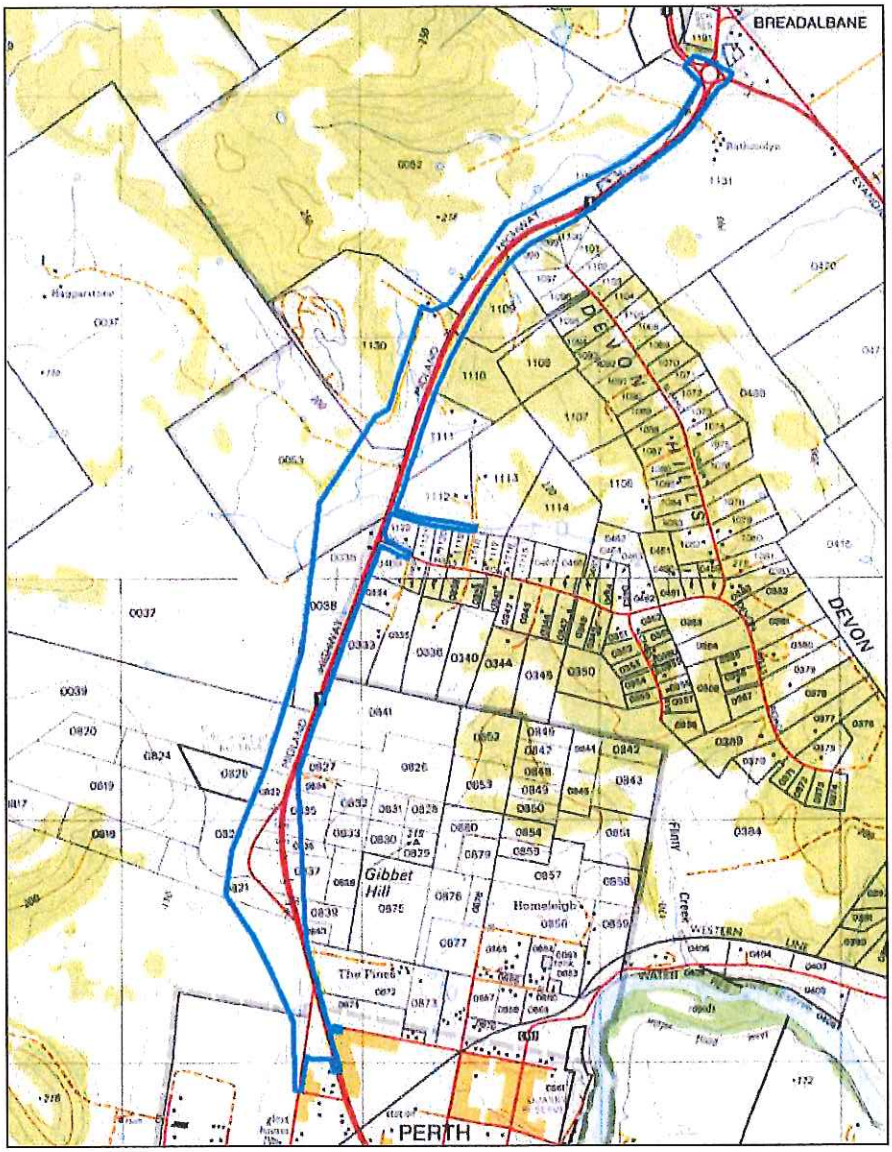

Figure 2. Perth to Breadalbane flora study area 2013

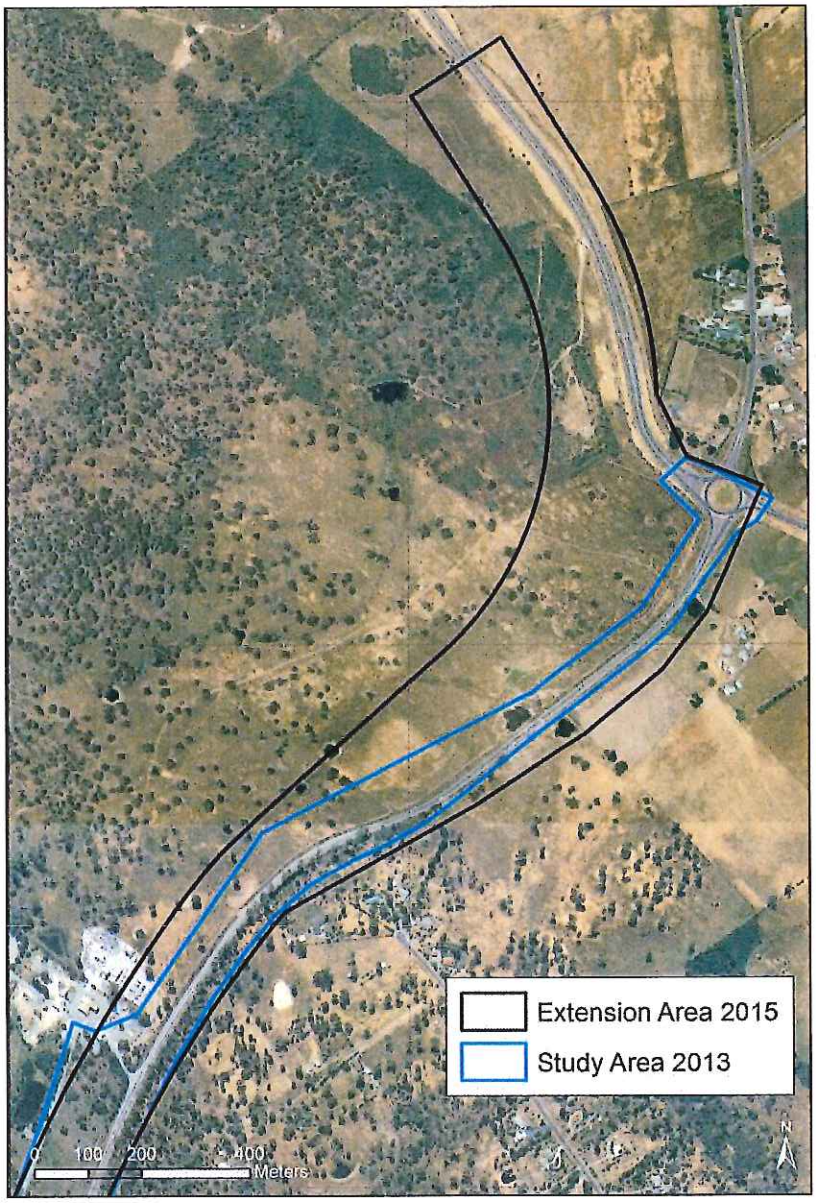

Figure 3. Perth to Breadalbane flora study area 2015.

3.0 LEGISLATION, STRATEGIES AND PLANS

This WDMG is prepared under the legislative and policy elements described below.

- Tasmanian *Weed Management Act 1999*

The Act is the primary legislation relating to the management of declared weeds in Tasmania.

- *Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens*

This manual (Allan & Gartenstein 2010) provides guidance on hygiene management and to reduce the risk of spreading environmental diseases.

- *Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania*

The present WDMG is structured on this set of guidelines (DPIPWE 2015).

4.0 EXISTING AND POTENTIAL WEED AND DISEASE ISSUES

Weeds, diseases and other pests have the potential to establish and/or spread across the project site during construction. Increased weed colonisation could potentially have some impact on the ecological values of adjacent remnant vegetation through displacement of native species and degradation of fauna habitat.

Weeds may be introduced and spread by construction vehicles or by contaminated soil or materials brought into the construction area (e.g. vehicles, machinery, equipment, clothing and boots).

4.1 Assessments

Several ecological assessments have been undertaken on behalf of the project proponent, as follows:

- *Assessment of Potential Impact on Ecological Values of Proposed Perth to Breadalbane Bypass and Associated Connectors, Tasmania. Report by Environmental Consulting Options Tasmania (ECOtas) for the Department of State Growth, 31 January 2015* (ECOtas 2015);
- *Green and Gold Frog Survey – Perth to Breadalbane. Report by the Forest Practices Authority for the Department of State Growth* (FPA 2014);
- *Perth to Breadalbane Ecological Assessment Report. Report prepared by the Forest Practices Authority for the Department of State Growth* (DIER 2014);
- *Perth to Breadalbane Ecological Assessment Report. Report prepared by the Forest Practices Authority for the Department of State Growth* – updated to include extension area in north (DIER 2015); and
- *Green and Gold Frog (*Litoria raniformis*) Management Guideline April 2015: Draft document prepared by GHD (Simon Lukies) for the Department of State Growth* (GHD 2015).

4.2 Weed species present within and adjacent to project area

Several weed species have been identified from within and adjacent to the project area, as per Table 1. Note that the priority indicated in the table is subjective only, based on the extent of the

species and potential to spread further beyond the works footprint, as per **Section 5 Management Priorities for Project Area**.

Table 1. Declared and environmental weeds recorded from within and adjacent to project area.

Species	Classification	Management zone	Distribution in project area	Priority
Carduus pycnocephalus (slender thistle) *Carduus tenuiflorus* (winged thistle)	Declared	Zone B (widespread infestations)	Occasional in "rough" pasture.	3
Erica lusitanica (spanish heath)	Declared	Zone B (widespread infestations)	Localised patches.	2
Foeniculum vulgare (fennel)	Declared	Zone B (widespread infestations)	Widespread but rarely locally dense, mainly as a roadside plant.	3
Genista monspessulana (canary broom)	Declared WoNS	Zone B (widespread infestations)	Localised patches.	2
Lycium ferocissimum (african boxthorn)	Declared WoNS	Zone B (localised infestations)	Localised around farm houses and fences in far east of study area.	2
Marrubium vulgare (white horehound)	Declared	Zone B (localised infestations)	Occasional in "rough" pasture.	3
Rubus spp., recorded as *R. anglocandicans* and *R. leucostachys* but other taxa may be present (blackberry)	Declared WoNS	Zone B (widespread infestations)	Localised to fencelines and occasional elsewhere.	2
Salix x *fragilis* nothovar. *fragilis* (crack willow)	Declared WoNS	Zone B (widespread infestations)	Localised to drainage depression.	1
Senecio jacobaea (ragwort)	Declared WoNS	Zone A (localised infestations)	Occasional in pasture areas.	1
Ulex europaeus (gorse)	Declared WoNS	Zone B (widespread infestations)	Widespread and locally common (with some areas mapped as the TASVEG mapping unit "weed infestation").	2

4.3 Potential disease issues

The following plant and animal disease issues have been identified as having potential to impact on the project:

- rootrot fungus (*Phytophthora cinnamomi*): this part of the State is generally considered too dry to support the species and no field symptoms have been identified – general project-level hygiene guidelines are recommended;

- myrtle rust: no field symptoms have been identified and the project does not include any intention to landscape with imported plant species from the family Myrtaceae – DPIPWE guidelines on quarantine of landscape/nursery stock will be adhered to;
- frog chytrid fungus: the detailed prescriptions provided in *Green and Gold Frog (*Litoria raniformis*) Management Guideline April 2015* will be adhered to.

Appropriate site controls will be implemented to ensure that causing pathogens such as *Phytophthora cinnamomi* and amphibian chytrid fungus are not introduced to the project area, and if detected, within the project area, that quarantine measures will be instigated to ensure that it is contained.

The main activities at risk of introducing or spreading these pathogens include:

- through soil, sand gravel or other materials attached to vehicles and machinery used as part of the development works;
- importing water or soil, sand, and gravel material for construction purposes (e.g. roading, landscaping, filling, bedding, etc.); and
- spreading the pathogen/disease from infected sites (contaminated) to uninfected (clean) sites.

5.0 MANAGEMENT PRIORITIES FOR PROJECT AREA

The project area is wholly within a highly modified primary production/peri-urban landscape supporting widespread infestations of weeds. Some parts of the works will be within areas entirely dominated by weeds such as gorse, and pre-treatment of such patches is not practical. The key management priorities for this project are to:

- control and prevent further spread of existing declared and priority environmental weeds within the project area;
- prevent the spread of existing declared and priority environmental weeds into adjacent areas;
- prevent the introduction of new weed infestations into or adjacent to project areas;
- prevent the introduction of plant pathogens into or adjacent to the project areas; and
- implement appropriate monitoring during and post-works activities.

In relation to the project area, the following priorities for weed management have been established.

Priority 1: treat prior to work

- any localised patches of willow (*Salix* sp.), which are highly localised – any patches likely to be affected by works should be entirely grubbed out prior to works, provided that this will not deleteriously impact on potential/known habitat of the green and golden frog (Litoria raniformis); and
- any identified individuals/patches of ragwort (*Senecio jacobaea*) – these are only likely to be identified after a flush of spring growth and any individuals should be immediately hand-pulled, bagged and removed from site (see disposal guidelines below).

Priority 2: manage during works

- species such as gorse (*Ulex europaeus*), which have more widespread distributions and will be impractical to entirely remove/treat prior to works, will effectively be eliminated through scraping and cut/fill.

Priority 3: agricultural "pasture" species

- isolated occurrences of species such as thistle (*Carduus* spp.), horehound (*Marrubium vulgare*) and fennel (*Foeniculum vulgare*) that occur in paddocks within and adjacent to the project area, infestations of which are unlikely to become worse due to the project.

6.0 MANAGEMENT AND CONTROL OF WEEDS AND DISEASE IN THE PROJECT AREA

The following actions will be implemented to achieve the objectives of this WDMG. The Construction Environmental Management Plan will identify the contract area for the purposes of implementing the following actions.

6.1 Construction impacts

Weed introduction and spread on road construction and maintenance sites can be caused by:

- vehicle and machinery movement;.
- personnel movement (on shoes and clothes);
- earth-moving activities;
- use of contaminated construction fill; and
- erosion-control products.

Vegetation clearance and soil disturbance can unearth weed seeds, distribute plant/root material and provide suitable conditions (bare ground and light) for germination of weed seeds and plant material introduced or exposed.

Project-specific weed and pathogens risks need to managed prior to, during construction and following construction as a result of the above risks.

6.2 Pre-construction phase

The following management controls should be implemented prior to construction:

- clearly delineate the construction boundary – no disturbance or access should be permitted outside of this boundary;
- identify, map and mark declared and environmental weed infestations, which are identified for specific pre-works treatment, within the works boundary;
- development of a Site Plan which identifies the locations for site offices, entry/exit points, vehicle parking areas, controlled vehicle and machinery movements/tracks, materials storage areas and vehicle/machinery maintenance areas in already cleared/disturbed areas – any weeds within the vicinity of the these facilities shall be controlled prior to installation;
- treat appropriately, prior to any construction activities, weed-infested areas inside the extent of works identified as Priority 1 species;
- identify requirements of wash-down facility and identify wash-down location/s (must be located at a weed-free location);
- establish wash-down facilities;
- install signage at site entry points outlining wash-down procedures prior to site access;
- induct all personnel in hygiene protocols, including the use of a hygiene register;

- wash all machinery and equipment for both weed, plant and freshwater pathogens prior to site access;
- confirm weed disposal procedures and locations.

6.3 Construction phase

Weed control for the construction phase is as follows:

- minimise disturbance to within the works boundary;
- maintain and follow hygiene protocols and facilities, including wash-down of all equipment and machinery contaminated with topsoil or vegetation entering or leaving the site, or moving between weed-infested and weed-free areas;
- inspect and check that all hygiene procedures are being followed;
- inspect construction areas, adjacent areas and any topsoil stock piles to ensure new infestation are not becoming established;
- control identified weed infestations as identified during inspections;
- disposal of weed-contaminated (or potentially weed-contaminated) material (vegetation debris, topsoil, etc.), will be disposed as follows (in order of priority):

  <u>On-site disposal</u>

  Weed material that can be disposed of on-site will be managed according to the following protocols.

  - All weed material will be buried in appropriate locations beneath at least 0.5 m of clean fill.
  - Any such on-site disposal sites will be covered with clean fill as soon as practicable to reduce any possibility of dispersal, particularly seed dispersal.

  <u>Off-site disposal</u>

  Where weed material is to be removed from the site, the following protocols will be followed:

  - Disposal will only be at Council-approved facilities and/or locations.
  - Loads will be appropriately secured and covered to ensure that there is no loss of weed material or dispersal of seed during the transport process.
  - A permit is required to transport declared weed material (DSG has a permit from DPIPWE to transport declared weed material until 31 January 2015. A new permit will be negotiated with DPIPWE by DGS on expiry of the existing permit).

  <u>Temporary storage</u>

  In the event that the weed material cannot be disposed of immediately either on-site or off-site, the following protocol will be followed.

  - All weed material will be stored in an appropriate location to minimise any possibility of dispersal, particularly of seeds.

6.4 Post-construction

Irrespective of pre- and during-construction weed management and hygiene measures, post-construction weed presence is inevitable. Post-construction weed monitoring and control will need to be implemented during the defects liability period. Following this time, weed monitoring and

management needs to be incorporated into maintenance operations for the North West Maintenance Region. Key weed and pathogen risks currently present have been identified in Section 3 of these guidelines, however emergence of new weed species is likely and monitoring and management of new infestation will also have to be incorporated in future weed control plans.

6.5 Hygiene

Due to the risk of spread of weed and plant pathogens associated with road construction and maintenance activities, such as the transportation and placement of both soil and vegetative matter, strategies for mitigating risks need to be in place. A specific hygiene program should be developed for the project as part of the Construction Environmental Management Plan and implemented throughout the site for the duration of the contract.

Hygiene protocols should be based on the following guidelines:

- *Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens* (Allan & Gartenstein 2010);
- *Weed and Disease Planning and Hygiene Guidelines - Preventing the Spread of Weeds and Diseases in Tasmania* (DPIPWE 2015);
- *Tasmanian Washdown Guidelines for Weed and Disease Control*: Machinery, Vehicles and Equipment (DPIPWE, FT & ACT 2004); and
- *Interim* Phytophthora cinnamomi *Management Guidelines* (Rudman 2005).

General control strategies for hygiene control are as follows:

- ensure hygiene controls are planned prior to commencement of works;
- all construction personnel will be inducted into the hygiene control requirements prior to entry onto the site; and
- ensure hygiene controls are implemented and monitoring during construction;
- ensure vehicles, machinery and equipment expected to come in contact with soil, vegetation or any other potential weed or pathogen source is cleaned/disinfected prior to entry to the project are;
- suitable wash-down sites shall be identified and wash-down facilities installed as appropriate;
- ensure all vehicles, machinery and equipment are washed down prior to leaving any weed or pathogen infected area to work in another area or exit the site; and
- ensure all gravel, soil, fill or other materials being imported are sourced from certified quarries (e.g. quarries certified as weed- and *Phytophthora*-free).

Based on the current safety profile information available (i.e. toxicity to organisms, biodegradability and irritation to humans) Phytoclean and F10 Super Concentrate (F10 SC) are the two disinfectants recommended for use as part of hygiene procedures for *Phytophthora* management.

Vehicles, machinery, tools and equipment that come into contact with clean fill, clean excavated surfaces or clean gravelled surfaces and do not come into contact with topsoil or vegetation will be exempt from the requirements for washing and completion of the hygiene register.

The wash-down areas should be designed to retain seeds, soil and weed matter. Material retained by the filter should be buried within the construction boundaries with a minimum cover of 0.3 m of clean fill or disposed of at an approved landfill site.

Shaker grids should be provided at each wash-down point to remove larger clods of soil from vehicles and machinery. Cleaning of vehicles, machinery, tools and equipment will be achieved by the use of high pressure water or air cleaners. Water cleaning will only be required if mud is present on the vehicle or machinery, otherwise high pressure air will be used to remove soil. Any water from the wash-down station(s) will be contained within the construction boundaries.

Hygiene Monitoring Registers will be maintained at each of the wash-down points. These registers will be completed for all vehicles, machinery, tools and equipment.

The Site Supervisor will be responsible for the implementation and management of all hygiene management activities. Hygiene monitoring process will be carried out at regular intervals and any deficiencies noted in the process will be rectified immediately

6.6 Treatment of weeds

Treatment of weeds within the construction boundary should be consistent with Table 2. This information has been developed with reference to DPIPWE control guide information for declared weeds and Australian Government weed identification and management information available from their Weed Index database (www.environment.gov.au/).

In most cases spraying will be the preferred management approach, however depending on type, growth habit or size of the plant other options may be preferable. All acceptable control methods have been included in Table 2, along with the optimal treatment of timing. Control at other times of the year may be acceptable depending on weather and stage of growth of the specific weed.

Table 2. Treatment options

[NB. This table refers to isolated patches only (e.g. in and around office, storage and maintenance areas), not broad areas that will be cleared by machinery and buried on site].

Species	Primary method of spread	Control options	Optimal treatment timing
Carduus pycnocephalus (slender thistle) *Carduus tenuiflorus* (winged thistle)	Seed	Pulling/grubbing. Herbicide.	Where slender thistles germinate in autumn before the temperature falls, autumn spraying is very effective. Spring treatment can be carried out in September or October when thistles begin to germinate.
Erica lusitanica (spanish heath)	Seed	Hand pull/grub small plants. Cut-and-paint larger plants or foliar spray when plants are actively growing prior to flowering. Monitor & treat regrowth and new patches before seed set.	Autumn-winter.

Species	Primary method of spread	Control options	Optimal treatment timing
Foeniculum vulgare (fennel)	Seed	Slash. Spray slashed plants. Monitor sites for regrowth. Treat regrowth before seed set.	Autumn-winter.
Genista monspessulana (canary broom)	Seed	Cut-and-paint/spray small plants. Monitor sites for regrowth. Treat before seed set.	Autumn-winter.
Lycium ferocissimum (african boxthorn)	Seed Root fragments	Machinery pull large plants/hand pull smaller plants. Herbicide.	When actively growing.
Marrubium vulgare (white horehound)	Seed	Pulling/grubbing. Foliar spray.	Spring-autumn.
Rubus spp., recorded as *R. anglocandicans* and *R. leucostachys* but other taxa may be present (blackberry)	Seed and root material	Spray (not when plants are carrying fruit). Monitor sites for regrowth. Treat regrowth before seed set.	Late spring-early autumn.
Salix x *fragilis* nothovar. *Fragilis* (crack willow)	Mainly stem fragments, seeds only viable for a few days in November	Hand pull seedlings. Frill prior to cutting at ground level. Cut just above ground level and paint stumps immediately.	Summer-autumn or when conditions permit.
Senecio jacobaea (ragwort)	Seed	Pulling/grubbing ragwort can be effective but only if the crown and larger roots are completely removed from the ground. Regrowth from small roots left in the ground can occur, although the regrowth from smaller roots tends to be weaker and take longer to re-establish. Pulling is best carried out at the flowering stage, but this is only possible if the soil is reasonably loose.	Prior to flower and seed set.
Ulex europaeus (gorse)	Seed	Spray or cut-and-paint small patches. Monitor & treat regrowth and new patches before seed set.	Autumn.

CULTURAL HERITAGE MANAGEMENT AUSTRALIA

Perth to Breadalbane Midland Highway Duplication Project

Historic Heritage Assessment

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CLIENT NAME: DIER January 2014

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Executive Summary

Project Details

As part of the Tasmanian Government's *Nation Building 2 submission* (NB2), the Department of Infrastructure Energy and Resources (DIER) has carried out planning for the Duplication of the Midland Highway between Perth and Breadalbane in northern Tasmania. Perth to Breadalbane is a key section of the Midland Highway, Tasmania's major north-south transport corridor and a key link in Tasmania's National Network. The Highway is both a critical freight connection facilitating access from the Southern region to the State's northern ports, and the major transport link for passengers travelling between the northern and southern regions.

The section of highway between Perth to Breadalbane is approximately 4km in length (see Figures 1 and 2). The existing road network is single carriageway with no formal overtaking opportunities and a number of direct accesses. At present a broad corridor alignment has been selected for investigation. The corridor is mostly orientated on the western side of the existing Highway. However it does also encompass a narrow strip of land on the eastern edge of the existing Highway (see Figures 1 and 2). The final alignment of the proposed road duplication will be determined based on the outcomes of a range of planning studies.

CHMA has been engaged by Pitt and Sherry (on behalf of DIER) to undertake an Aboriginal and historic heritage assessment for the proposed Perth to Breadalbane Midland Highway Duplication Project. This report presents the findings of the historical heritage assessment.

Results of the Search of the Heritage Registers

Prior to commencing the field survey a search was conducted of a number of historic registers and databases to determine the extent of historic sites and features in the vicinity of the study area. One registered historic property exists within the study area – "Haggerston", which is listed on the Tasmanian Heritage Register. The eastern boundary of the historic Haggerston property will be directly impacted by the proposed development.

Project Methodology

Prior to undertaking fieldwork for this project, a search was undertaken of all relevant heritage registers as well as extensive historical background research of the area. Heritage Tasmania was also contacted to request additional information for the area and as part of an ongoing process of consultation during this project. The field survey was undertaken, on foot, over a period of two days (11th-12th November 2013) by Stuart Huys (CHMA archaeologist) and Vernon Graham (AHO). A total of 24.4km of transects were walked within the bounds of the study area.

Results of the Survey

A total of 5 historic sites were identified during the current investigations, comprising 3 possible building foundations likely to be part of a single site complex, an old track and a planting of Macrocarpa trees with associated buildings (Hist 2). The locations

of each of these are provided in Table 1. Full details of each of the sites are provided in Appendix A. A sixth historic site was identified during the background historical research for the area; the site of the last gibbeting in the British colonies.

In addition, historical research revealed that the current boundaries of the Haggerston property, as defined on the THR, do not accurately represent the historical boundaries of the property.

Table 1. Summary of historic sites identified during the current study

Site	Type	Grid Reference	Description
Foundation 1	Building Foundations	E513762 N5399387	Building foundations measuring approx. 12m x 4m and up to 0.7m in height. Constructed largely from locally available dolerite nodules.
Foundation 2	Building Foundations	E513790 N5399350	Building foundations measuring approx. 8m x 7m and up to 0.6m in height. Constructed largely from locally available dolerite nodules, with a number of hand-made clay bricks across and adjacent to the foundations.
Foundation 3	Building Foundations	E513825 N5399460	Building foundations measuring approx. 8m x 8m and up to 0.8m in height. Constructed largely from locally available dolerite nodules, with a number of hand-made clay bricks across and adjacent to the foundations.
Track	Possible old track alignment	E513747 N5399507 to E513757 N5399225	Stretch of old track running to the east of the foundations and extending approx. 300m in a north/south direction. Track is approx. 4m wide and littered with historic glass and ceramics.
Hist 2	Plantation of Macrocarpa Trees and associated buildings	E514190 N5400430	20 mature Macrocarpa trees planted in a V shaped alignment, a scatter of old farm machinery, partially collapsed corrugated iron shed and a large 10m x 7m shed with a sign saying 'Haggerston Vale' on the east side of the building.
Gibbet Hill	Location of historic gibbetting	Unknown	Unknown – but likely to comprise physical remains of the gibbet and possibly nearby burial of John McKay
Haggerston House	Historic Property listed on the THR	16457 Midland Hwy, Perth	Single storey house in Old Colonial Georgian style. Constructed c.1834

Management Recommendations

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

- The legal and procedural requirements as summarised in section 7 of this report;
- The results of the investigation as documented in this report; and
- Background research into the extant archaeological and historic record for the study area and its surrounding regions.

The recommendations are aimed at minimising the impact of the proposed developments on any potential historic resources present within the study area.

Insufficient information is currently available for several of the historic sites identified during the present investigations, to enable significance to be confidently assessed and the need exists for further research to be undertaken at these sites. As such, the following recommendations are made:

Foundations 1, 2 and 3 and Track

This site complex has the potential to be a very early representative of convict life in Van Diemen's Land. However additional research is required to confirm its identity and significance. As such, the following recommendations are made:

- Efforts should be made to better define the physical boundaries of these structures, through detailed mapping. This may require the removal of some of the weeds and grasses presently obscuring visibility.
- Approximate dates for these features may be available by dating visible historic debris along the track - such as broken glass and ceramics.
- The material record can then be used to inform/guide further detailed research into the likely identity and age of the site (or confirm it as Pitt's Public House). Research should be directed towards historical documentation including maps, written records and newspapers of the relevant period to provide as complete an understanding of the site as possible.
- The results of this research may then be used to establish significance and to inform the design process for the Highway. Further management recommendations for the site will be necessary pending the outcome of the highway design process.

Hist 2 – Row of Macrocarpa Trees and Associated Buildings

- This site is identified as being a modern shed (i.e. less than 20 years old) associated with a post WWII planting of Macrocarpa trees. Neither site reaches threshold values for historic significance.
- There are no further management recommendations for this site.

Gibbet Hill – Gibbeting Site

The site of the last gibbetting in the British colonies and only known criminal sentencing of a gibbetting in Australia, has both state and national significance and

must be subject to further investigation. The following recommendations are therefore forwarded:

- Ground truthing of the possible location of the gibbet site should be undertaken. This will require the clearing of the densely thick vegetation currently obscuring visibility throughout these areas. In addition, given the metal chains/iron casing likely to be attached to the body, the use of a metal detector is advised.
- Background research into the two convicted murderers John McKay and John Lamb should be undertaken as well as research into understanding the effects of the gibbeting on the Perth/Tasmanian community, in order to provide a full and complete assessment of the historical significance of the site.
- The results of this research may then be used to establish significance and to inform the design process for the Highway. Further management recommendations for the site will be necessary pending the outcome of the highway design process.

Importantly, the significance of the site itself should be differentiated from its conservation status in this case. The significance of the site is not diminished by the present inability to find the exact location of the site. However, the need to and/or ability to conserve the site or otherwise is directly dependent upon accurately locating the site and its current condition. While significance and conservation, more often than not, go hand in hand, the one does not preclude the other. Irrespective of whether or not the site can be located and actively conserved, it remains a significant place within Australia's history.

Heritage Requirements for Haggerston House under the *Historic Cultural Heritage Act 1995* (given its status on the Tasmanian Heritage Register) and NMIPS 2013

Under the *Historic Cultural Heritage Act 1995*

> 'a person must not carry out any works in relation to a registered place...which may affect the historic cultural heritage significance of the place unless the works are approved by the Tasmanian Heritage Council.'

As such, the requirements for Haggerston House and associated property under the *Historic Cultural Heritage Act 1995*:

- A works application must be lodged with the Northern Midlands Council (local planning authority), who will forward the application and any representations received, following public consultation, to the Heritage Council.
- Proposed development works should be discussed with Heritage Tasmania prior to lodging a works application.
- The Heritage Council decision must be incorporated into the final permit (or refusal) issued by the local planning authority (Northern Midlands Council).

Requirements for Haggerston House and associated property under the NMIPS 2013 are as follows:

- Any works to be undertaken within the title boundary of listed properties will need to be applied for under the Use and Development Standards of the Local Historic Heritage Code (refer to Section 3.0).
- Haggerston House, which is listed as the primary item of heritage significance within the property, is located just under 2km to the west of the current study area. As such, the current development of road infrastructure may not trigger the Performance Criteria of the Interim Planning Scheme.
- Where any trees or vegetation require to be removed on listed properties, this will trigger a discretionary Permit Application under clause E13.6.12 of the Interim Planning Scheme 2013.

General Recommendations

- Copies of this report should be submitted to Heritage Tasmania (HT) for review and comment.
- The process for the revision of the THR listing of Haggerston House should be initiated with the current boundaries of the property being replaced by the historic boundaries of the property.

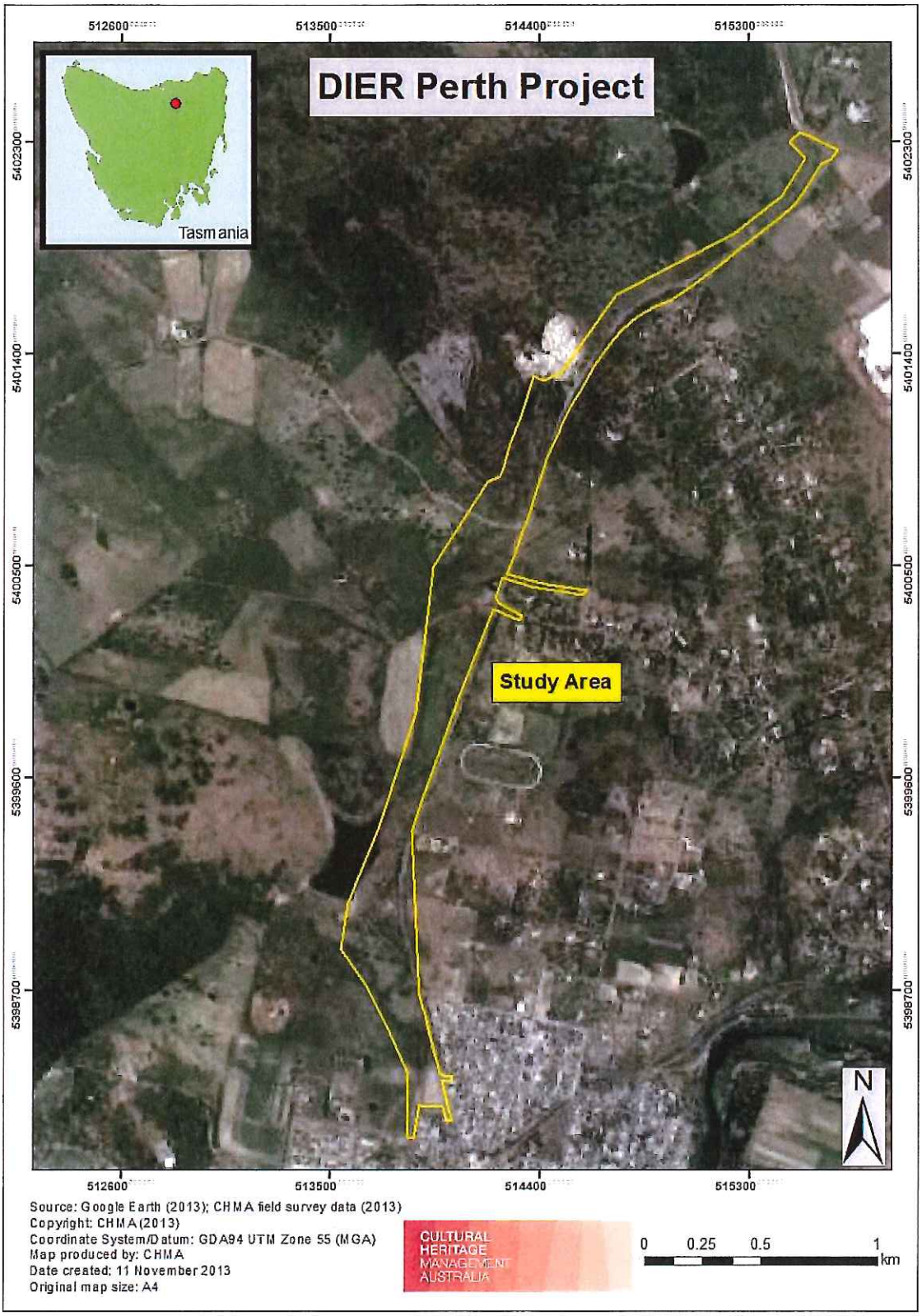


Figure 1: The boundaries of the Study Area

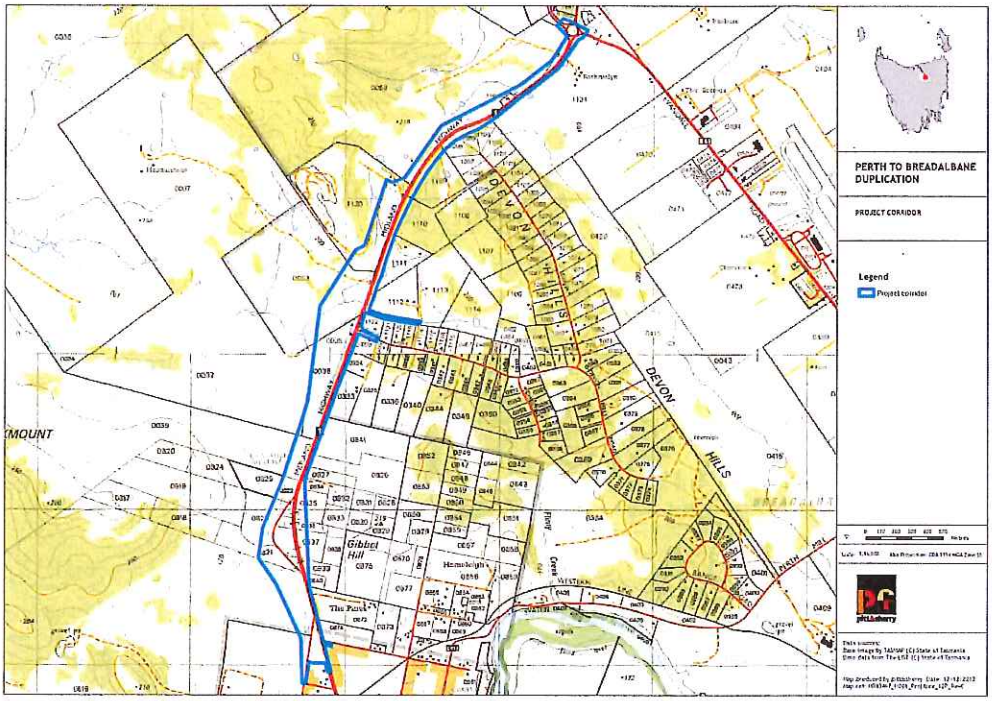


Figure 2: The location of the study area (1:25 000 Map scale)

1.0 Project Outline

1.1 Project Details

As part of the Tasmanian Government's *Nation Building 2 submission* (NB2), the Department of Infrastructure Energy and Resources (DIER) has carried out planning for the Duplication of the Midland Highway between Perth and Breadalbane in northern Tasmania. Perth to Breadalbane is a key section of the Midland Highway, Tasmania's major north-south transport corridor and a key link in Tasmania's National Network. The Highway is both a critical freight connection facilitating access from the Southern region to the State's northern ports, and the major transport link for passengers travelling between the northern and southern regions.

The Midland Highway between Perth and Breadalbane carried around 1.4 million tonnes of freight in 2009. It is a key link into Launceston and to industrial development adjacent to Launceston Airport, including a major new statewide grocery distribution centre. It fulfils an important role as a passenger transport link. The existing road network is single carriageway with no formal overtaking opportunities and a number of direct accesses. While other sections of the Midland Highway have been significantly upgraded to a standard consistent with the National Network, there has been limited investment in this section despite its comparatively high traffic and freight volumes compared to other parts of the Highway in the region. The project is part of the broader Midland Highway Improvement Projects, designed to improve efficiency and safety across the north-south corridor.

The section of highway between Perth to Breadalbane is approximately 4km in length. At present a broad corridor alignment has been selected for investigation. The corridor is mostly orientated on the western side of the existing Highway, however it does also encompass a narrow strip of land on the eastern edge of the existing Highway (see Figures 1 and 2). The final alignment of the proposed road duplication will be determined based on the outcomes of a range of planning studies.

CHMA has been engaged by Pitt and Sherry (on behalf of DIER) to undertake an Aboriginal and historic heritage assessment for the proposed Perth to Breadalbane Midland Highway Duplication Project. This report presents the findings of the historical heritage assessment.

1.2 Aims of the Investigation

This historic heritage assessment aims to:

- Document the extent of historic heritage resources within the bounds of the study area.
- Develop a set of management recommendations aimed at minimising the impact of the proposed road development project on any historic heritage sites and areas of cultural values that may be present within the study area.

1.3 Project Methodology

A three-stage project methodology was implemented for this assessment.

Stage 1 (Pre-Fieldwork Background Work)

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 and the collation of information pertaining to any registered heritage sites located within the general vicinity of the study area.
- Maps 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.

Contact was also made with David Scott of Heritage Tasmania requesting any additional information for the area. Contact with David Scott was ongoing during this project, including discussions relating to:

- Clarification of the exact boundaries of Rathmolyn listed on the THR (as the original property boundaries extended over both sides of Hobart Rd which is now the Midland Hwy),
- Identified heritage significance and age of sites discovered at Hist 2 (see Section 4.3),
- Heritage listing of Haggerston House on the THR and necessary alterations to the historic boundary of the site (see Section 4.4)

Stage 2 (Field Work)

Stage 2 entailed the fieldwork component of the assessment. The field survey was undertaken over a period of two days (11-11-2013 to 12-11-2013) by Stuart Huys (CHMA Archaeologist) and Vernon Graham (Aboriginal Heritage Officer).

The field survey was undertaken on foot by walking a series of transects within the designated bounds of the study area (as shown in Figure 1). In total, 24.4km of transects were walked within the bounds of the study area. In the course of the field assessment, any areas of improved surface visibility (such as vehicle tracks and erosion areas) were subject to a detailed inspection. Section 6 provides further details as to the survey coverage achieved within the study area.

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 and historical background research and management recommendations. The report has been prepared by Dr Sophie Collins and Stuart Huys.

1.4 Acknowledgements

This report has benefited greatly from the wisdom and research assistance of many of the reference staff at the Launceston LINC. CHMA wishes to acknowledge the work of Marion Sargent in particular, whose personal interest in the Gibbet Site provided a much larger and more precise historical background than would otherwise have been possible.

Thanks also to John Dent, a local surveyor and chairman of the Launceston Society Historical Archaeological Group for the provision of early maps of the area.

2.0 Historical Background

2.1 European Settlement of the Norfolk Plains

European occupation of northern Van Diemen's Land began in 1804 with orders for Colonial William Paterson to establish a settlement/penal colony at Port Dalrymple. The need to establish good communications between northern and southern settlements led to the search for a direct route across the Central Plateau to Hobart Town by Lieutenant Thomas Laycock of the 102nd New South Wales 'Rum Corps' in 1807. On the first night of his travels, Laycock and his companions slept near the current site of Longford (Haygarth 2013).

The study area falls within the broader region of the Norfolk Plains (comprising the modern day towns and rural properties around Longford, Cressy, Bishopsbourne, Illawarra and Perth) (see Figure 3). European occupation of the Norfolk Plains began in 1809 with the property of Scone was granted to Captain John Ritchie, Commandant at Port Dalrymple. In 1811 Governor Lachlan Macquarie inspected the new penal colony at Van Diemen's Land, during which time the area around the Norfolk Plains was identified as a locality for the inhabitants of Norfolk Island, following the closure of this outpost of the colony in 1807-1808. In 1813, a mix of free born, ex-convicts and their families and prisoners arrived on the Norfolk Plains. Those uprooted from their settlement on Norfolk Island were compensated for their losses with larger grants, payment in kind for livestock left behind, the use of a convict labour force and an entitlement to food supplies and clothing for a 1-2 year period subject to wealth and status (Haygarth 2013).

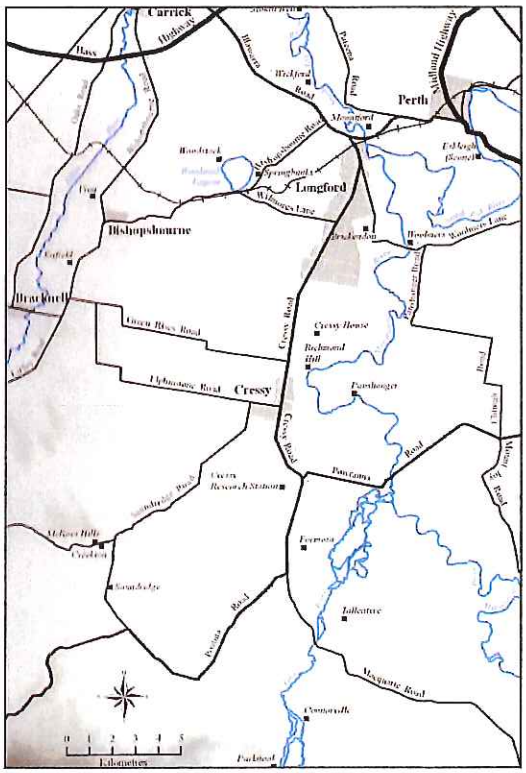


Figure 3: The area comprising the Norfolk Plains: (Map from theLIST)

The Norfolk Island grants (see Figure 4, for proximity of these land grants to Perth and the study area see Figure 8) were accompanied by clauses requiring the clearing and cultivation of a certain proportion of each grant and the area rapidly thrived, with wheat and corn harvested in the area and stock available for slaughter.

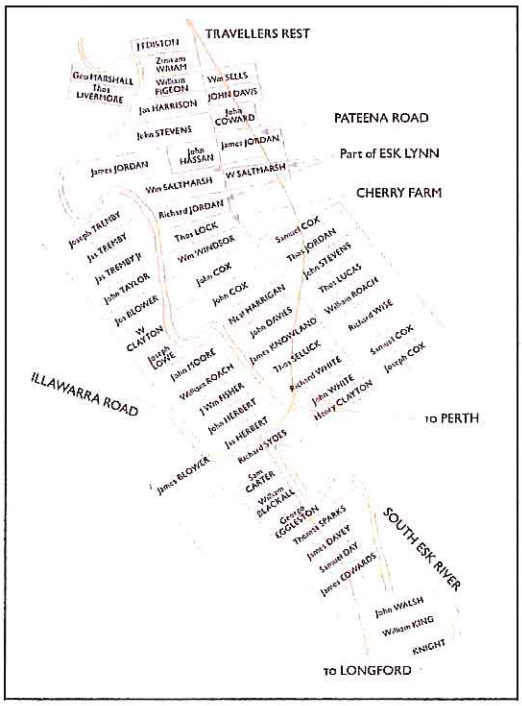


Figure 4: The Original Norfolk Islander grants on Macquarie's Norfolk Plains (image taken from Haygarth 2013:9).

In 1819, the decision was made to restrict land grants to free immigrants with capital in excess of £500, ending the opportunities for small yeoman farmers and opening the way for wealthier landowners. The Archer family soon became the biggest landholders in the district, with five different lineages establishing the properties of Woolmers, Brickendon, Panshanger, Woodside and Burlington.

In 1823, the 553 Europeans who lived in the Norfolk Plains comprised 204 freeborn and 349 convicts. Forty thousand acres were held by grant, of which less than 5000 were cultivated. Crops included 1780 acres of wheat, 310 acres of barley, 63 acres of peas, 62 acres of potatoes, 45 acres of oats, 34 acres of orchards and gardens and 20 acres of beans (Haygarth 2013:17). Much of the remaining acreage was dedicated to the grazing of livestock with 25 482 sheep and 3513 head of cattle recorded (Haygarth 2013:17). All of these properties were run on convict labour.

Under Lieutenant-Governor George Arthur, the allocation of land grants escalated substantially, with 1 899 332 acres being allocated between 1823-1831, fuelled by an extensive campaign marketing Van Diemen's Land to respectable English migrants. The gap between the 'haves and the have-nots' became ever larger.

The 1820s to 1830s was a period of lawlessness, with corruption rife, sheep rustling and other forms of criminal behaviour common. Bushrangers were known to roam the area, with Mathew Brady's gang of outlaws destroying harvests at a number of properties in the area and attacking various households (Haygarth 2013:19). Brady was ultimately taken by John Batman, before being hanged from the goal wall in Hobart, along with four of his gang members in1826.

The diaries of Edward Dumaresq, a pious man living a few kilometres from Perth, paint a vivid picture of wool-growing life in a penal colony, 'with convict shepherds watching sheep, losing them and stealing them, and stray dogs destroying stock. The difficulties of everyday life, included the routine trials of horse travel, fording streams, breaking in and controlling restive horses' (Haygarth 2013:47), dealing with the loss of young children and the burdens of master-convict relationships.

The current study area comprises the stretch of the Midland Hwy between Perth and Breadalbane; both towns were established within this climate of social, political and economic hardship.

2.2 Breadalbane

Breadalbane was named in 1811 by Governor Macquarie during his first visit to Van Diemen's Land, but was previously known as 'Cocked Hat', 'The Springs' and 'Brumby's Plain' (von Stieglitz 1947).

Listed as some of the earliest settlers in the area were James Brumby, David Rose, W. E. Leith, Thomas Quin, J. Dell, Thomas Reiby, J. Gildas, Ed. Wooley, Thomas Scott and Bartlett, John Smith (Stancome 1964). Following the establishment of the road to Perth in 1820, these small holders had a market for their produce, with rising prices in wool bringing a new prosperity to the area. Accompanying this prosperity was an increase in crime, with the area becoming infamous as a centre for sheep stealing (von Stieglitz 1947; Stancombe 1964). Breadalbane was the location for bushranger Matt Brady's last showdown following his shooting of Thomas Kenton. An engagement between the outlaws and soldiers followed shortly after, during which several of Brady's gang were captured and Brady himself was shot twice in the leg. Brady's capture followed a few days later.

The post office was opened in 1847, remaining open until 1968. There were three Inns at Breadalbane; the Albion, The Temperance Hotel and the Woolpack Inn (still standing and registered) (see images in Table 2). The Woolpack represented the halfway house for coaches travelling from Nile to Launceston (Stancombe 1964).

2.3 Perth

The area around Perth was first explored by Europeans as early as 1806 following the establishment of Launceston (approximately 19km to the north), with Governor Macquarie passing through the area during his first exploration of 1811. However it was not until 1821 that Governor Lachlan Macquarie undertook a tour of inspection through the infant settlements of Van Diemen's Land (Macfarlane n.d.) and identified the area for a future township.

The area was originally known as 'The Punt' (see Plate 1), as it was here that passengers were ferried across the South Esk River to and from Hobart. In close proximity lay the quarters of the 57th Regiment, a jail, a few cottages and an Inn (St Andrew's Inn). Also encamped there were the prisoners engaged in building the road to Launceston, to facilitate the transport of produce and resulting in considerable expansion of the district (Stancombe 1964).

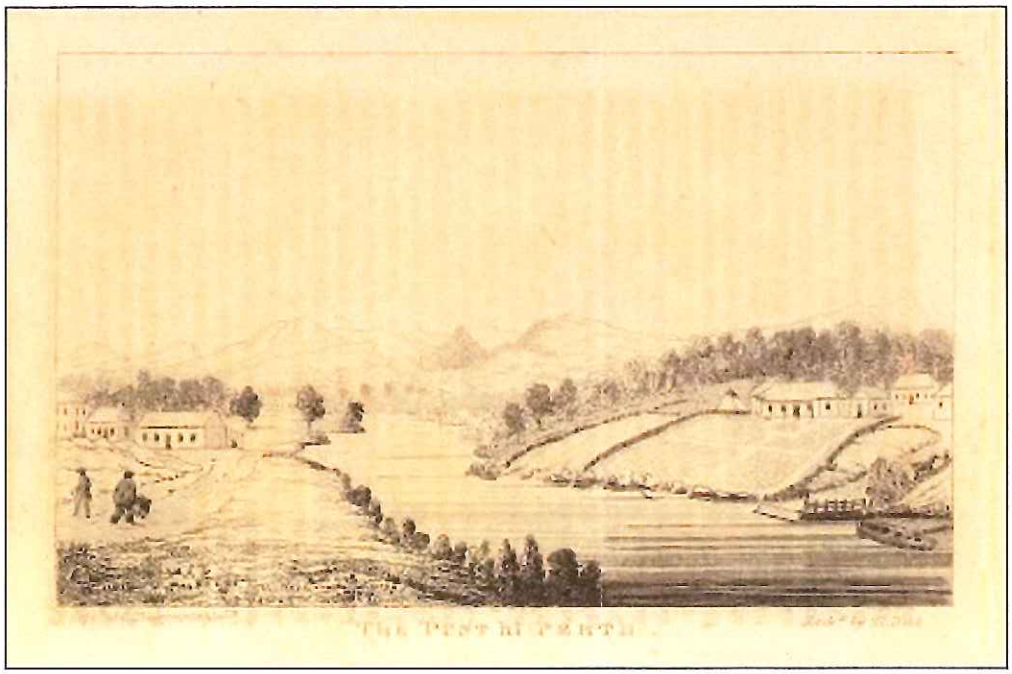
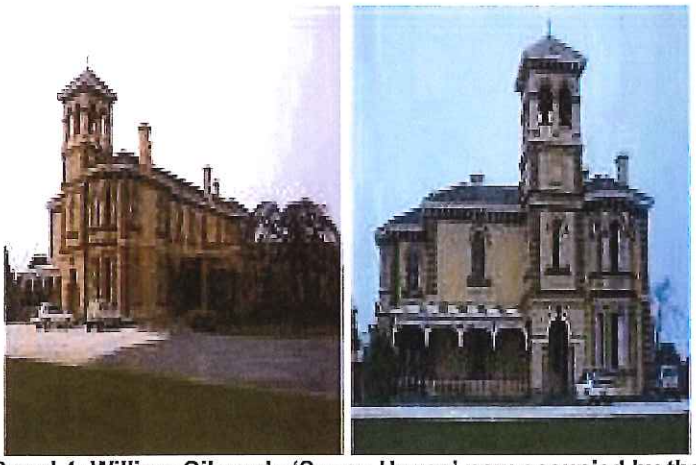


Plate 1: The Punt at Perth etched by Capt. M. Dalrymple, by T Bock (in Hobart Town Almanac for the year 1830) (Image copied from LINC Tasmania online collection http://stors.tas.gov.au/AUTAS001131827651j2k).
The building on the left edge of the image is thought to be that of the Crown Inn in William Street, Perth until 1970s (Haygarth 2013:20)

The first land of any consequence granted in the district of Perth was in 1809, to Captain John Ritchie of the 73rd Regiment; a property which he called 'Scone' (see Figure 8). The property was passed on to his brother Thomas a short time later who built a house and mill there (see Plate 2). The mill was one of the first to be built in the country districts, making it necessary to keep 'eight or nine savage dogs to guard his property from the blacks and bushrangers, who were very frequent visitors' (von Stieglitz 1947:40). By 1852 this mill had become old and shaky, such that it was washed away by floods and was followed by a new mill, which in turn was burnt down some three days after the purchase of the property by William Gibson in 1867. Gibson built 'Scone House' (now the Eskleigh Institution) in the same year (see Plates 3 and 4).

Plate 2: The remains of the Old Mill at Scone (1995) (Photo taken by Harry C. Bean, reproduced and copied from Haygarth 2013:95)



Plates 3 and 4: William Gibson's 'Scone House' now occupied by the Eskleigh Institute (images included in THR data sheet, Tasmanian Heritage Council 1999)

By 1814, Thomas Massey had also established himself in the area, located across the river from a military post, which was overseen by Lieutenant Lyttleton (Rev. Robert Knopwood cited in Stancombe 1964). Another property along the river was that of 'Pleasant Banks' owned by David Gibson, who had come from Perthshire in Scotland. Gibson's friendship with Governor Macquarie lead to the naming of the town. 'The Punt!' said Macquarie. 'We must have a better name than that for this little village. Ah, it shall be Perth!' (cited in Macfarlane n.d.).

A description of the township in 1829 is provided by Ross' Almanac who states that 'after Mr David Gibson's house and farm ['Pleasant Banks'] a road turns off to a ford on the South Esk which can be crossed only in summer time and dry weather. In winter travellers prefer going on the main road till the 112th milestone at the Government punt. Here is an inn, also quarters for a military officer and detachment of troops, a sergeant and ten privates of the 57th Regiment. A good jail and some cottages for mechanics and others are also here. A mile up the river from Perth is Major McLeod's flourmill. Also adjoining the township is the sheep walk of Mr Nowlan ['Native Point']' (Ross in von Stieglitz 1947:40) (see Figure 8 and Plate 5).

Plate 5. Native Point Homestead (established c1842 by Nowlan). (Image taken in 1976 and included in THR data sheet, Tasmanian Heritage Council 1999)

Reports by Widowson in 1829 also refer to the Government Punt at Perth, which he states as being established 'many years ago'. He makes further comment of the existence of a 'good hotel' and 'sly grog' shop which was noted to 'deal in the stuff that the bushrangers were having difficulty getting rid of' (von Stieglitz 1947:40). The exact location of this original Punt is unclear and unfortunately does not appear on any of the early maps.

The town was laid out in 1833, with the bridge across the South Esk River constructed some three years later. The first doctor in Perth and along the South Esk is recorded as being Dr J R Salmon who arrived in 1835, with two other doctors (JS Kigour and William Weymouth) noted in 1848 (Elliston's Almanac) and cited in von Stieglitz (11947) as looking after a convict probation gang of 200 men.

Major John Norman McLeod (mentioned above) was in charge of the convicts in 1831 and built the water mill and 'Glendessary'. The mill was run by James Burrell in 1838 on behalf of McLeod. The mill continued to grist wheat until it was washed away by the floods of 1929.

'Old Launceston newspapers of 1831 record the bad condition of the Perth road.... advertise the opening of a new store....inform a Perth Inn licensee that a cart which he had left for repairs will be sold unless he pays for it.....cautions the public against purchasing parcels of land advertised for sale at Native Point as they constitute grants made to a man named McLeod .... and contain a letter from the South Esk punt keeper denying that he had charged people a tax of sixpence a head for crossing the river to go to church on Sunday' (Macfarlane n.d.)

The area was proclaimed a township in 1836.

Transport Development Phases

In 1835 works began on the construction of a Government built bridge over the river to take the place of the punt. 'There had been a great deal of trouble on the punt as the puntsmen where inclined to be careless or to get drunk. Mr Nowlan's bullock wagon from Native Point, for instance, tilted off the end of the punt into deep water,

causing great loss and a law case at Longford. Drunkenness was proved to have been the cause.' (von Stieglitz 1947:41).

Bridge construction took 5 years and was undertaken by prisoners working under Lieut. Wm. Kenworthy (see Plates 6 and 7). It was completed in 1839 and remained standing, though with several repairs, until the great floods of March 1929 during which it was washed away. The convicts who died building the bridge and road were buried in the sandy bank across the river from 'Scone' avenue (von Stieglitz 1947:41), while others lie in the old church cemetery close to the river.

The track from Hobart to Launceston was marked out by Surveyor Grimes in 1807. It was this route that Governor Macquarie followed when he visited the colony in 1811. Mailman Robert Taylor was appointed in 1816 and walked the entire route, leaving Hobart and Launceston on alternate Sundays and carrying the mail in a pack. The road was built by convict labour and it was not until Macquarie visited again in 1821 that it was fit for a carriage. This visit marking the first record of movement between the Hobart and Launceston. The 'Main Road' or 'Hobart Road' as it was known for most of its history (before becoming the Midland Highway in the 1930s), was completed in 1840 (see Plate 8).

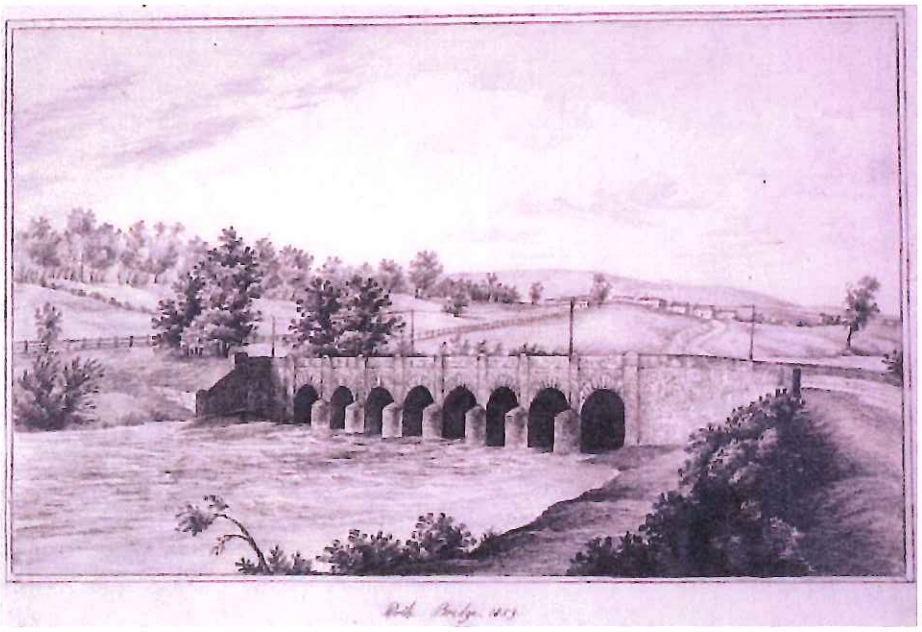


Plate 6: 'Perth Bridge, 1859' by Emily Stuart Bowring, In Sketchbook of Tasmanian Scenes 1859 (Image copied from LINC Tasmania online collection at http://stors.tas.gov.au/AUTAS001124065814w800)

A regular coach service was in operation by 1831. A small coach ran from Perth to Launceston three times a week from 1833. Royal Mail runs were established by 1840 between Perth and Launceston, by a Mr J F Cox who made the journey twice a week. Horses were changed about every 10 miles at hostelries along the route. Stables were therefore an important component of hotels and taverns along the route (see Plate 8).

Plate 7: Perth Bridge. Photograph from Miscellaneous Collection of Photographs 1860-1992, Archives Office of Tasmania (Image copied from LINC Tasmania online collection at http://stors.tas.gov.au/PH30-1-7928)

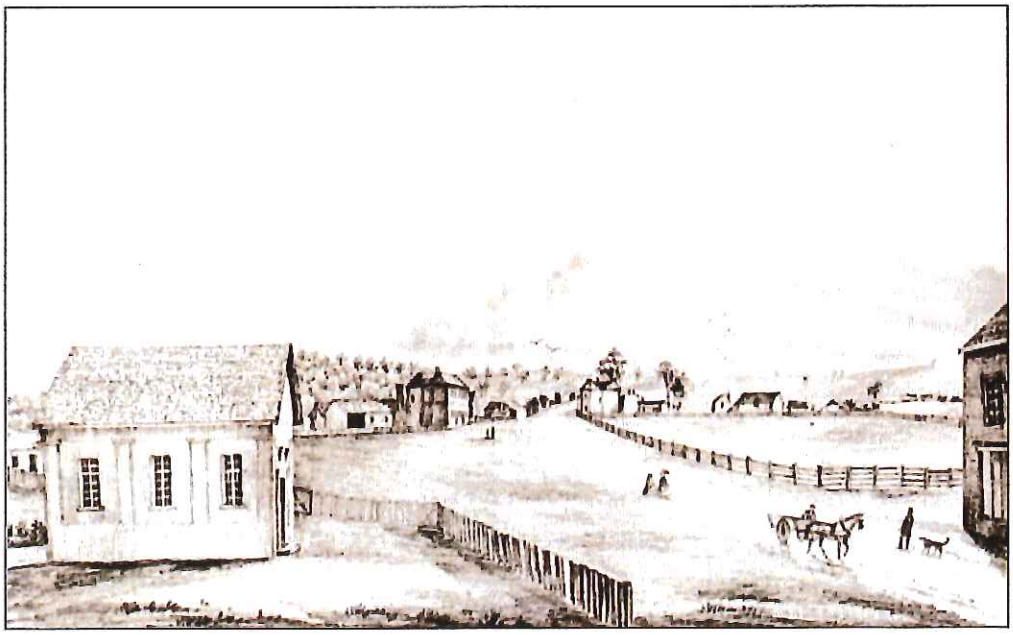


Plate 8: Perth in 1855, Emily Bowring Sketch from 'Sketches in Early Tasmania and Victoria' by Emily Bowring (Image copied from LINC Tasmania online collection http://stors.tas.gov.au/PH30-1-2180). The Leatherbottle Inn is visible behind a tree on the right hand side of the road, and the Coffee Temperance House occurs on the left had side of the road towards the centre of the image (Haygarth 2013:72).

The route of the highway originally ran between Hobart and Launceston, passing through the localities of Bridgewater, Pontville, Mangalore, Bagdad, Dysart,

Kempton, Melton, Mowbray, Jericho, Oatlands, Antill Ponds, Woodbury, Tunbridge, Ross, Campbell Town, Conara Junction, Cleveland, Epping Forest, Perth, Breadalbane and King Meadows (Figure 8 shows the original alignment of the Hobart Rd through the study area and broader district). The alignment of the road has had some alteration since then. However, within the current study area, only two small sections have been altered; the bend in the road immediately south of Richard Pitt's boundary, which was straightened to cross over the top of Gibbet Hill, and the intersection at Breadalbane which has been modified to include the newer Midland Hwy route, which runs more or less parallel to the original Hobart Road from Breadalbane northwards. Further north, towards Launceston, the Midland Hwy has been moved to the west, bypassing King Meadows and running instead to the east of Prospect. Figures 5 and 6 show the original and altered alignments of Hobart Rd and the Midland Hwy within the study area; Figure 7 illustrates the deviation of the two roads towards Launceston.

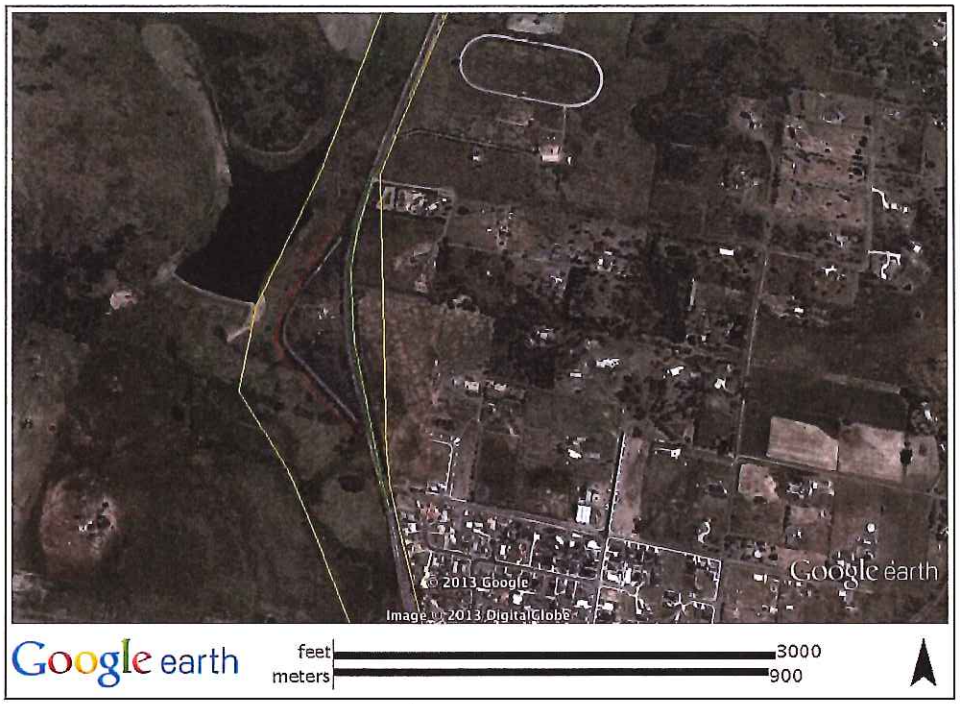
The Duke of Edinburgh turned the first sod of earth on the Launceston and Western Railway with a silver trowel in 1868. Plate 9 illustrates the first 'ride on rail' excursion on the Launceston and Western Railway in 1869 (the route of this line is illustrated in Figure 8). By 1876 The Tasmanian Main Line Railway Company had completed a line from Hobart to Evandale. An image of the Flinty Creek Viaduct near Perth is presented in Plate 10 with a steam locomotive running on Tasmania's first railway line as part of celebrating the centenary of Tasmania's railways in 1971.

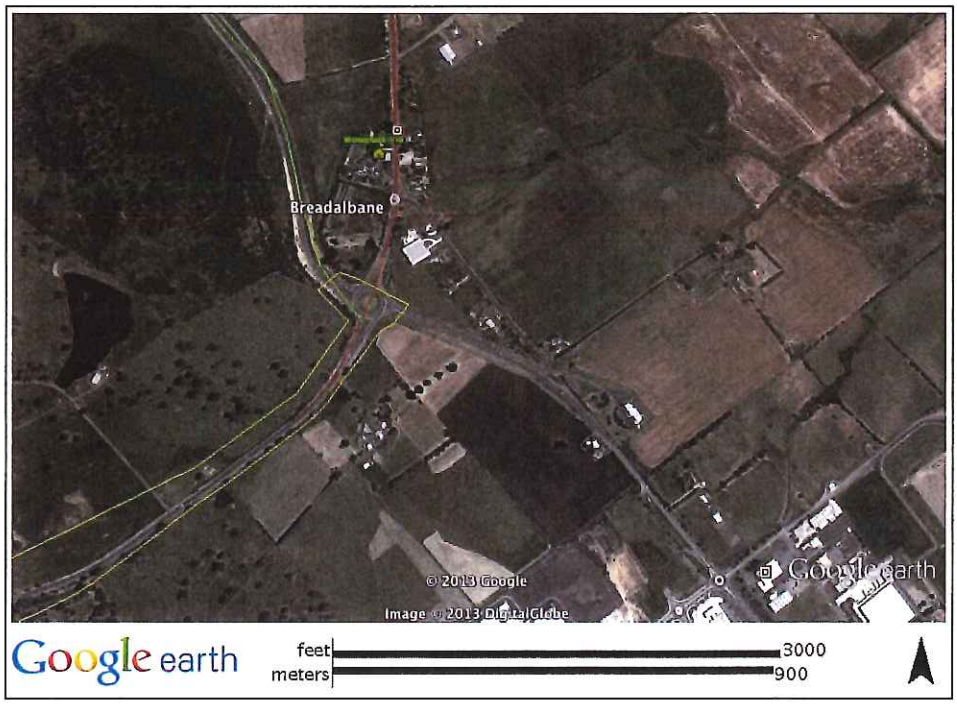
Hotels and Taverns

The first of these was St Andrew's Inn, built in 1821, followed by the Plough Inn in 1823 which was run by Alex McLemmon. By 1835 the Perth Inn had been constructed as a weatherboard building on Scone Street corner and managed by Isaac Solomon followed by Richard Ruffin.

In the 1830s the Crown Inn was built on the road that lead to the Old Punt, serving the best strawberries and cream ever tasted (von Stieglitz 1947:43) and run by John Dryden who built 'Haggerston'.

The Tasmanian Inn opened in 1836 (see Plate 11), followed by the Queen's Head which opened in 1840, run by Schultz and later by W. Russell. Also in the area were the Star Inn, the Jolly Farmer, the Leather Bottle, the Railway Tavern, the Commercial Inn, and the Eagles Return. The Half-Way House and the Cocked Hat Inn (von Stieglitz 1947) were located at Cocked Hat Hill; the junction where the Longford police with prisoners for Hobart handed over their charges (Macfarlane n.d.).





Figures 5 and 6: The original alignment of Hobart Rd (shown in red) and that of the existing Midland Hwy (shown in green); the two areas within the current study area where the original path of Hobart Rd has been altered.

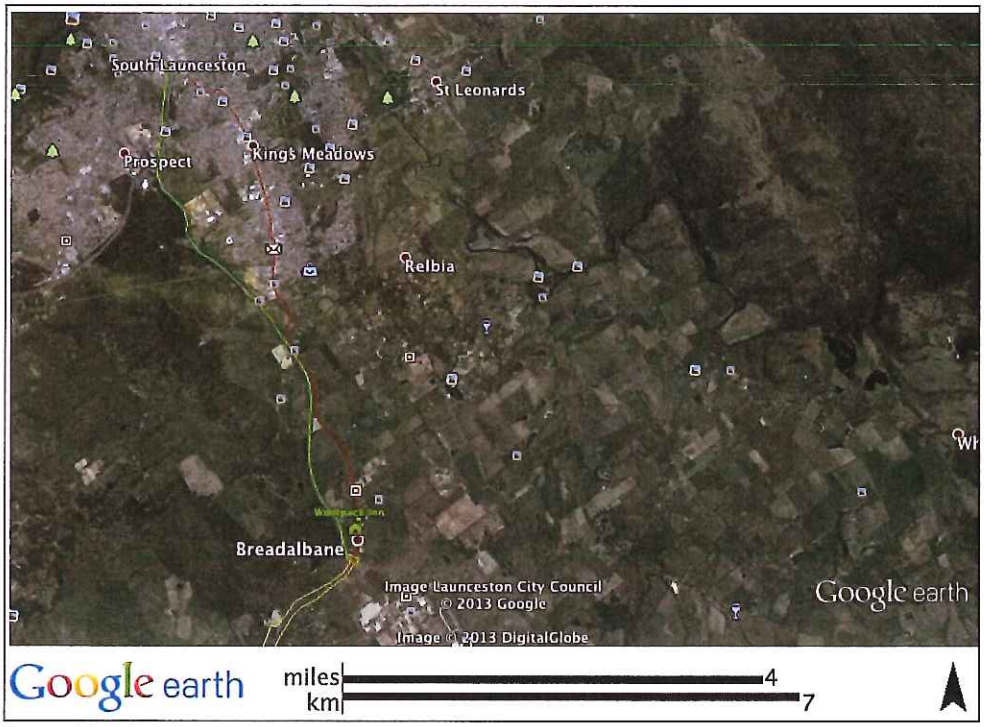


Figure 7: The original alignment of Hobart Rd (shown in red) and that of the current Midland Hwy (shown in green) between the current study area and South Launceston.

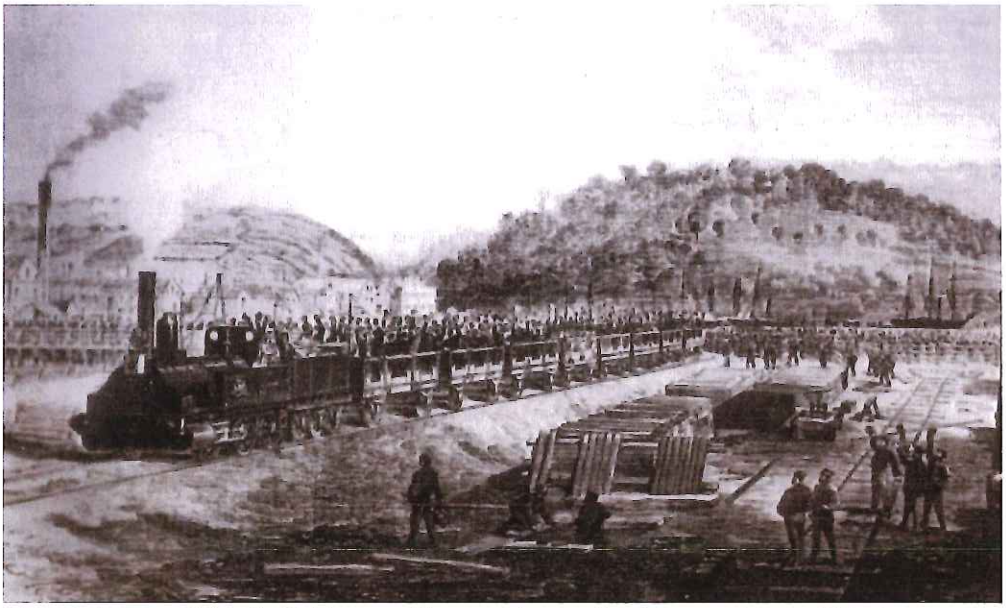


Plate 9: Image of the first 'ride on rail' excursion on the Launceston and Western Railway in 1869 (image courtesy of Ivan Badcock, copied here from Haygarth 2013:94)

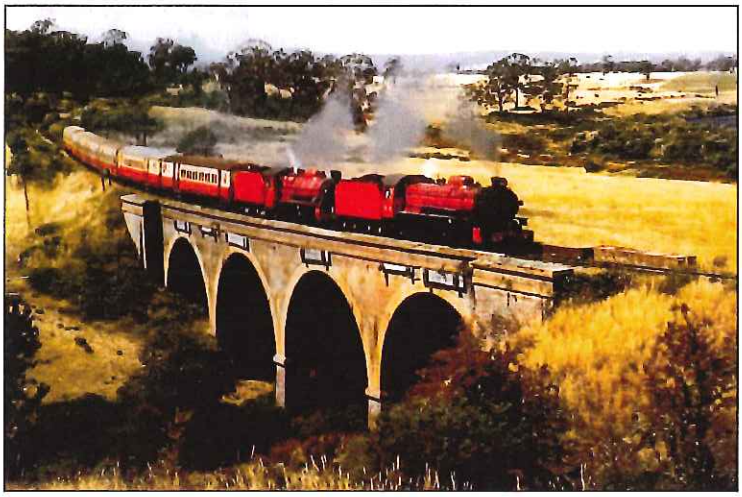


Plate 10: Flinty Creek Viaduct, in 1971, on Tasmania's first railway line, as part of celebrations for the centenary of Tasmanian railways (image courtesy of the Northern Midlands Council, copied here from Haygarth 2013:198).

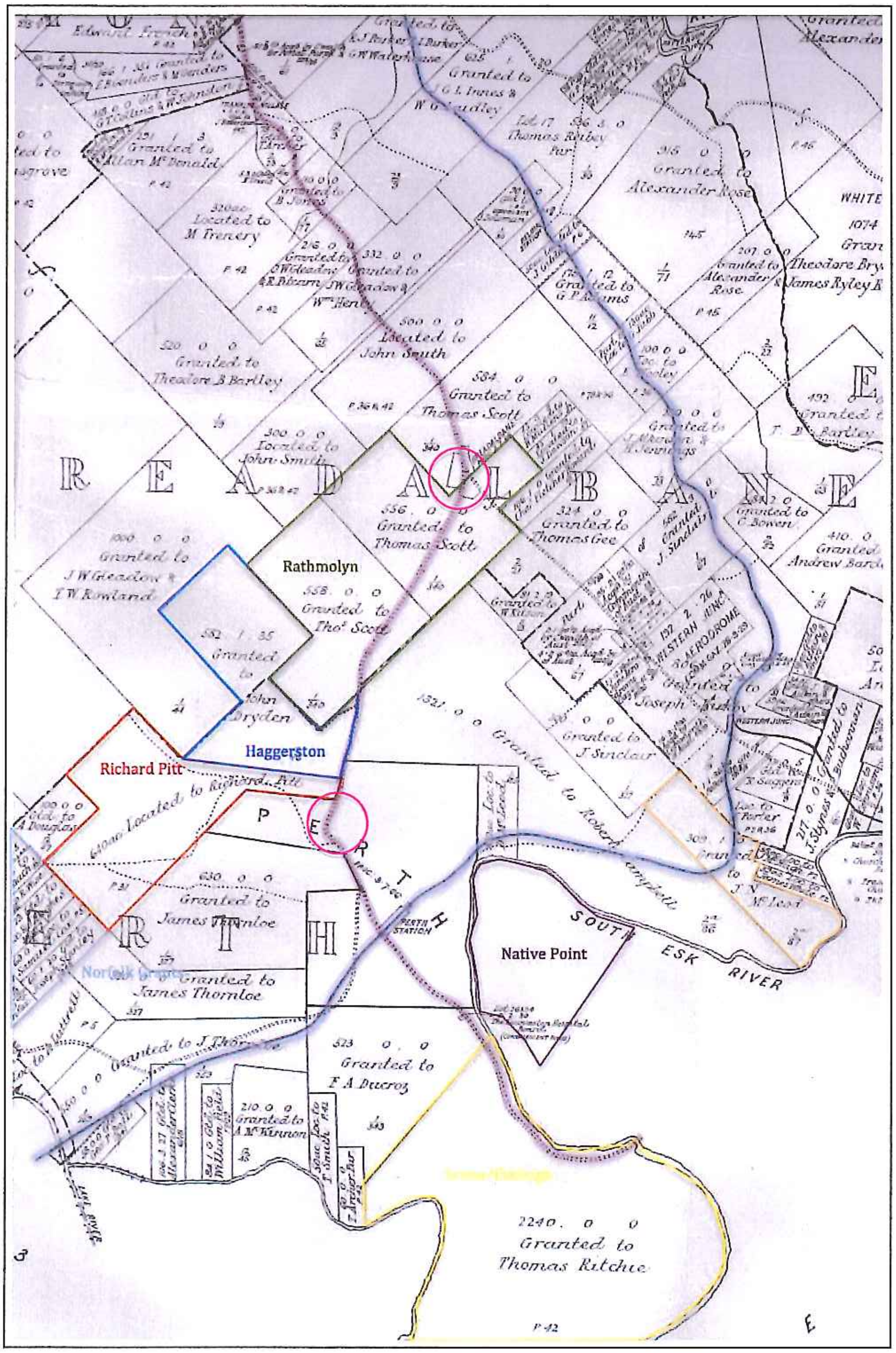


Figure 8: Map showing locations of properties and features discussed in this report. The route of the Launceston and Western Railway is marked in blue; the original alignment of the Hobart Rd is marked in purple; the two pink circles mark the location of the two areas within the study area where the Midland Hwy deviates from the original path of Hobart Rd. *Cornwall No. 3A* / Compiled and drawn at the Survey Department Hobart, 1929. Tasmania. Surveyor General's Office.

Plate 11: The Tasmanian Inn, corner of Drummond and Main Sts, Perth (image from Haygarth 2013:68)

The Leather Bottle Inn is now the oldest building in Perth, constructed in 1830 and named after a hotel in Cobham, Kent, England, which was frequented by novelist Charles Dickens (see Plate 12). Some of the walls are over 60cm thick and hand made nails are retained in the original cedar of much of its construction. Anecdotal evidence has a bushranger being shot at the bar by one of the special constables who aimed through a window (Macfarlane n.d.; Von Stieglitz 1947).

Church of England

Rev R R Davies, the first Chaplain of Longford, laid the foundation stone of St Andrews at Perth with the church opening in May of 1836. By 1853 the average congregation was 35 people at each of the three services held every Sunday (von Stieglitz 1947:44). A second church (still present) was erected some distance away in another street, with construction commencing in 1876 (see Plate 13).

Cemetery

A number of historic monuments are in the old graveyard, including those of John Helder Wedge (associated with Batman's Victorian expedition of 1835) founder of 'Leighlands', the home of the prominent Youl family; Captain William Wood (paymaster of the 15th Regiment) whose wife Marie Hyseinthe Genvevieve had ties with the court of Marie Antoinette; members of the Youl family and other pioneers (Macfarlane n.d.).

Over time, the Norfolk Plains began to prosper, with visitor H Butler Stoney recording in 1853 that Perth was 'a neat country village' and nearby Longford 'the most thriving settlement of the colony' possessing 'an appearance of comfort and well-being seldom so visible in an infant state' (cited in Haygarth 2013:71). The transportation of convicts ceased in 1857 creating new economic pressures on the region.

Plate 12: The Leather Bottle Inn as it currently stands in Perth

Plate 13: St Andrews Church, Perth

Perth experienced a period of economic downturn in 1876. The introduction of the Main Line Railway diminished traffic through the town and eliminated the coaching trade. The town became described as 'drowsy and full of gorse' (Haygarth 2013:111). Nevertheless, the town remained a community and supply centre for the agricultural farms in the surrounding areas.

With technological improvement came renewed interest and traffic to the area in the form of tourism. From the 1930s the rivers and wide-open spaces of the Norfolk Plains were within easy distance for motor tourists, sportsmen and picnickers from Launceston (Haygarth 2013) (see Plate 14). The plains became classed as the 'leisure land' of the 'northern capital' with the area depicted as 'a little piece of England' (Haygarth 2013:124) (see Plate 15).

Plate 14: TAC car rally to 'Scone' Perth. Photograph from Miscellaneous Collection of Photographs 1860-1992, Archives Office of Tasmania (Image copied from LINC Tasmania online collection at http://stors.tas.gov.au/PH30-1-8239)

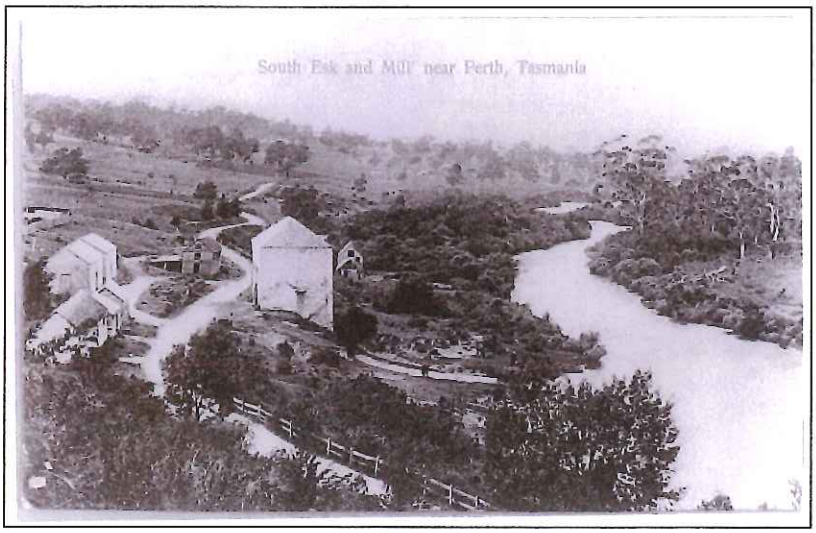


Plate 15: Panoramic view of South Esk River and the Mill, near Perth. Photograph from Miscellaneous Collection of Photographs 1860-1992, Archives Office of Tasmania (Image copied from LINC Tasmania online collection at http://stors.tas.gov.au/PH30-1-1707)

The town was joined to the State Electricity Grid in 1927 and regular dances were held in the town from 1930 onwards (Haygarth 2013). By 1944 both a sewerage and water scheme had been submitted for Perth (Haygarth 2013).

3.0 Results of the Search of the Heritage Registers

3.1 Heritage Databases, Registers and Lists

A search was carried out of a number of historic registers and databases in order to determine the extent of historic sites and features in the vicinity of the study area. Agency databases searched included:

· The Australian Heritage Database (AHD);
· The Register of the National Estate (RNE);
· The National Heritage List (NHL);
· Tasmanian Historic Places Inventory (THPI);
· Tasmanian Heritage Register (THR);
· Northern Midlands Interim Planning Scheme (NMIPS).

The search revealed a number of historic sites within the broader study area listed on the RNE, THR and within the NMIPS. The roles of each of these registers is discussed below.

Register of the National Estate (RNE)

The RNE ceased to be an active register in February 2007 and from this point onwards sites were unable to be added or removed from the list. Many places on the RNE are also included in state and local government registers, which provide sites with various level of protection. However, the RNE is still considered to be a statutory register with registered sites offered protection under the EPBC Act until 2012. The Minister for the Environment is required to consider the register when making decisions under the EPBC Act.

Tasmanian Heritage Register (THR)

The Tasmanian Heritage Register provides a list of places recognized as possessing 'historic cultural heritage significance to the whole of Tasmania' (www.heritage.tas.gov.au/thr.html), as representatives/contributors to our cultural fabric and historic identity of Tasmania. The Register is maintained by the Heritage Council, under the Historic Cultural Heritage Act 1995.

The Act offers protection to all registered heritage places and areas under Part 6 s.32 (1) in which it states:

> 'A person must not carry out any works in relation to a registered place or a place within a heritage area which may affect the historic cultural heritage significance of the place unless the works are approved by Heritage Council.'

Approval to carry out works or to impact upon places registered on the Tasmanian Heritage Register must therefore be sought through the Tasmanian Heritage Council via a works application. The works application process has recently been streamlined (see section 5.3), resulting in the following process:

- Works applications are lodged with the local planning authority (in this case it is the Northern Midlands Council), who advertise the works to allow 14 days for interested parties to lodge a representation with it.

- A copy of the works application and any representations received are then forwarded to the Heritage Council for assessment by Heritage Tasmania. Assessment is undertaken against the Tasmanian Heritage Assessment Criteria (see section 6.3) and may involve a site visit, before recommendations are made to the Heritage Council's Works Application Assessment Committee.
- The Committee considers the recommendations and either approves, approves with conditions or refuses the application.
- The Heritage Council decision is then issued to the planning authority and a copy provided to the applicant.
- The planning authority must incorporate the Council decision into the final permit (or refusal).

Northern Midlands Interim Planning Scheme 2013 (NMIPS)

The Northern Midlands Planning Scheme 1996 was replaced in June 2013 with the Northern Midlands Interim Planning Scheme 2013. Section E13 of the Scheme deals specifically with the Local Historical Heritage Code, designed to protect and conserve the historic cultural heritage significance and integrity of local places and precincts as well as any identified archaeological sites (sE13.1.1).

The Code (sE13.1.2) applies to the use or development of land that is:

a) within a Heritage Precinct;
b) a local heritage place;
c) a place of identified archaeological significance.

Table E13.1 of the NMIPS defines local heritage precincts for the Northern Midlands. The Perth Heritage Precinct Character Statement is as follows:

> 'The Perth Heritage Precinct is unique because it is still the core of a small nineteenth century riverside town, built around the thoroughfare from the first bridge to cross the South Esk River, and which retains its historic atmosphere. It combines significant colonial buildings, compact early river's edge residential development, and retains the small-scale commercial centre which developed in the nineteenth century at the historic crossroads and river crossing for travel and commerce between Hobart, Launceston and the North West. Perth's unique rural setting is complemented by its mix of businesses still serving local and visitor's needs. Perth's heritage ambience is acknowledged by many of those who live in or visit the town, and will be enhanced by the eventual construction of the Midland Highway bypass.'

The boundary of the Perth Heritage Precinct, as defined under the NMIPS, is illustrated in Figure 9; located well to the south of the current study area. A number of historic sites also exist outside of the Precinct. Table F2.1 of the Scheme lists Heritage Places Inside Heritage Precincts, providing a comprehensive list of identified heritage places within the Northern Midlands. A copy of listed places in included at Appendix B.

Those relevant to the current study area are discussed below.

3.2 Registered Historic Sites within the Study Area

The historic town of Perth boasts in excess of 25 buildings on the Tasmanian Heritage Register and NMIPS 2013. Another 3 historic buildings occur in Breadalbane. Only seven (7) of these listed sites are in close proximity to the current study area and are summarised in Table 2 below, while the locations of each of these places, relative to the current study area, are illustrated in Figures 10-12. The historic property of Rathmolyn is also listed on the Register of the National Estate.

The eastern boundary of the historic Haggerston property sits within the proposed study area and will be directly impacted by the development. The listing of Haggerston as a place of local and state significance on the NMIPS and THR means that any impacts to the property are subject to the Code as detailed in the NMIPS and to clearance by the Tasmanian Heritage Council via a works application (see Heritage Management Plan in Section 7.0 for requirements regarding impacts to this site).

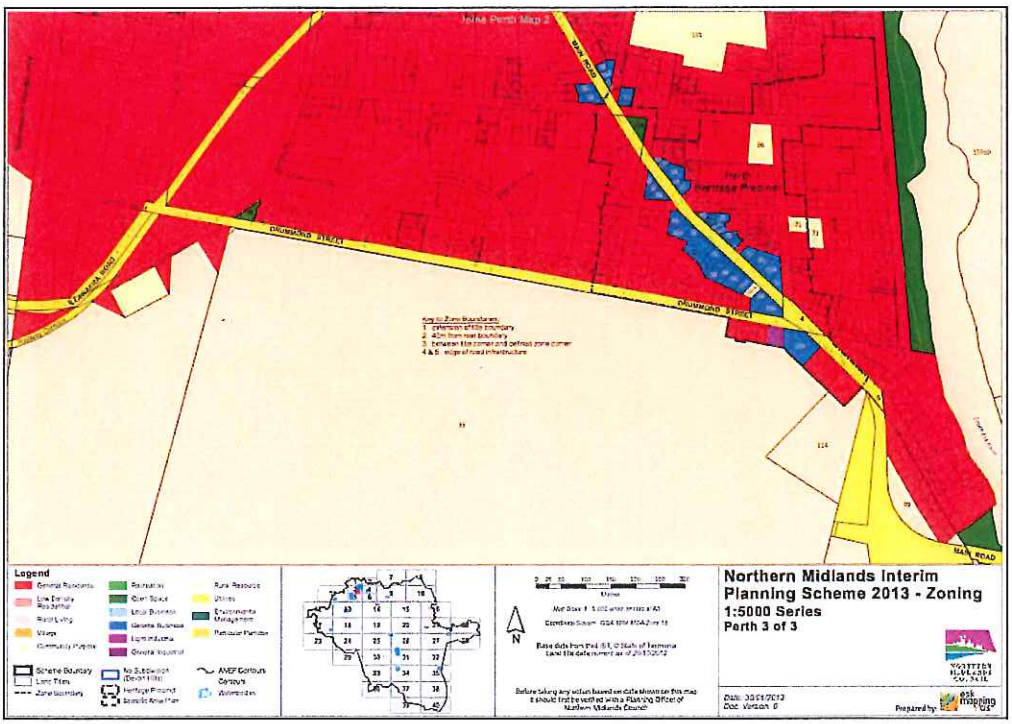


Figure 9: Perth Heritage Precinct as defined under the NMIPS (image taken from NMIPS 2013)

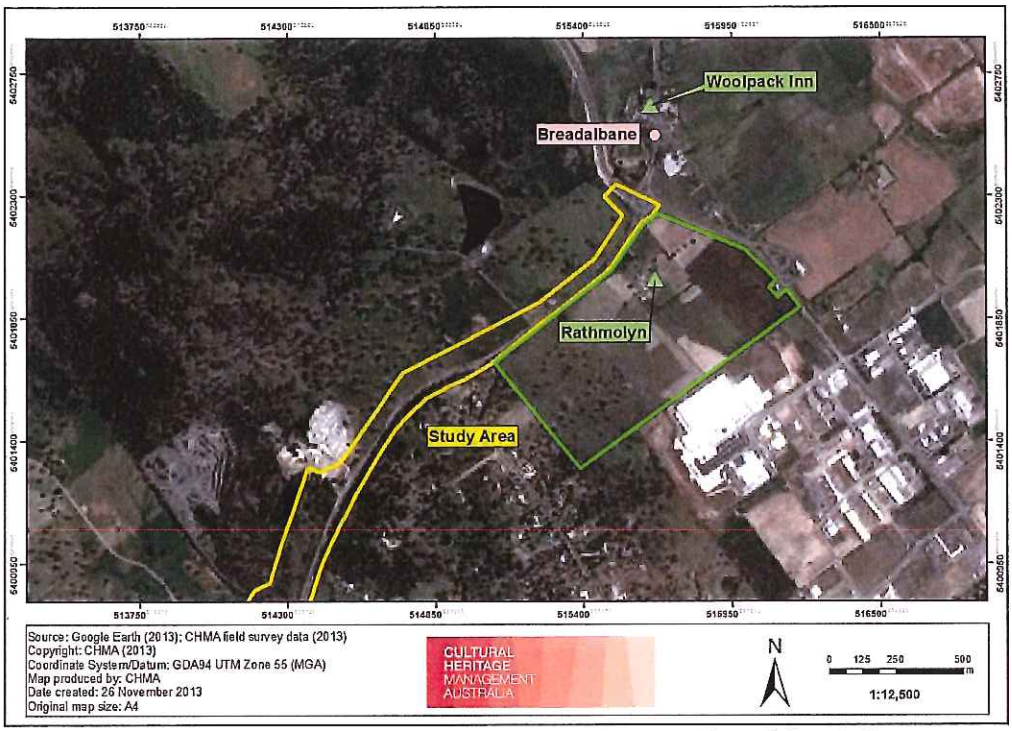
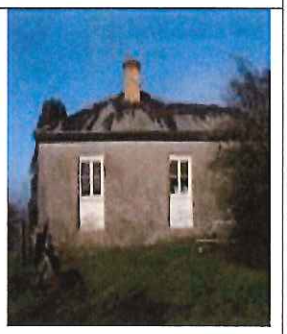


Figure 10: Location of listed historic sites in the northern portion of the study area

Table 2. Registered historic sites in the vicinity of the study area.

Place Name and Location	Heritage Register and Status	Description and Significance	Images
Pioneer Avenue Elm Trees Main Rd, Perth (adjacent no's 19 and 23)	THR: 8201 Permanently Registered Listed on NMIPS	Two 15m high mature elms approx. 35m apart. Thought to be about 70 years old and planted as part of the Pioneer Ave c1935-1941. Registered area contains the trees and their root systems but not the land between them. Located on opposite side of the road from 26 and 28 Main Rd, Perth.	
Wool Pack Inn 854 Hobart St, Breadalbane	THR: 4888 Permanently Registered Listed on NMIPS	Single storey Georgian building. Recognised for architectural features as a single storey stuccoed Old Colonial Georgian Inn and for its social/cultural associations as one of the oldest buildings in the township.	

Place Name and Location	Heritage Register and Status	Description and Significance	Images
The Railway Tavern 26 Main Rd, Perth	THR: 5240 Permanently Registered Listed on NMIPS	A two storey brick Georgian Inn. Recognised for its ability to demonstrate the principal characteristics of a two storey brick Victorian Georgian domestic building and because its townscape associations are important to the community's sense of place.	
Rathmolyn 16662 Midland Highway, Breadalbane	THR: 4889 Permanently Registered RNE: 12699 Register Listed on NMIPS	Early farmhouse with gabled roof and early timber barn and shearers hut. Recognised for demonstrating principal characteristics of a Victorian Georgian farmhouse complex and its social/cultural associations with the township.	 

Place Name and Location	Heritage Register and Status	Description and Significance	Images
House 28 Main Rd, Perth	THR: 5217 Permanently Registered Listed on NMIPS	A Victorian Italianate house of weatherboard construction with verandah. Recognised for demonstrating the principal characteristics of a single storey weatherboard Victorian Italianate domestic building and because its townscape associations are important to the community's sense of place.	
Haggerston 16457 Midland Highway, Perth	THR:5241 Permanently Registered Listed on NMIPS	Constructed c1834, a rendered single storey house in Old Colonial Georgian style. Recognised for demonstrating the principal characteristics of a single storey rendered Old Colonial Georgian homestead with associated outbuildings.	 

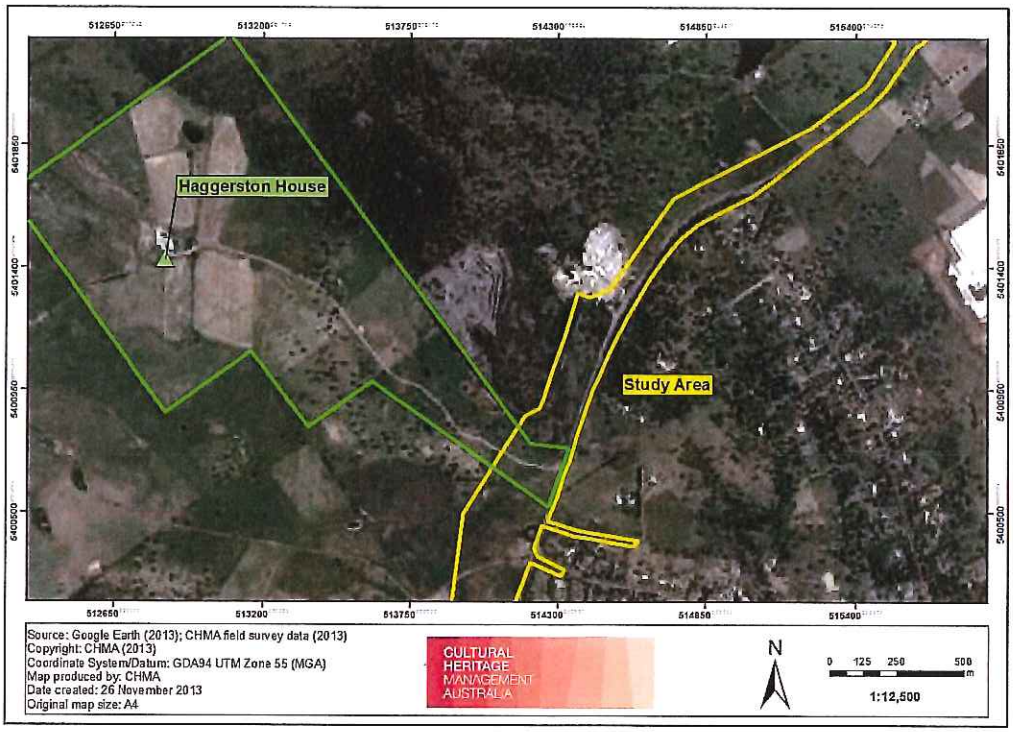


Figure 11: Location of listed historic sites in the central portion of the study area

Figure 12. Location of listed historic sites in the southern portion of the study area

4.0 Survey and Research Results and Discussion

4.1 Summary of Results

A total of 5 historic sites were identified during the current investigations, comprising 3 possible building foundations likely to be part of a single site complex, an old track and a planting of Macrocarpa trees with associated buildings (Hist 2). The locations of each of these are provided in Table 1 and illustrated in Figures 13 and 14. Full details of each of the sites are provided in Appendix A. A sixth historic site was identified during the background historical research for the area which was the site of the last gibbeting in the British colonies. Each of these sites is discussed below.

In addition, historical research revealed that the current boundaries of the Haggerston property, as defined on the THR, do not accurately represent the historical boundaries of the property.

4.2 Building Foundations and Track: Description and historic context

The three sets of possible building foundations identified during the current study lie within an approximate area of 125m (north/south) x 60m (east/west). Approximate measurements for the three sites are 12m x 4m, 8m x 7m and 8m x 8m respectively. However, visibility is currently obscured by the presence of thick gorse across the site and partial burial of the remains.

All three foundations are constructed primarily from dolerite nodules, the parent rock for the area, and readily available in the general surrounds of the sites. The third set of foundations is accompanied by a number of man-made clay bricks, which may suggest that this structure postdates the others (see Plates 16 to 19).

Plate 16: View east at Foundations 1

Plate 17: Clay brick material present at foundations 2

Plate 18: Sample range of bricks scattered in the vicinity of Foundations 3

To the west of these foundations is a track extending for approximately 300m in a north/south direction. The track is approximately 4m wide and extends from the old sealed alignment of the Midland Highway in a northerly direction to a point where it crosses a small creek. It is likely that this was one of the original access roads through the area and is temporally associated with the building foundations to its east. Accompanying this collection of historic sites is a scatter of glass and ceramic material, with highest densities of which occur along the track immediately to the west of Foundation 1.

Plate 19: View south along the track alignment

Discussion

Investigations into the possible origins of these buildings have produced mixed results. Analyses of historical maps of the area do not indicate any structures as having once been in that locality. This suggests that these structures pre-date any of the maps,so far located for the area, which would date them to pre- c1860.

A single eyewitness account by James Scott (1837), a surveyor by trade, records the existence of 'Pitts old Public House' in 1837 when commenting to his family on the location of the gibbet site (see discussion below). His account accords with the location of the foundations identified during the current study, and implies that by 1837 the public house was no longer in use. If these structures are indeed the remains of Pitts Old Public House, a pre- 1837 date is indicated for their construction.

Figure 8 shows the location of Pitt's grant (in red) which he was awarded in 1830-1831 (Sargent 2013). The foundations identified during the current study clearly fall within his property boundary (see Figure 13).

In a history of Richard Pitt, complied by Marion Sargent of the Launceston LINC (Sargent 2013), Richard Pitt is identified as a convict, tried in Kent in March 1811 and transported for life. He arrived in NSW in 1811 and was one of 30 male and 13 female convicts transferred to Port Dalrymple in June 1812. He is described as 'notorious' (CON 13/1/1 p. 37, image 28 cited in Sargent 2013). He first appears in the *Hobart Town Gazette* of 20 Dec 1823 when he was awarded a licence to sell spirits, wine and beer in Launceston. By April 1824, he was licenced to sell spirits and wine at the *Man of Ross* at Ross Bridge.

On 10 Oct 1829 the *Hobart Town Courier* runs a substantial advertisement stating that Richard Pitt has kept the Inn at Ross Bridge and Compton Ferry for six years and that he has now removed to Murray Street, Hobart, still under the name of *Man of Ross* (Sargent 2013).

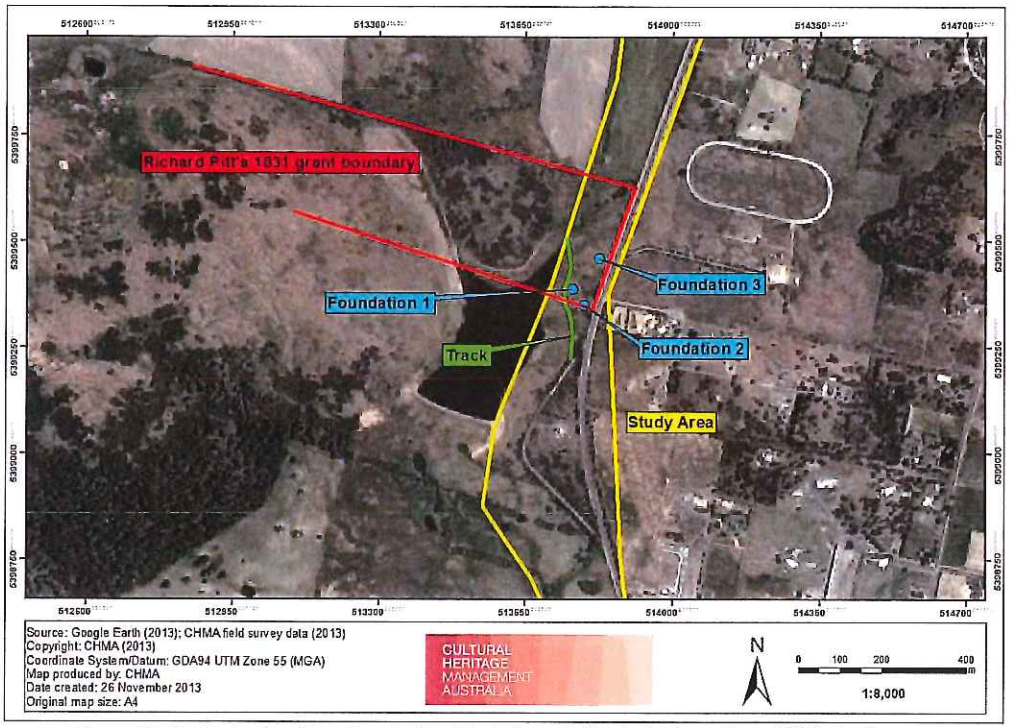


Figure 13: Illustrates location of newly identified sites relative to the boundary of Pitt's 1831 grant.

Richard Pitt received a 640-acre grant of land at Perth in 1830-31, with a 14 chain (280m) frontage along the Hobart Rd to Launceston (see Figures 8 and 13). If this grant was the formalisation of previously occupied lands, it is possible that Pitt's earliest venture as a Publican in Van Diemen's Land was the small dolerite cobble buildings identified during the current study; operated briefly on land on which he squatted between 1823 and 1824.

From the preceding discussion, it is clear that much of this is speculation, and that further work would be required in order to confirm Pitt's ownership and the presence of the public house at this current site. However, if these musings are correct, the foundations would comprise the remains of some of the earliest structures in the area.

4.3 Hist 2 - Row of Macrocarpa trees and associated buildings

This site comprises a cluster of mature Macrocarpa trees located on the west side of the Midland Highway, approximately 2.5km to the north of Perth. Two distinct rows of trees are evident and meet to form a V shaped alignment; a total of 20 mature trees are present (see Plate 20). Two sheds appear to be associated with the trees – one small partially collapsed corrugated iron shed and another larger shed approximately 30m to the south of the Macrocarpa trees (see Plate 21).

The larger of the two sheds is constructed from horizontal timber boards with a pitched corrugated iron roof. A sign on the east side of the building reads 'Haggerston Vale'.

Plate 20: View west at the planting of Macrocarpa trees

Plate 21: View northwest at the shed to the south of the planting of Macrocarpa trees

Both the plantings and the shed are located within lands, which were once part of Haggerston; owned by John Dryden. The block which currently defines the Haggerston property (to the north and west of Hist 2 features) (see Figure 14), does not represent the original boundaries of the property. Instead, the current block of Haggerston includes the original portion granted to Thomas Dryden prior to 1837, along with a section of land originally granted to Thomas Scott as part of Rathmolyn (see Figure 15).

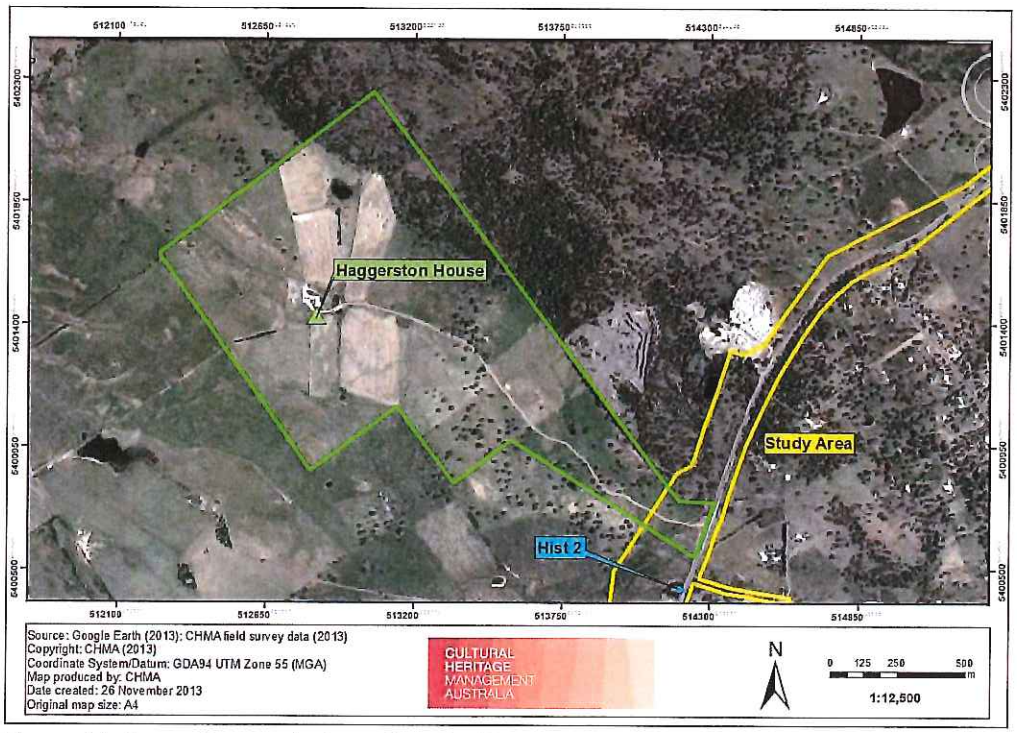


Figure 14: Current property boundary for Haggerston and proximity to Hist 2 site.

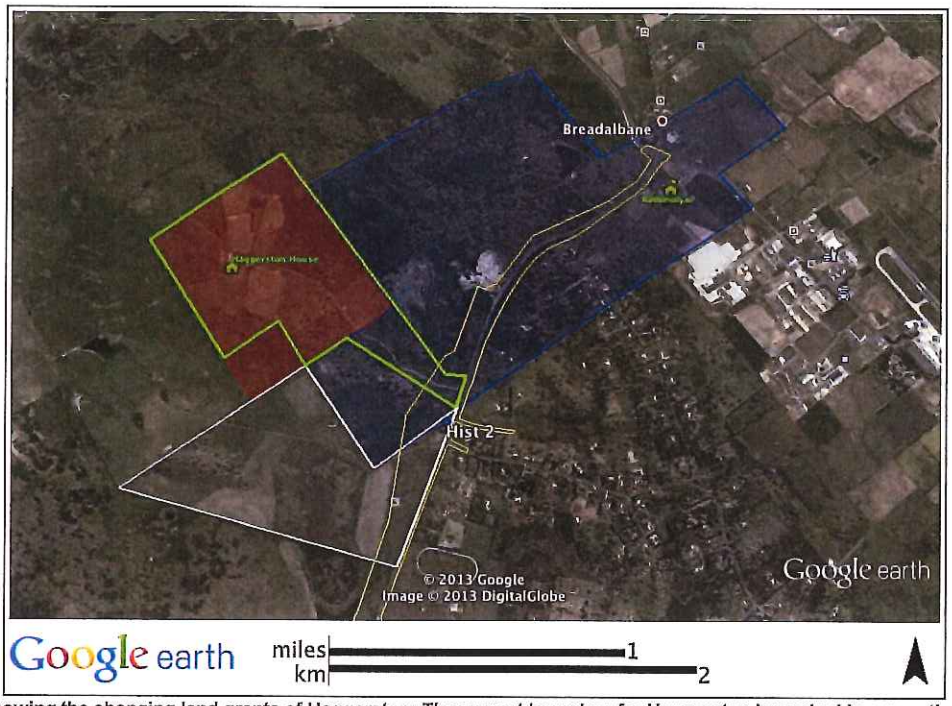


Figure 15: Map showing the changing land grants of Haggerston: The current boundary for Haggerston is marked in green, the original grant of Thomas Dryden c1830s is marked in red, Edward's block c1830s to the south is marked in white, Scott's original land grant including Rathmolyn is marked in blue. The current boundary, and therefore the area to be impacted by the proposed works, is that of Scott's original Rathmolyn.

The block of land on which the current Haggerston House stands was originally granted to Thomas Dryden prior to 1837, with a second block below it granted to his brother Edward Dryden. In 1878, both blocks were claimed by John Dryden (see Figure 16), with the large grant described as 1 rood, 35 perches: 582 acres. John Dryden worked and lived most of the time at the Crown Inn in Perth (von Stieglitz 1947), using Haggerston as a holiday home. The driveway extended approximately 2km from the old Hobart Rd to the west and this driveway is still utilised as a road/track running immediately to the south of the Hist 2 features (see Figure 16).

Importantly, the THR data sheet for Haggerston dates the construction of the house as c1834 but the house is widely thought to have been built by John Dryden (e.g. von Stieglitz 1947). If the house was built in c1834 it was originally work of Thomas and not John but if the house was built by John, then its construction must post date 1878. Further research would be required to clarify this. Regardless, site Hist 2 was once part of John Dryden's 1878 Haggerston property.

However, despite the connections between the land and the Haggerston property both the shed and tree plantings are considerably younger. The shed itself is manufactured from machine cut wood, though it is likely that the vertical slab door has been recycled from an older structure. Aerial images of the area show the shed in existence in 2003, without the adjoining fences but a survey of the block in 1999 made no mention of a structure on the land (see Figure 17). It is therefore likely that the building was constructed between 1999 and 2003, with the occasional use of older, recycled timbers.

The Macrocarpa trees are likely to be older. Judging by their size, they could be somewhere in the order of 20-30years of age, post dating the Second World War. During the 1940s, Macrocarpa's were identified as one of the most popular trees planted at the time for the provision of windbreaks and for being a hardy species in need of minimal care (Advocate 1940 'Tree Planting'). These trees are therefore common in Tasmania, with the particular trees identified in this planting as dating from the post war period.

4.4 Haggerston House and THR Listing

As is clear from the previous discussion, investigations into the origin of the shed and plantings identified at Hist 2 revealed that the current registered boundary for Haggerston does not reflect Dryden's original land grant. Figure 15 shows the boundaries of both the current and original Haggerston land grants, as well as the dissection of James Scott's Rathmolyn to the north. Land title searches indicate that the current boundary of Haggerston was developed in 2001 (see Figure 18).

As such, the portion of the current Haggerston boundary likely to be impacted by the development is not actually part of the original grant (shown in red in Figure 15 and as Block No 1 in Figure 16), whilst a larger portion of the later historic grant claimed by John Dryden (combining the white and red areas in Figure 15 and Block No's 1 and 2 in Figure 16) would be impacted to the south. However, this land is not covered by the citation of the THR and is therefore not subject to any limitations associated with the THR.

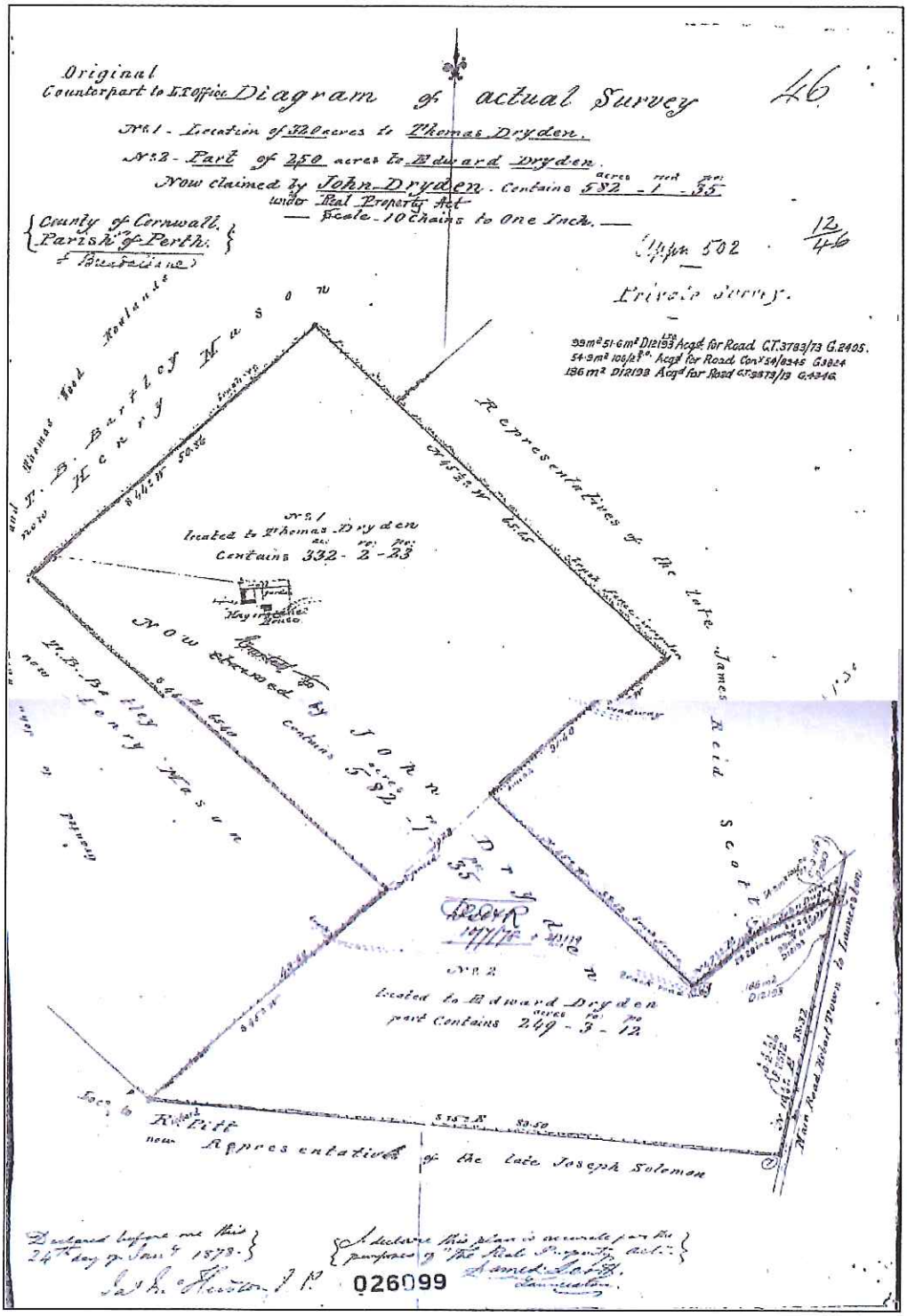


Figure 16: Copy of John Dryden's claim of the two blocks previously owned by Thomas and Edward Dryden dated 1878, and the new Haggerston boundary. Note the mapping of the existing driveway. Document courtesy of Dept of Lands – supplied 20 Dec 2013).

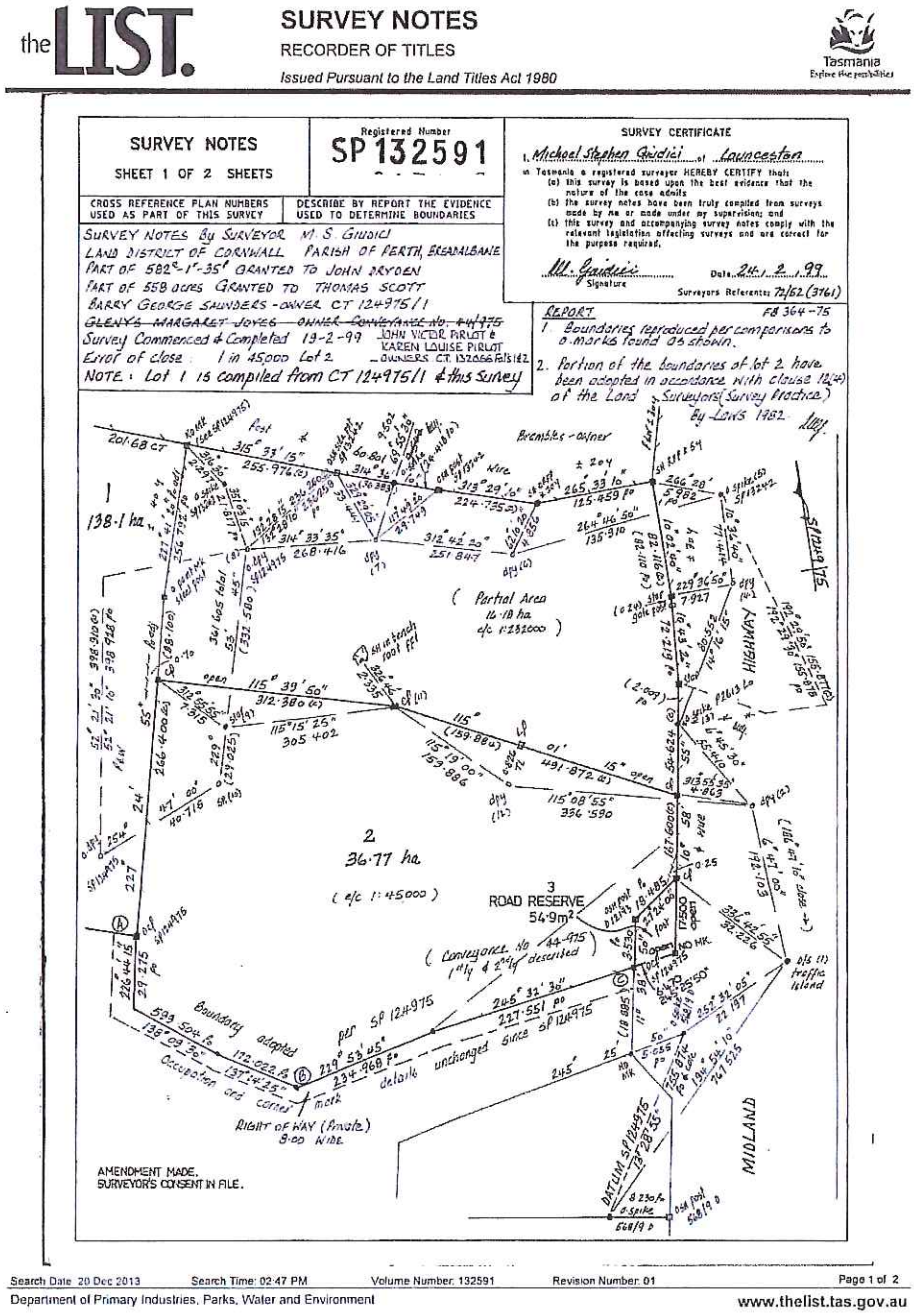


Figure 17: Survey of block on which Hist 2 is now located, having been absorbed into the block to the north. Notes on the block do not mention any existing structures, but do mention the incorporation of Scott's land within this northern block.