

Wild Mersey Mountain Bike Development

Natural Values Report

Warrawee Conservation Area through to Railton



Prepared for :

Kentish Council and Latrobe Council

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Cover photo: View of the Mersey River from Shale Road in the Warrawee Conservation Area. Facing South, M.Rose, 23/10/16.

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Executive summary

The Kentish Council and Latrobe Council engaged Natural State to prepare a natural values report to support the Wild Mersey Mountain Bike Development which is proposed within the Warrawee Conservation Area and through to the township of Railton.

This report focusses on the environmental impacts associated with the proposed mountain bike trails within the Warrawee Conservation Area and the linking Warrawee to Railton trail.

Approximately 22 km of trails are proposed throughout protected native forests in the Warrawee Conservation Area and an Informal Reserve within the Tasmanian Reserve Estate.

Three threatened flora species have been recorded in the Warrawee Conservation Area, the critically endangered orchid *Caladenia tonellii* - Robust Fingers, the vulnerable *Caladenia caudata* - Tailed Spider-orchid and the rare *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower.

Several threatened fauna species have been recorded in the study areas and a number of other threatened species potentially use this forest for foraging and nesting habitat. Two Wedge-tailed Eagle nests have been recorded just over 500m away from the Warrawee to Railton section of trail. Further advice should be sought from DPIW's Threatened Species Section regarding the proposed developments proximity to the eagle nests.

A threatened native vegetation community has been recorded in the vicinity of the proposed trail.

The trails cross over 8 creeks with varying freshwater ecosystem conservation values. The trails traverse through native forest with mature habitat and many mature hollow-bearing trees.

The major impacts likely from this development are clearing and fragmentation of native vegetation (upto 2.5 hectares), soil erosion and weed and disease spread. These impacts could result in degradation of the native forest and freshwater ecosystem condition.

Most of the impacts can be avoided and mitigated through: further planning, adhering to best practice protocols, ongoing monitoring, ongoing weed control, revegetation and stabilisation.

Recommendations to avoid or mitigate the environmental impacts are detailed in section 11 of this report (pp. 65-69). A brief sample of the recommended actions includes:

- Sourcing and allocating adequate resources for ongoing environmental management.
- Developing a Weed Management Plan and a Biosecurity Risk Management Plan for the proposed development activities.
- Targeted surveys and ongoing monitoring of threatened species.
- Follow the recommended trail alignments ground-truthed and remapped by Natural State to avoid impacts to threatened species, threatened native vegetation communities and freshwater ecosystems.
- Contractors and volunteers working on the trails should be required to adhere to the biosecurity standards recommended. Ensure all construction machinery, equipment, tools and clothing is weed and disease free before entering and exiting the site.
- All of the weeds mapped within the Warrawee Conservation Area and in close proximity to the Warrawee to Railton trail should be controlled before, during and after trail construction to comply with statutory obligations and to significantly reduce the biosecurity risk to the protected native forest reserves.
- Diligent mountain bike hygiene procedures will need to be implemented with a commitment from the Kentish and Latrobe Councils, and the local mountain bike community, to adhere to, and encourage these biosecurity standards.

Further assessments, planning and monitoring are required.

1. Introduction

1.1 Background

The Kentish Council and Latrobe Council engaged Natural State to prepare a natural values report to support the Wild Mersey Mountain Bike Development which is proposed within the Warrawee Conservation Area through to the township of Railton.

This report follows the Guidelines for Natural Values Surveys - Terrestrial Development Proposals (DPIPWE, 2015). This report seeks to document the natural values surrounding the proposed development footprint and recommend options to avoid, mitigate and offset the environmental impacts based on the information provided to Natural State by the Kentish Council and Latrobe Council.

1.2 Description of the proposed development activities

The Kentish Council and Latrobe Council propose to develop 100 km of world-class mountain bike trails and associated infrastructure in North-West Tasmania, between Latrobe and Sheffield. This proposed development is called the *Wild Mersey Mountain Bike Development*.

This report focusses on the environmental impacts associated with the proposed mountain bike trails within the Warrawee Conservation Area and the linking Warrawee to Railton trail.

The Warrawee Trail Cluster is a network of mountain bike trails within the reserve boundaries, 15.45 km in total length x up to 1m wide.

The Kentish and Latrobe Council's *Wild Mersey Mountain Bike Development* marketing brochure states 'the world-class trailhead facilities will include closed loop bike washdowns, event hosting infrastructure, plus BBQs, toilets and change room, shelter, picnic tables and other facilities...' within the Warrawee Conservation Area. A pedal-powered flying fox over the Mersey River is also part of this development.

The maps within this report include an indicative location for the proposed closed loop bike washdown bays and the flying fox, for display purposes only. This report does not study the environmental impacts associated with these or any other facilities proposed due to a lack of information available at this time.

The mountain bike trails are each assigned a difficulty rating according to the International Mountain Bicycling Association (IMBA) Australia Mountain Bike Trail difficulty rating system. The potential development impact, or trail width, varies depending on the difficulty rating. For example, a 'Green Circle level MBT', will require a wider trail width to cater for beginners and novices; opposed to a 'Black Diamond level MBT', which has a narrower trail width and is designed for the experienced and skilled mountain bikers.

The proposed trail lengths within the Warrawee Conservation Area are as follows:

- Green Circle 'Easy' level of difficulty trails x 6,040m
- Blue Square 'Intermediate' level of difficulty trails x 8,100m
- Black Diamond 'Difficult' level of difficulty trail x 1,310m

Some of the trails proposed will traverse or intersect several sections of existing walking tracks such as the Shale Trail Loop including the Old Tramway Track, the Fern Gully Track and the start of the 'Fisherman's Track' along the Mersey River.

The understorey vegetation along the proposed trail routes will be cleared up to 1m in width. The potential area to be cleared is approximately 2.5 hectares in total. Vegetation, branches, logs and leaf litter will be cut, moved aside, and used for erosion management along the edges of the trail.

The proposed trail length between the Warrawee Conservation Area and Railton is as follows:

- Blue Square 'Intermediate' level of difficulty trails x 6,200m.

This development will be staged over several years as development approvals and funding is secured.

Study area landscape context

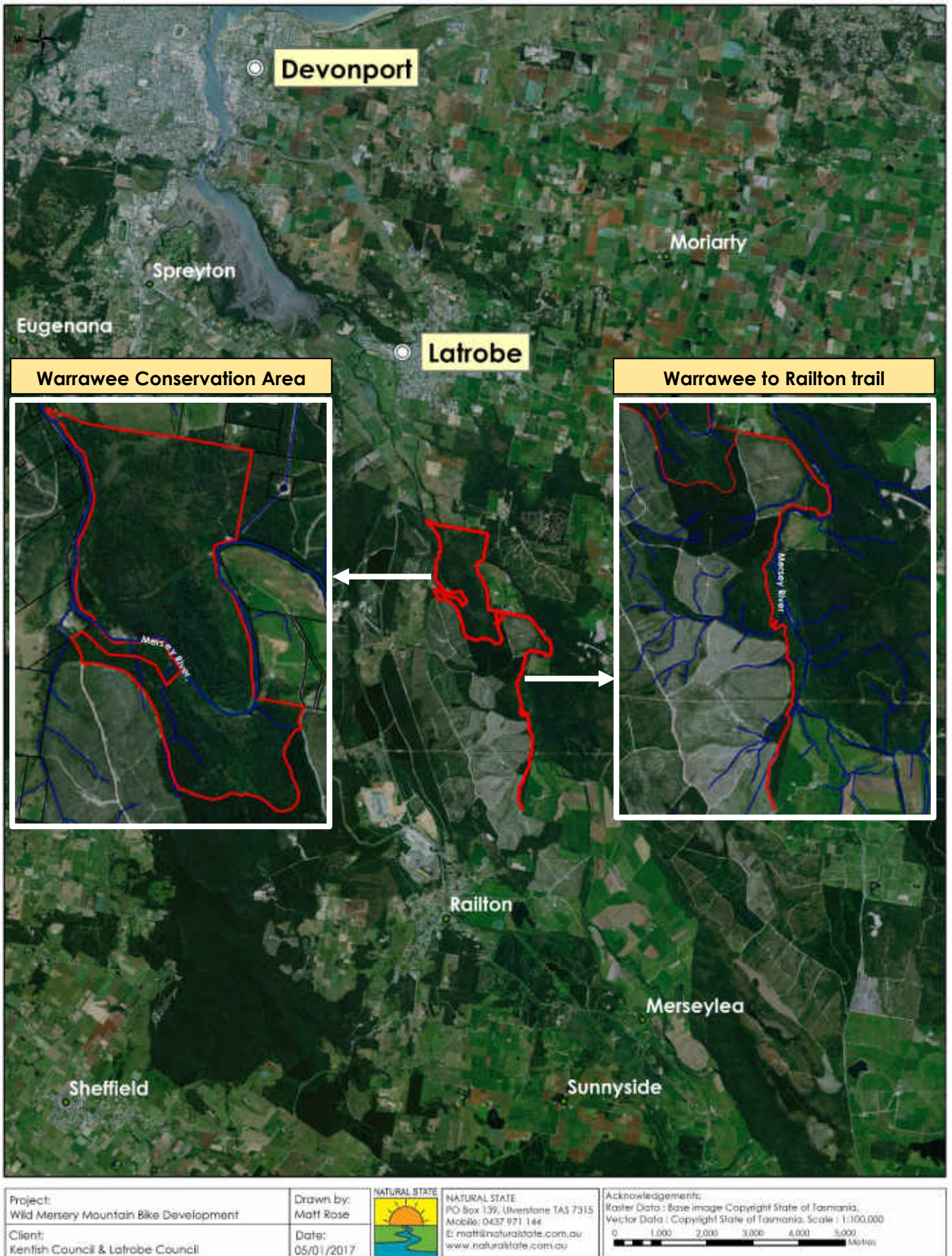


Figure 1: Study area landscape context

1.3 Description of the study areas

1.4 The Warrawee Conservation Area

The Warrawee Conservation Area is also known locally as the Warrawee Reserve. The Reserve is located at the end of Shale Road approximately 3.5 km south of the township of Latrobe, Tasmania.

Up until the June 6th 2016 major flood event, the site had been actively promoted by Latrobe Council as a tourism attraction with local volunteers offering Platypus viewing tours.

The Warrawee Conservation Area is reserved land within the Tasmanian Reserve Estate and is currently managed by the Tasmania Parks and Wildlife Service. The Reserve was previously managed by Forestry Tasmania as the Warrawee Forest Reserve. The site is approximately 225 hectares in total size.

The Reserve has the Tenure ID 42314. The tenure is classified Conservation Area, under the Nature Conservation Act 2002. The Reserve is situated within the Latrobe Council local government area.

The proposed trails navigate through native forest. The terrain is gently sloping to mildly steep from the Shale Trail walking track. The Fern Gully walking track is also gently sloping to mildly steep. The summit of the reserve is relatively flat with gentle rises. The site ranges in altitude from 10m near the Mersey River up to 150m on the highest part of the Southern summit.

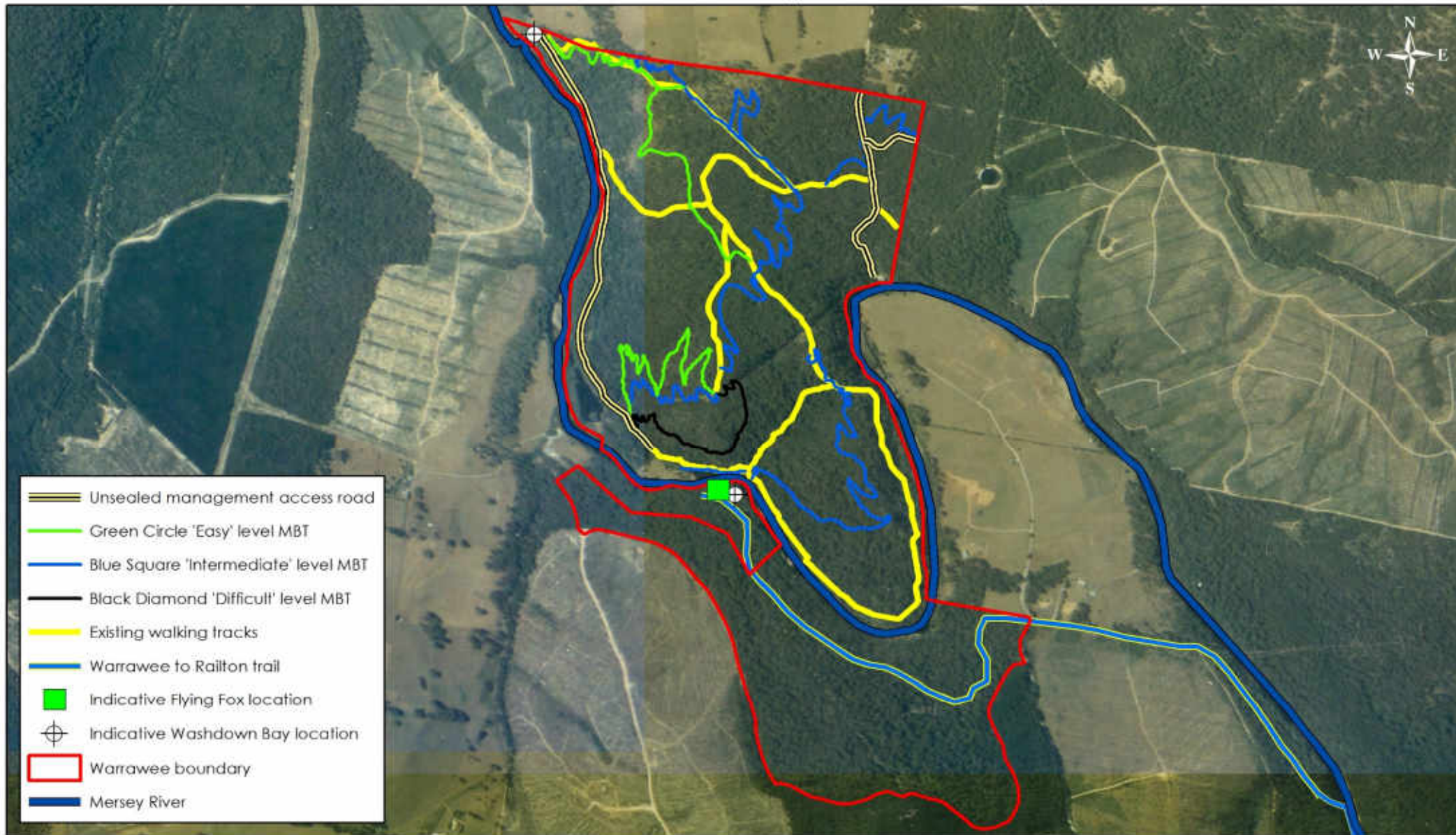
1.5 Warrawee to Railton trail

The proposed trail is sited on Tenure ID 42313. The tenure is classified Permanent Timber Production Zone Land, under the Forest Management Act 2013. The land is managed by Forestry Tasmania and is currently leased to Timberland Pacific Pty Ltd. A small section of the trail passes by pine plantations. The surrounding land is mostly Crown Land managed by Forestry Tasmania. The trail follows the boundary of one private property freehold title for a distance of approximately 650 m.

The proposed trail follows the Mersey River between Warrawee Conservation Area and the township of Railton, Tasmania. It navigates through native forest which is protected under an Informal Reserve within the Tasmanian Reserve Estate. The terrain is gently sloping to steep in areas ranging in altitude from 10 - 80m. The trail links up with Pumphouse Road and then onto Native Rock Road towards Railton.

The Warrawee to Railton trail traverses through both the Kentish Council and Latrobe Council local government areas.

Warrawee Conservation Area - Proposed development activities



Project: Wild Mersey Mountain Bike Development	Drawn by: Matt Rose	 NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base Image Copyright State of Tasmania, Vector Data : Copyright State of Tasmania. Scale : 1:16,000
Client: Kentfish Council & Latrobe Council	Date: 04/01/2017		

Figure 2: Proposed development activities in the Warrawee Conservation Area.

Warrawee to Railton - Proposed development activities

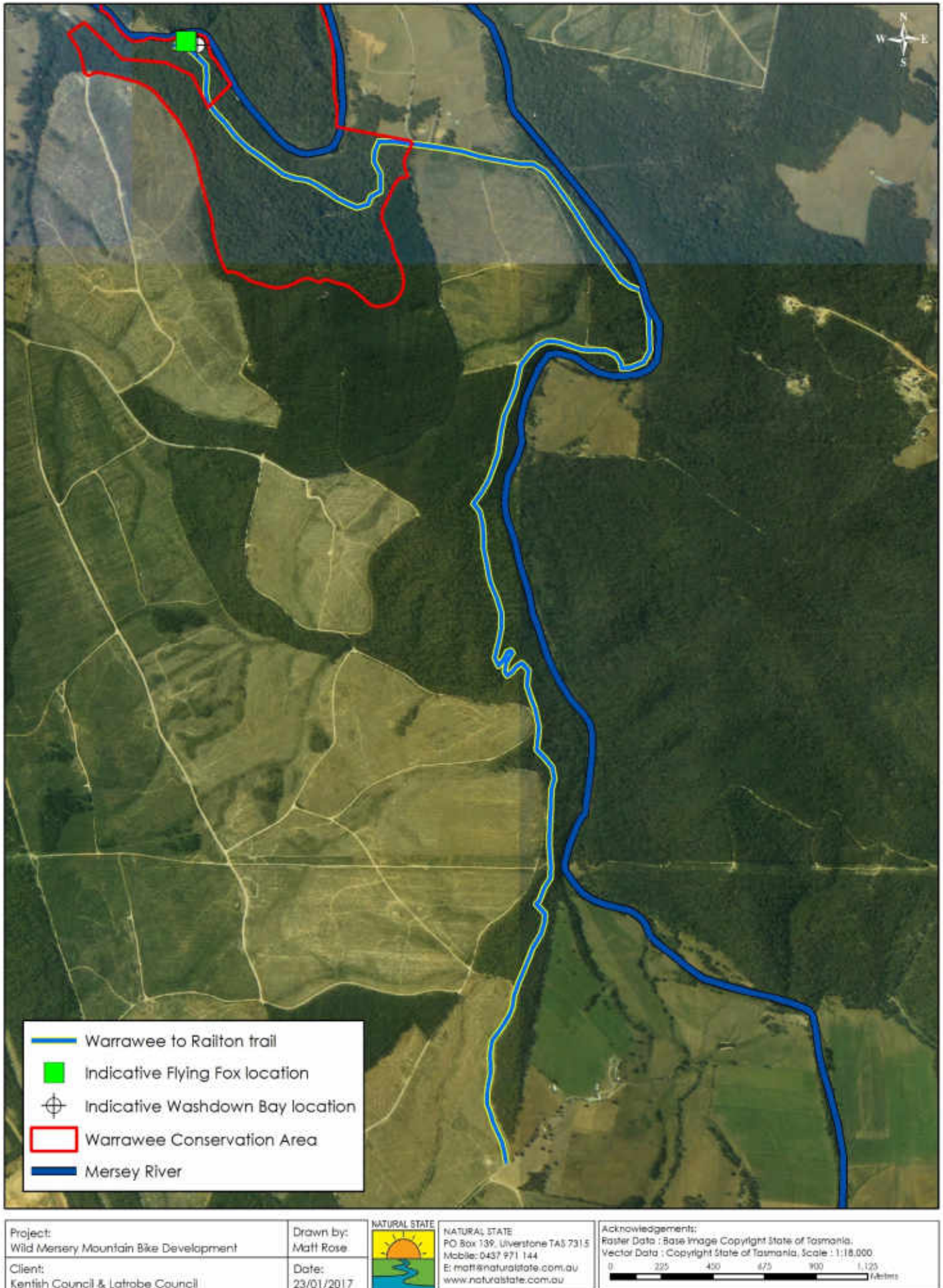


Figure 3: Proposed development activities Warrawee to Railton trail.

2. Methodology

2.1 Background research

The proposed mountain bike trail alignments were provided to Natural State by Kentish Council and Latrobe Council staff as GPS tracklogs in a variety of file formats - .gpx (Garmin express) and .shp (ESRI shapefile). The proposed tracklogs were converted into vector data in the ESRI polyline shapefile format (.shp) to enable analysis within ArcGIS.

The initial desktop analysis involved searching The Natural Values Atlas, The Land Information System Tasmania map, and The Forest Practices Authority Biodiversity Values databases.

A Natural Values Report and a Biodiversity Values Database search surrounding the study areas was generated using the Natural Values Atlas and FPA Biodiversity Values Database. Data was then extracted from the databases and presented as vector files to enable analysis and map production using ArcGIS v10.1 software prior to site assessments.

Due to the shale oil mining activities carried out in the Warrawee Conservation Area during the last century, GPS coordinates were sourced from Forestry Tasmania and Parks and Wildlife Service documents to record the proximity of known mine shafts and adits to the proposed mountain bike trails. A section of trail was relocated with a 150m buffer zone from known mine shafts due to the potential safety risk for the surveyors, mountain bike riders and the public,

Another two sections of proposed track totalling 1.8 km was found to be aligned on adjoining private property. One section was removed from the proposed development altogether, the other was relocated within the Warrawee Conservation Area boundary.

To avoid impacting threatened species, species of conservation significance and threatened vegetation communities directly, some of the proposed trail alignments were realigned in ArcGIS before conducting the surveys on-ground, whilst other trails were realigned after ground-truthing data onsite.

Further research utilised a wide variety of books, publications, fact sheets and website information detailed in the Reference list. A total of 152 hours was spent conducting background research.

2.2 Site access

The Warrawee Conservation Area is still officially closed to the public, as of January 2017, and has been since the June 2016 flood. Several meetings were held with Tasmania Parks and Wildlife Service and Latrobe Council staff between August and October 2016 to seek permission for site access and to discuss further information requirements to assist with Reserve Activity Assessment planning.

Permission to access the site was approved on the condition that Natural State accepted full responsibility for any liability when onsite.

Natural State spent a total of 8 hours liaising with PWS and Latrobe Council to gain permission to access the site.

Permission to access the Forestry Tasmania land between Warrawee and Railton was sought by Kentish Council. The land is currently managed by Timberlands Pacific Pty Ltd who authorised Kentish Council and Natural State to access the proposed development area. Permission to access the land to conduct the field surveys for the Warrawee to Railton trail was confirmed to Natural State on 4th January 2017 by Kentish Council.

2.3 Natural values assessments

Field surveys were conducted to assess the potential impacts of the proposed development footprint, to ground-truth existing data, and to collect additional data not recorded within the NVA database. The additional data collected by Natural State will be submitted to the NVA database under the project title Wild Mersey Mountain Bike Development within the 3 month submission timeframe.

Field survey work was conducted by Matt Rose and Philip Milner on 22nd October and 1st November 2016. Further surveys were conducted by Matt Rose on 23rd October, 27th December 2016, 19th January and 21st January 2017. A total of 64 person-hours were spent surveying on-ground.

Surveyor contact details:

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The survey equipment used each day consisted of: a personal location beacon, UHF radios, GPS units, mobile phones, cameras, first aid kit, maps, clipboards, compass, reference books, binoculars and smartphone mapping Apps.

The survey methodologies included:

a.) walking the proposed mountain bike trail alignments, a total length of 22 km. The total search area covered in the GPS tracklogs was 52.3 linear km.

The GPS tracklogs were uploaded onto GPS units. The tracklogs were carefully followed as close as possible in the field. Pink marking tape had been tied to trees in the Warrawee Conservation Area at regular intervals to mark most of the trail alignments. The GPS accuracy for this field survey work was 3m.

b.) searching areas where threatened flora species and threatened vegetation communities were previously recorded (NVA database) near the proposed development footprint. This was conducted by uploading the coordinates into handheld GPS units and searching around waypoints using the random meander technique. The GPS accuracy for this field survey work was 3m.

c.) opportunistic mapping of natural values observed during surveys using handheld GPS units. The GPS accuracy for this field survey work was 3m.

d.) ground-truthing a variety of data collated during the background research phase, for example vegetation communities, mature habitat availability, existing tracks etc. The random meander technique was used for this purpose.

Field data was collected using handheld GPS units (Garmin GPSMAP64 & Garmin GPS60) in the UTM UPS position format and WGS84 map datum.

Data was then presented as vector files in ArcGIS to enable further analysis and map production.

The Census of Vascular Plants of Tasmania (Baker & de Salas, 2016) has been used as a reference for taxonomic nomenclature. Vegetation classifications are based on Kitchener and Harris (2013).

2.4 Survey timing

Surveys were deliberately timed to coincide with the optimal flowering period for the critically endangered orchid species, *Caladenia tonellii* – Robust Fingers in the Warrawee Conservation Area. The surveys were conducted on sunny days with fine weather which is more favourable for GPS accuracy. Windy and wet days were avoided due to safety concerns.

An agreement to undertake the Warrawee to Railton trail assessment was confirmed on 4th January with the expected timeframe for completion by 31st January 2017.

2.5 Limitations

The fauna assessment involved mapping large fallen trees and mature trees or stags with a diameter at breast height (DBH) of >100cm within 20m of the proposed mountain bike trails. All of the mature trees that were mapped were categorised as either bearing hollows, or not. Potential denning habitat was searched near the proposed mountain bike trails. Any scats, tracks and evidence of disturbance was recorded. Targeted fauna surveys, conducted several times throughout the year, during day and night, are likely to record further species.

The flora assessment involved recording species likely to be impacted by the construction of the trails, as well as observing flora species nearby, whilst searching the proposed mountain bike trails. Additional surveys conducted several times throughout the year are likely to record further species.

Bryophytes, fungi, lichens and most insects were not included in the surveys. The Natural Values Atlas Report and the Biodiversity Values Search did not highlight any threatened species. Targeted surveys conducted several times throughout the year are recommended.

Vegetation Condition Assessments (VCA) were not able to be conducted due to time constraints, however some general observations were recorded during the surveys.

Environmental weeds were recorded where observed near the proposed mountain bike trails. Further surveys conducted several times throughout the year are likely to discover additional weed populations.

Due to the extreme seasonal variability over the past two years, some species are likely to be dormant, or may have migrated from this site. Other species may be present, but have not been recorded within any database. Ongoing surveys are recommended to record the biological diversity of the study areas.

An exclusion zone is currently in place near the old platypus viewing area along the Mersey River where flood clean-up work is still in progress. Part of this active work site was not surveyed due to safety concerns.

The budget offered to undertake field surveys and to deliver a report to the required standards has been a major limitation. Many additional hours (>80hrs) have been donated towards this project by Natural State to try to document the environmental impacts from the proposed development.



Figure 4: Pink marker tape indicating the proposed trail alignment in the Warrawee Conservation Area

3. Native vegetation communities

3.1 Native vegetation communities of the Warrawee Conservation Area

A variety of native vegetation communities are represented in the Warrawee Conservation Area. The TASVEG Version 3.0 digital vegetation map of Tasmania, records the following vegetation communities within the Warrawee Conservation Area:

Table 1: Native vegetation communities present at the Warrawee Conservation Area

TASVEG code	Vegetation community description	Area ha
DAC	<i>Eucalyptus amygdalina</i> coastal forest and woodland	50
DAM	<i>Eucalyptus amygdalina</i> forest on mudstone	7
DSC	<i>Eucalyptus amygdalina</i> - <i>Eucalyptus obliqua</i> damp sclerophyll forest	155
DVG	<i>Eucalyptus viminalis</i> grassy forest and woodland	5
FPE	Permanent easements – (Transmission lines)	3

The Permanent Easement mapping unit is vegetation which is managed under the transmission lines. The *Eucalyptus viminalis* grassy forest and woodland vegetation community which is shown in the TASVEG 3.0 mapping is not an accurate representation of the highly modified vegetation community which is now present.

Two additional vegetation communities were also recorded during the surveys.

Table 2: Additional native vegetation communities present at the Warrawee Conservation Area not recorded within the TASVEG 3.0 database.

TASVEG code	Vegetation community description	Area ha
GSL	Lowland grassy Sedgeland	0.25
WOB	<i>Eucalyptus obliqua</i> forest with broadleaf shrubs	5

None of the above vegetation communities are listed as threatened under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) or the Tasmanian Nature Conservation Act 2002.

The following general observations were recorded within each vegetation community:

DAC - Dry *Eucalyptus amygdalina* coastal forest and woodland – Large areas of forest with limited diversity of understorey species, poor natural regeneration, dominated by Bracken. Woody debris (logs) meets, and in many areas, exceeds the TASVEG benchmark for this community. Fire scarring is still evident on the *Eucalyptus* and *Allocasuarina* bark since the bushfire of 2006-07. Approximately 3,600m of trails are proposed within this native vegetation community.

DAM - Dry *Eucalyptus amygdalina* forest on mudstone – Highly modified. Evidence of mining history, introduced garden plants, several environmental weed species present. Degraded understorey consisting of mostly introduced grasses. Approximately 1,300m of trails are proposed within this native vegetation community.

DSC - *Eucalyptus amygdalina* – *Eucalyptus obliqua* damp sclerophyll forest – The understorey tree and shrub layer is poorly represented in areas. Large areas of forest with limited diversity of understorey species, poor natural regeneration, dominated by Bracken. Woody debris (logs) meets, and in many areas, exceeds the TASVEG benchmark for this community. Fire scarring is still evident on the *Eucalyptus* and *Allocasuarina* bark since the bushfire of 2006-07. Approximately 8,100m of trails are proposed within this native vegetation community.

DVG - *Eucalyptus viminalis* grassy forest and woodland – Highly modified vegetation community. A small patch of *Eucalyptus ovata* - Swamp Gum and *Melaleuca ericifolia* – Swamp Paperbark have adapted to the modified drainage around the old reservoir. Degraded understorey further away from the reservoir consisting of mostly introduced grasses. Very few *Eucalyptus viminalis* –

White Gum present, the tree canopy is mostly *Eucalyptus amygdalina*. Approximately 600m of trails are proposed within this native vegetation community.

GSL - Lowland Grassy Sedgeland – species diversity exceeds the TASVEG benchmark for this community. Introduced grasses are colonising and competing with the native grasses. Very small area conserved within the reserve so the proposed alignment has been redirected to avoid disturbing this unique vegetation community in the context of this reserve.

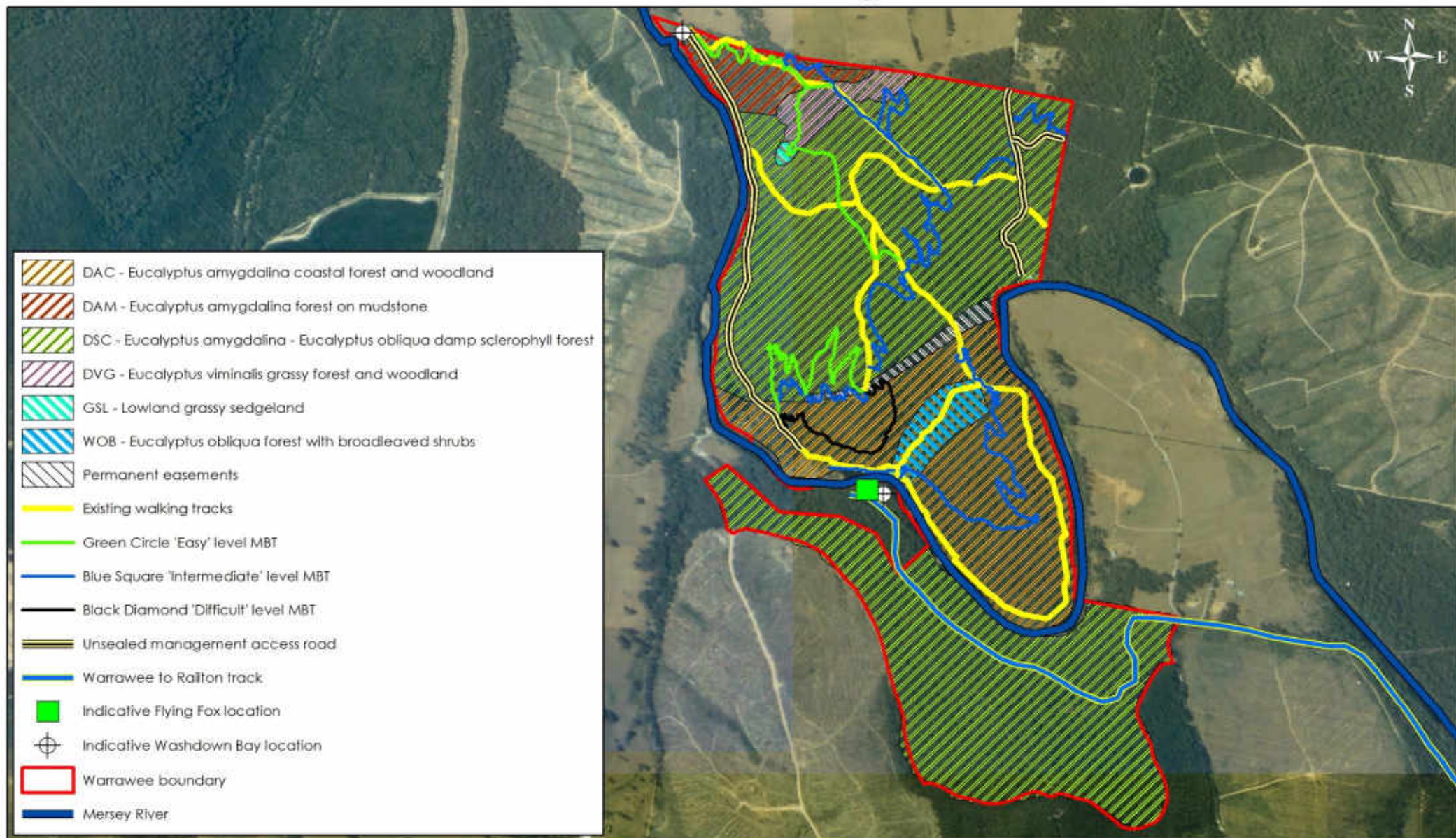
FPE – Permanent Easements – vegetation is managed to prevent interference with electricity supply lines. Dense patch of mature Spanish Heath near where three trails are proposed to meet needs to be controlled to avoid risking further spread. Approximately 300m of trails are proposed within this modified vegetation zone under the transmission lines.

WOB - Eucalyptus obliqua forest with broadleaf shrubs – vegetation community located within the protected Fern Gully and along the adjoining part of the Mersey River. Good condition, natural regeneration providing sufficient groundcover, several large trees have fallen over the Fern Gully Track. Approximately 200m of trails are proposed within this native vegetation community.



Figure 5: Large fallen trees along the alignment. The WOB – wet *Eucalyptus obliqua* forest vegetation community is to the left and the DSC - *Eucalyptus amygdalina* – *Eucalyptus obliqua* damp sclerophyll forest is to the right. Facing South, M.Rose 27/12/17.

Warrawee Conservation Area - Vegetation communities



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Figure 6: Native vegetation communities in the Warrawee Conservation Area.

3.2 Native vegetation communities Warrawee to Railton trail

A variety of native vegetation communities are represented near the Warrawee to Railton trail.

The TASVEG Version 3.0 digital vegetation map of Tasmania and the LISTMap, record the following vegetation communities nearby:

Table 3: Native vegetation communities present Warrawee to Railton trail.

TASVEG code	Vegetation community description	Area ha
DAC	<i>Eucalyptus amygdalina</i> coastal forest and woodland	241
DAM	<i>Eucalyptus amygdalina</i> forest on mudstone	239
DAZ	<i>Euc amygdalina</i> inland forest and woodland on cainozoic deposits	19
DOV	<i>Eucalyptus ovata</i> forest and woodland	4
DSC	<i>Eucalyptus amygdalina</i> - <i>Eucalyptus obliqua</i> damp sclerophyll forest	41
FPE	Permanent easements – (Transmission lines)	30
SRI	Riparian scrub	12.5
WOU	<i>Eucalyptus obliqua</i> wet forest (undifferentiated)	163

The Permanent Easement mapping unit is vegetation which is managed under the transmission lines. Non-native vegetation communities nearby include pine plantations which are not included on the map.

Three of the above vegetation communities are listed as threatened under the Tasmanian Nature Conservation Act 2002.

Table 4: Threatened native vegetation communities near the Warrawee to Railton trail.

TASVEG code	Vegetation community description	Area ha
DAZ	<i>Euc amygdalina</i> inland forest and woodland on cainozoic deposits	19
DOV	<i>Eucalyptus ovata</i> forest and woodland	4
SRI	Riparian scrub	12.5

The proposed trail alignment has been redirected to avoid directly impacting upon the Riparian Scrub threatened native vegetation community. The other threatened native vegetation communities are on the other side of the Mersey River and are unlikely to be affected by this development.

The proposed trail alignment will now traverse through the *Eucalyptus amygdalina* - *Eucalyptus obliqua* damp sclerophyll forest and the *Eucalyptus obliqua* wet forest. Some general observations were recorded within each vegetation community:

DSC - *Eucalyptus amygdalina* – *Eucalyptus obliqua* damp sclerophyll forest – the proposed trail alignment covers areas of dense Rainbow Fern and Bracken Fern understorey. Woody debris (logs) meets, and in many areas, exceeds the TASVEG benchmark for this community. There is evidence of recent firewood harvesting within this forest. Approximately 650m of trail are proposed within this native vegetation community.

WOU - *Eucalyptus obliqua* wet forest (undifferentiated) – the proposed trail alignment covers areas of dense Rainbow Fern and Bracken Fern understorey. Woody debris (logs) meets, and in many areas, exceeds the TASVEG benchmark for this community. There is evidence of recent firewood harvesting within this forest. Approximately 5,500m of trail is proposed within this native vegetation community.

The rest of the trail is proposed along existing tracks, within road reserves, and near the edge of pine plantations.

Warrawee to Railton - Vegetation communities

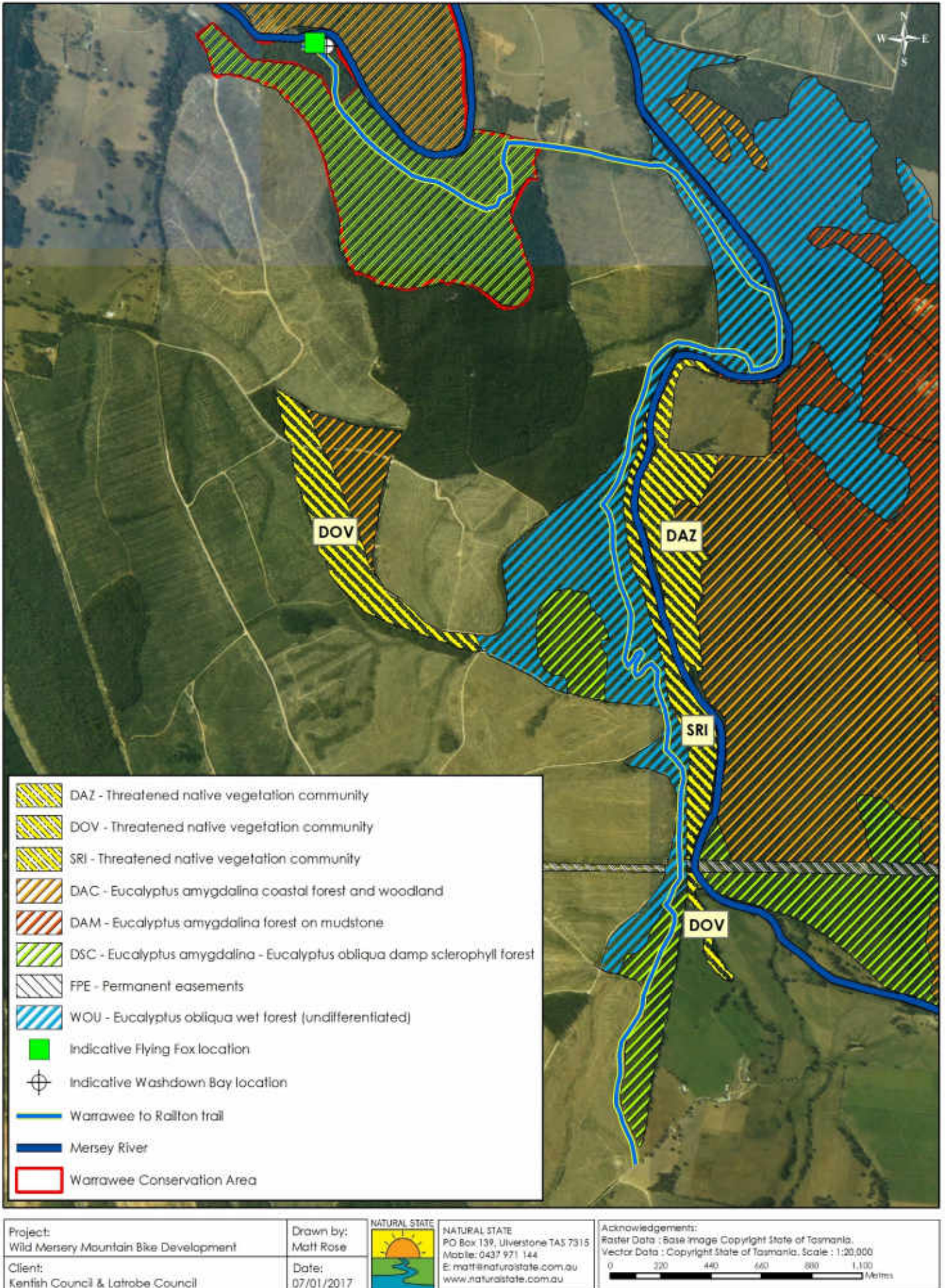


Figure 7: Native vegetation communities Warrawee to Railton trail.

4. Threatened fauna

The study areas contain several threatened fauna species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the Tasmanian Threatened Species Protection Act 1995 (TSP Act).

Several of the threatened species recorded within the study areas are mostly nocturnal. The probability of recording observations during the daytime surveys was very unlikely.

Burrowing Crayfish stacks were recorded on the proposed alignment within several of the creeks. As the surrounding areas have suitable habitat, and the threatened species Central North Burrowing Crayfish is known to occur within 1 km from this site, it is highly likely that the stacks are also from this species. As no animals were actually sighted during the surveys, further research may be required to confirm the species of burrowing crayfish.

The tables below combine the threatened fauna species observations made during the field surveys and observations recorded within the NVA database.

4.1 Threatened fauna within the Warrawee Conservation Area

Table 5: Threatened fauna species observed within the Warrawee Conservation Area

Scientific Name	Common Name	TSP Act status	EPBC Act status
<i>Accipiter novaehollandiae</i>	Grey Goshawk	Endangered	
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Rare	Vulnerable
<i>Engaeus granulatus</i>	Central North Burrowing Crayfish	Endangered	Endangered
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable	Vulnerable
<i>Sarcophilus harrisi</i>	Tasmanian Devil	Endangered	Endangered
<i>Tyto novaehollandiae</i>	Masked Owl	Endangered	Vulnerable

4.2 Threatened fauna Warrawee to Railton trail

Table 6: Threatened fauna species observed near the Warrawee to Railton trail

Scientific Name	Common Name	TSP Act status	EPBC Act status
<i>Aquila audax subsp. fleayi</i>	Wedge-tailed Eagle	Endangered	Endangered
<i>Engaeus granulatus</i>	Central North Burrowing Crayfish	Endangered	Endangered
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable	Vulnerable
<i>Sarcophilus harrisi</i>	Tasmanian Devil	Endangered	Endangered

4.3 *Accipiter novaehollandiae* - Grey Goshawk

One adult bird was observed perched on an old stag during the surveys. At least one bird was heard on each day of the surveys in the Warrawee Conservation Area. The FPA Biodiversity Values Database search indicates that the study areas are part of the core range for this species. Suitable habitat is present throughout the reserves and on adjoining properties. The proposed development could impact upon this species if disturbance occurs within 100m of an active nest (TSS, 2016). No active nests were recorded during the surveys.

4.4 *Aquila audax subsp. fleayi* - Wedge-tailed Eagle

Two eagle nests have been recorded in the NVA database within approximately 500m of the proposed Warrawee to Railton trail. Local naturalists have also reported seeing an eagle nest on Dinsdales Hill within the Warrawee Conservation Area previously (P.Milner, pers.com), however no records have been entered into the NVA Database. Suitable habitat is available throughout the reserves and on adjoining properties. The proposed development could impact upon this species as disturbance is likely to occur within 500m or 1 Km line of sight of an active nest (FPA,2016 & TSS,2016). This species was not observed during the surveys.

4.5 *Dasyurus maculatus* - Spotted-tailed Quoll

Whilst no live animals were recorded during the surveys, some fresh scats were observed near the Mersey River bank. One potential denning site was recorded within the Warrawee Conservation Area. The FPA Biodiversity Values Database search indicates that the study areas are part of the core range for this species. Suitable habitat is present throughout the reserves and on adjoining properties. Further research may be required to confirm if the potential den site is active, and if so, which species is utilising the den, Quoll, Devil or feral cat.

4.6 *Engaeus granulatus* - Central North Burrowing Crayfish

Burrowing Crayfish stacks were recorded in three of the creeks which the proposed trail alignment crosses. Suitable habitat is present in most of the well vegetated creeks within the reserves. As the surrounding areas have suitable habitat, and the threatened species Central North Burrowing Crayfish is known to occur within 1 km from the study areas, it is highly likely that the stacks are also from this species. As no animals were actually sighted during the surveys, further research may be required to confirm the species of burrowing crayfish. The proposed development could impact upon this species where the trails cross over the creeks.

4.7 *Prototroctes maraena* - Australian Grayling

Several observations have previously been recorded nearby in the NVA Database. The FPA Biodiversity Values Database search indicates that the study areas are part of the potential range for this species. The Mersey River provides suitable habitat for this species. As this is an aquatic species the proposed development is highly unlikely to impact upon this species. This species was not observed during the surveys.

4.8 *Sarcophilus harrisii* - Tasmanian Devil

Whilst no living animals or active denning sites were recorded during the surveys, a number of fresh scats were observed, mostly on the existing walking tracks and roads. Several sightings have been recorded in the NVA Database. The FPA Biodiversity Values Database search indicates that the study areas are part of the potential range for this species. A potential latrine site was located amongst the Lowland Grassy Sedgeland native vegetation community. The size of the scats appear to indicate that at least two Tasmanian Devils utilise the reserves for foraging activities.

4.9 *Tyto novaehollandiae* - Masked Owl

One observation has previously been recorded in the Warrawee Conservation Area in the NVA Database. The FPA Biodiversity Values Database search indicates that the study areas are part of the core range for this species. Suitable mature habitat is available throughout the reserves and on adjoining properties. Many mature hollow-bearing trees with suitable nesting hollows >15cm entrance diameter are available. The proposed development should not impact upon this species as no trees will be cleared. This species was not observed during the surveys and no active nests were recorded.

4.10 Additional threatened species likely to utilise the study areas.

***Alcedo azurea subsp. diemenensis* - Azure Kingfisher**

No observations for this species have been recorded in the NVA Database within the study areas. The FPA Biodiversity Values Database search indicates that the study areas are part of the core range for this species. Suitable habitat is available along the Mersey River, however the June flood event has removed overhanging vegetation and altered the course and depth of the river in this section. This species was not observed during the surveys.

***Astacopsis gouldi* - Giant Freshwater Crayfish**

Many observations have been recorded in the NVA Database within 5 Km of the study areas. The FPA Biodiversity Values Database search indicates that the study areas are part of the potential range for this species. Suitable habitat is available along stretches of the Mersey River and within several creeks throughout the reserves and on adjoining properties. Like the burrowing crayfish, the proposed development could impact upon this species where the trails cross over the creeks. This species was not observed during the surveys.

***Haliaeetus leucogaster* - White-bellied Sea-eagle**

Several observations have been recorded in the NVA Database within 5 Km of the study areas. The FPA Biodiversity Values Database search indicates that the study areas are part of the potential range for this species. Suitable habitat is available throughout the reserves and on adjoining properties. The proposed development could impact upon this species if disturbance occurs within 500m or 1 Km line of sight of an active nest (FPA,2016 & TSS,2016). This species was not observed during the surveys.

***Lathamus discolor* - Swift Parrot**

Several observations have been recorded in the NVA Database within 5 Km of the study areas. The FPA Biodiversity Values Database search indicates that the study areas are part of the North West breeding range for this species. Suitable foraging and nesting habitat is available throughout the reserves and on adjoining properties (FPA, 2016 & TSS, 2016). Many mature hollow-bearing trees with suitable nesting hollows are available. This species was not observed during the surveys and no active nests were recorded.

***Perameles gunnii* - Eastern Barred Bandicoot**

Many observations have been recorded in the NVA Database within 5 Km of the study areas. The FPA Biodiversity Values Database search indicates that the study areas are part of the potential range for this species. Suitable habitat is available throughout the reserves and on adjoining properties. This species was not observed during the surveys.



Figure 8: Burrowing Crayfish stacks likely to be the *Engaeus granulatus* - Central North Burrowing Crayfish recorded in several creeks within the study areas. M.Rose, 21/01/17.

5. Threatened flora

5.1 Threatened flora Warrawee Conservation Area

Three threatened flora species have been recorded within the Warrawee Conservation Area. One species was located within two sections of the proposed trail alignments, whilst two orchid species have previously been recorded within very close proximity to the proposed development activities. The orchids were not able to be located whilst conducting the field surveys, possibly due to the NVA database position accuracy of +/- 100m for these observations. Unauthorised clearing and trail construction activities (1 km x > 1m) were observed surrounding the critically endangered orchid waypoint which may have impacted upon this species.

Table 7: Threatened flora species within the Warrawee Conservation Area

Scientific Name	Common Name	TSP Act status	EPBC Act status
<i>Caladenia caudata</i>	Tailed Spider-Orchid	Vulnerable	Vulnerable
<i>Caladenia tonellii</i>	Robust Fingers	Endangered	Critically Endangered
<i>Pimelea curviflora</i> var. <i>gracilis</i>	Slender Curved Riceflower	Rare	

5.2 Threatened flora Warrawee to Railton trail

No threatened flora species were observed within 500m of the proposed trail. Two threatened species have been recorded within 1 km, however this development should not impact upon these species.

Table 8: Threatened flora species within 1 km of the Warrawee to Railton trail

Scientific Name	Common Name	TSP Act status	EPBC Act status
<i>Gynatrix pulchella</i>	Fragrant Hembush	Rare	
<i>Spyridium parvifolium</i> var. <i>molle</i>	Soft Dustymiller	Rare	



Figure 9: The threatened *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower growing on the edges of the old tramline. Facing South East, M.Rose 22/10/16.

Warrawee Conservation Area - Threatened species observations

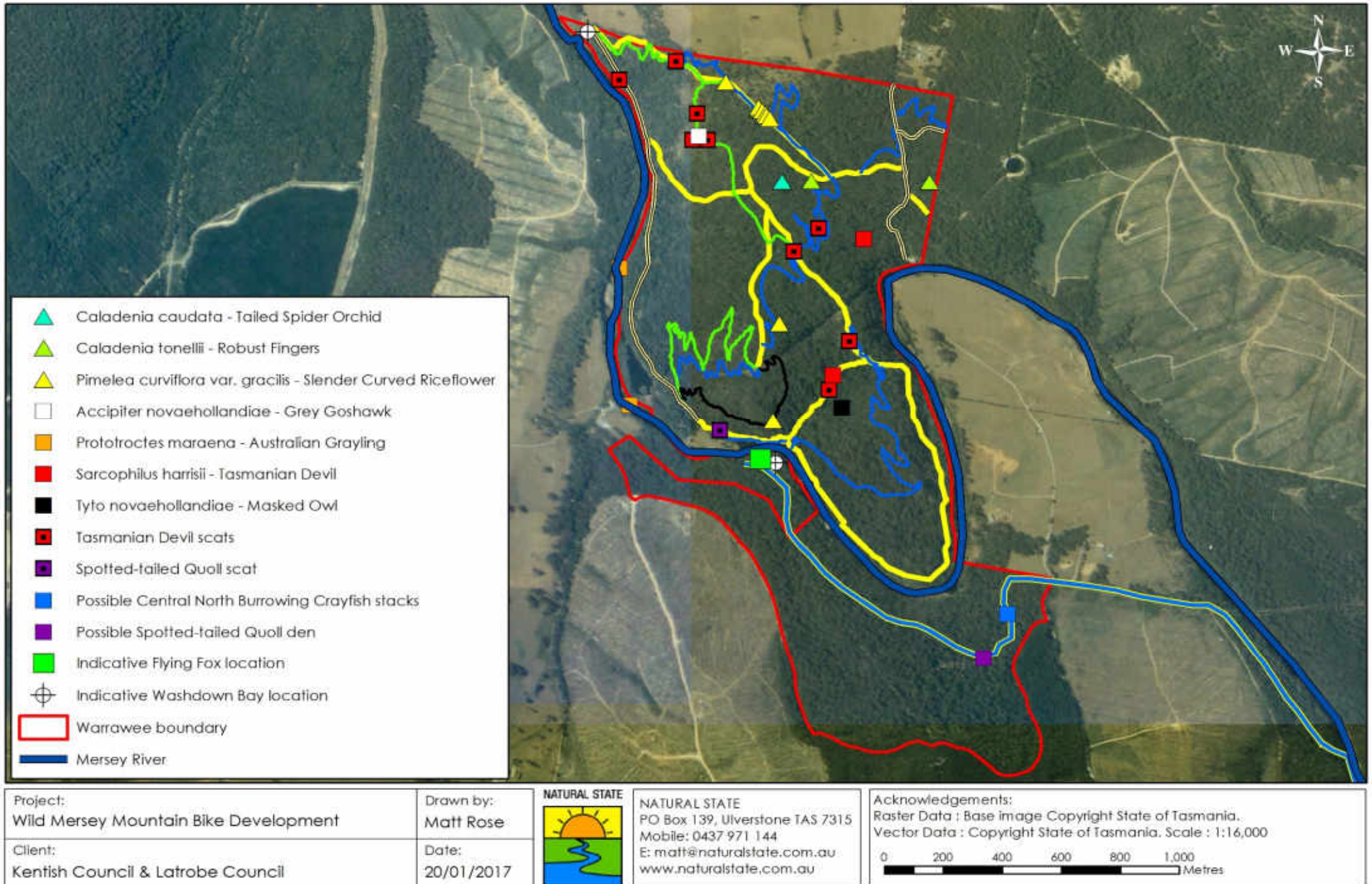
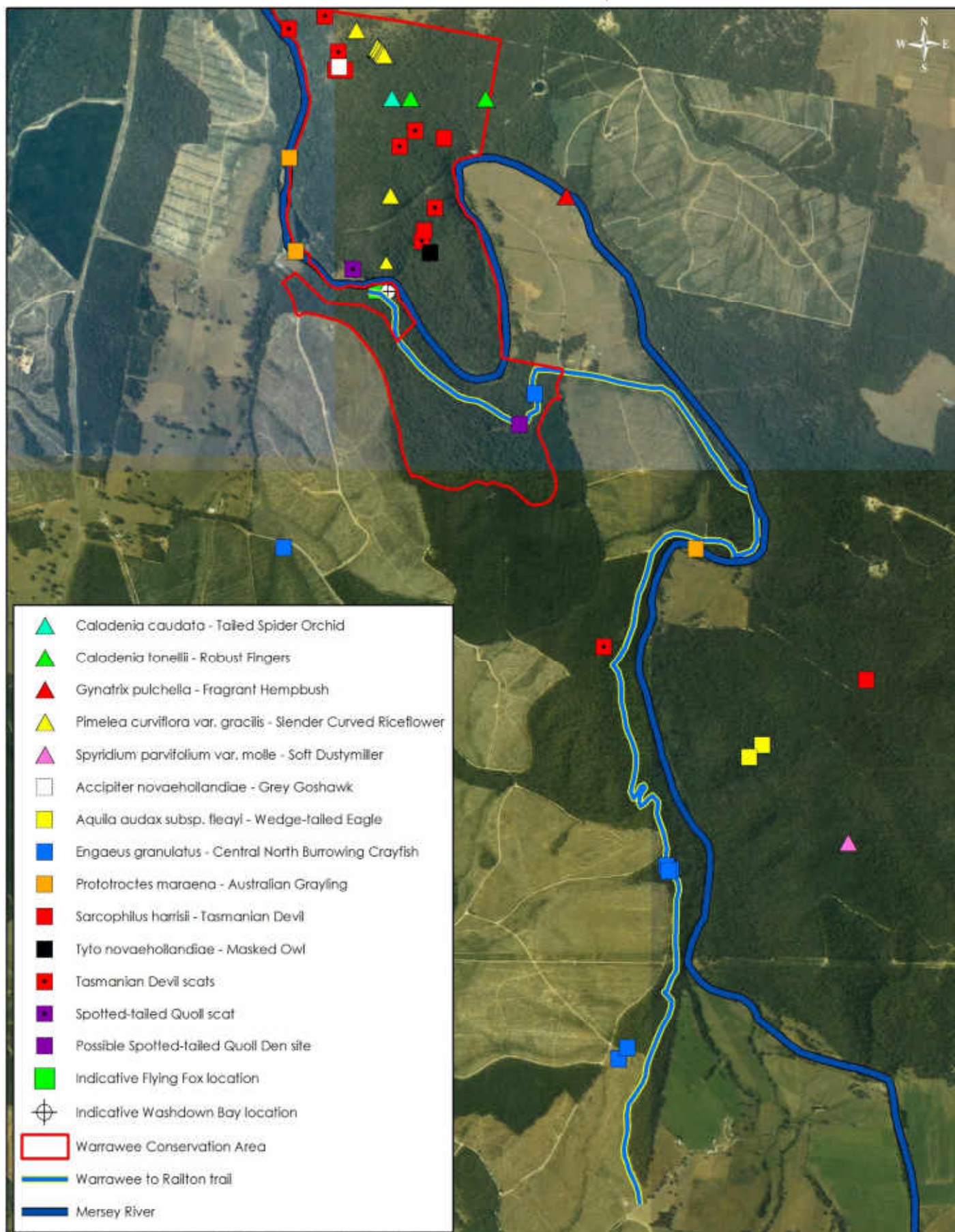


Figure 10: Threatened species observations Warrawee Conservation Area.

Warrawee to Railton - Threatened species observations



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Figure 11: Threatened species observations Warrawee to Railton trail.

6. Mature habitat availability

Mature hollow-bearing or senescing trees with a diameter at breast height (DBH) of greater than 100cm, and large fallen trees were recorded up to 20m either side of the proposed trail alignments.

The majority of the mature habitat with large hollow-bearing trees are found in the southern half of the Warrawee Conservation Area. This may reflect the historic impacts from the previous land uses and management regimes.

The hollow-bearing mature trees observed provide suitable nesting habitat for a variety of animals, including bats. Several hollow-bearing mature trees showed possum track marks on the bark, leading to the hollows. Another species which may utilise the larger hollows for nesting is the threatened Masked Owl which prefers hollows with a diameter of >10cm.

Several large fallen trees, some with hollows, were also observed near the trail alignments. The fallen trees are valuable habitat features within a native forest, sometimes utilised by Tasmanian Devils and Spotted-tailed Quolls for foraging and refuge.

The proposed development activities will not involve clearing of any mature trees which support hollows. Trees will be avoided from any clearing activities altogether.



Figure 12: Several mature hollow-bearing trees with hollows of a diameter greater than 10cm were recorded amongst the proposed trail alignments. Facing East, M.Rose 23/10/16.

Warrawee to Railton - Mature habitat availability

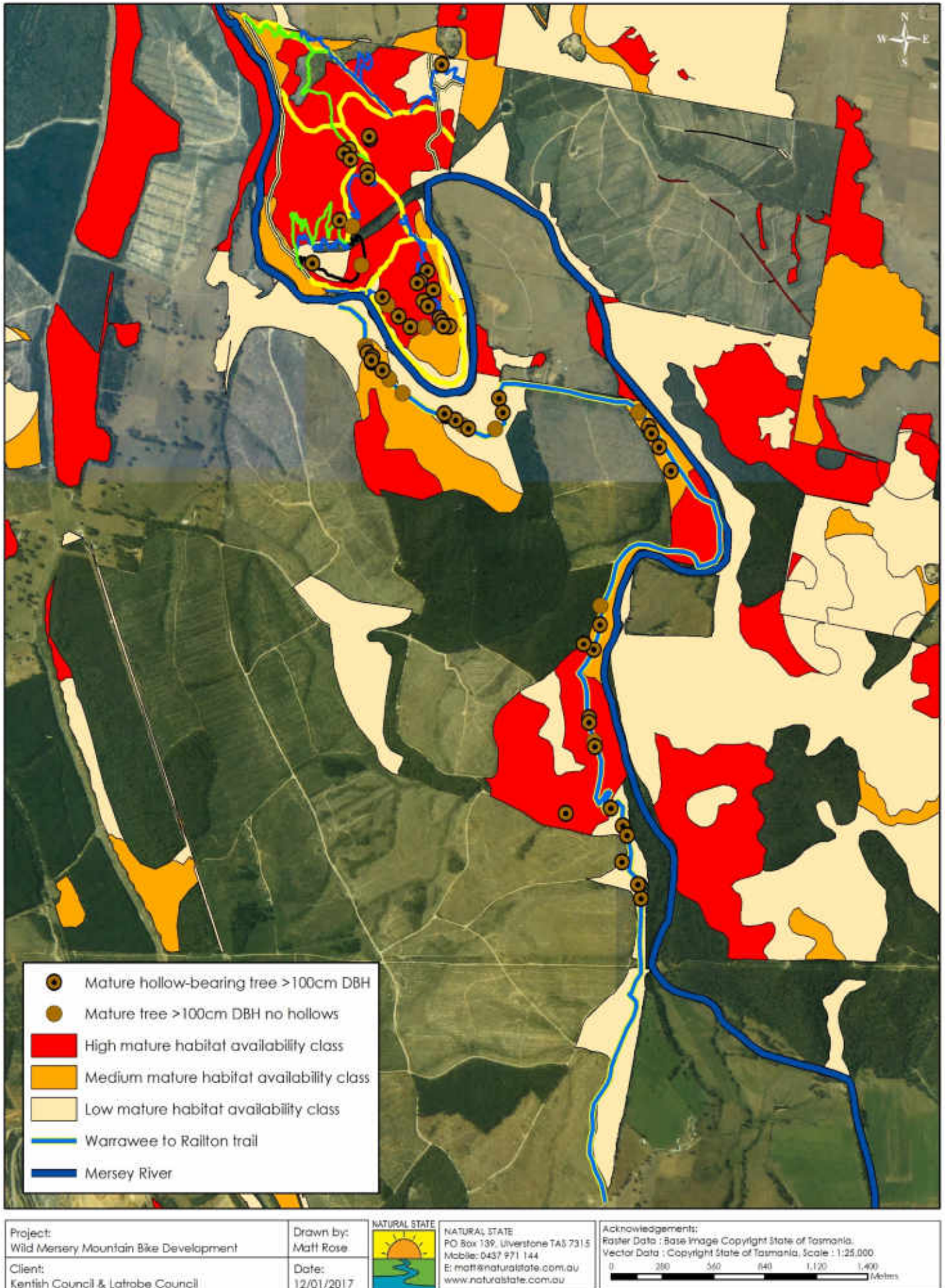


Figure 13: Mature habitat availability modelling. Source: FPA Biodiversity Values Database.

7. Biosecurity risks

7.1 *Phytophthora cinnamomi*

Phytophthora cinnamomi – Root Rot is an introduced “soil borne pathogen that causes death in a wide range of native plant species causing floristic and structural changes in susceptible plant communities” (Rudman, 2005). *P.cinnamomi* “grows within the roots of host plants as a very fine mycelium and the spores it releases into the soil are microscopic in size” (Rudman, 2005).

The surrounding native vegetation communities are highly to moderately susceptible to *Phytophthora cinnamomi*. High levels of biosecurity risk management will be required to avoid spreading this pathogen.

Phytophthora was not recorded within the NVA Database for the Warrawee Conservation Area. At the time of the surveys no symptoms were observed amongst the surrounding vegetation.

Two observations of *Phytophthora* have been recorded close to the Warrawee to Railton trail above the very high freshwater ecosystem value creek crossing. At the time of the surveys no other symptoms were observed amongst the surrounding vegetation.

7.2 Chytrid fungus

Batrachochytrium dendrobatidis - Chytrid fungus is “a fungal pathogen that causes the emerging infectious amphibian disease, chytridiomycosis”(DPIPWE, 2010). Frogs are highly susceptible to this disease.

Sensitive areas associated with the proposed development activities include freshwater ecosystems on the trail alignments (creeks, puddles, depressions and other waterbodies).

For more information visit the DPIPWE Biosecurity Tasmania website -

<http://dPIPWE.tas.gov.au/biosecurity/animal-biosecurity/animal-health/wildlife/frog-disease-chytrid-fungus>.

No observations of Chytrid fungus were recorded within the NVA Database for the study areas.

7.3 Environmental weeds

There are many established environmental weeds growing in the vicinity of the proposed development activities. These weeds are threatening the condition and integrity of the surrounding native vegetation communities.

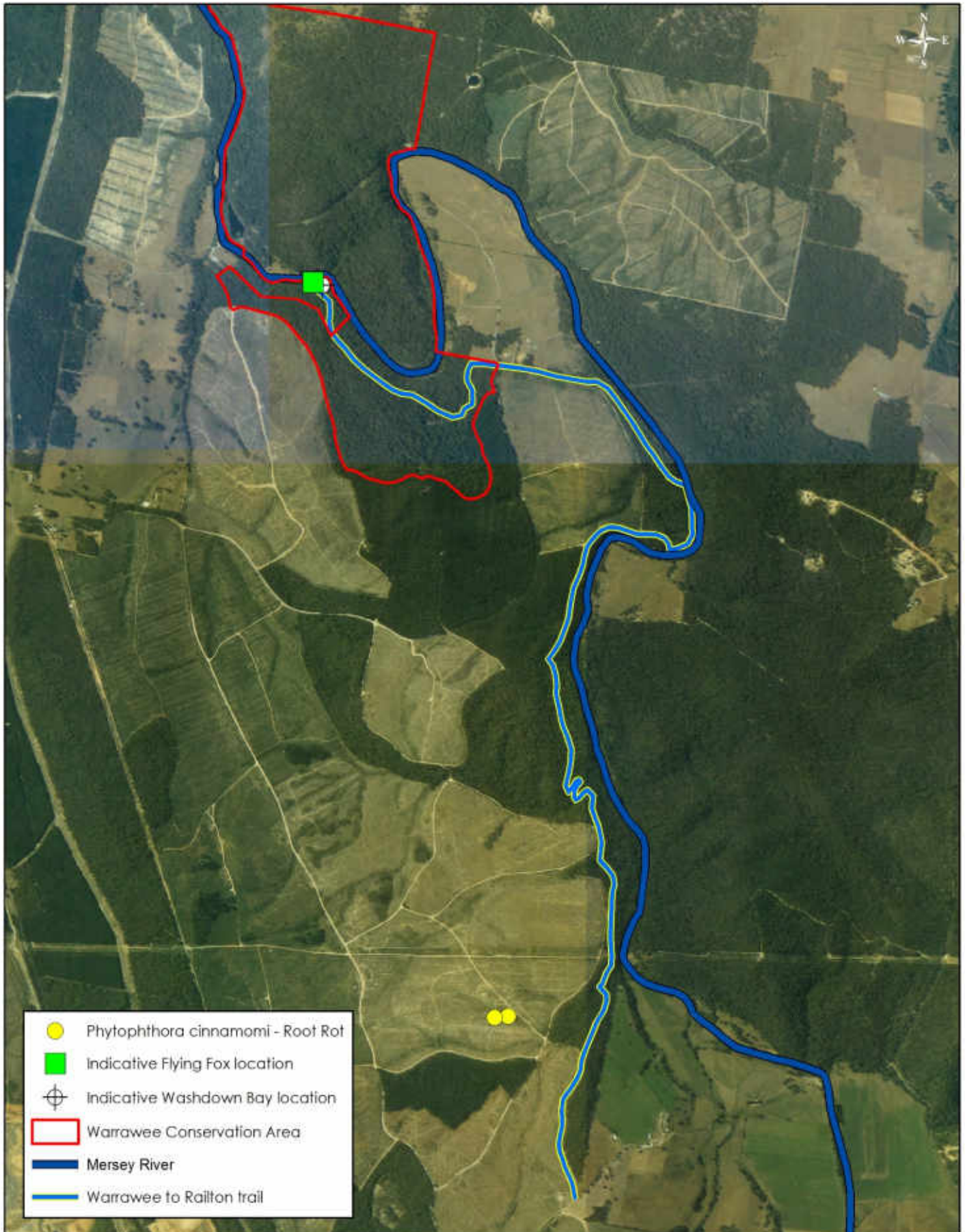
Several of the environmental weeds observed are Declared Weeds in Tasmania and also Weeds of National Significance (WoNS).

The environmental weed infestations were observed at very high densities at the beginning of the proposed trail in the Warrawee Conservation Area and at Southern end of the proposed Warrawee to Railton trail as displayed in Figures 15 & 16.

The risk of further weed spread throughout the native forest along the proposed trail alignments is very high.

Weed management is urgently required within the study areas to prevent further degradation of the native vegetation condition.

Warrawee to Railton - Known biosecurity risks



- Phytophthora cinnamomi - Root Rot
- Indicative Flying Fox location
- Indicative Washdown Bay location
- Warrawee Conservation Area
- Mersey River
- Warrawee to Railton trail

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Figure 14: Known biosecurity risks.

Warrawee Conservation Area - Environmental Weeds

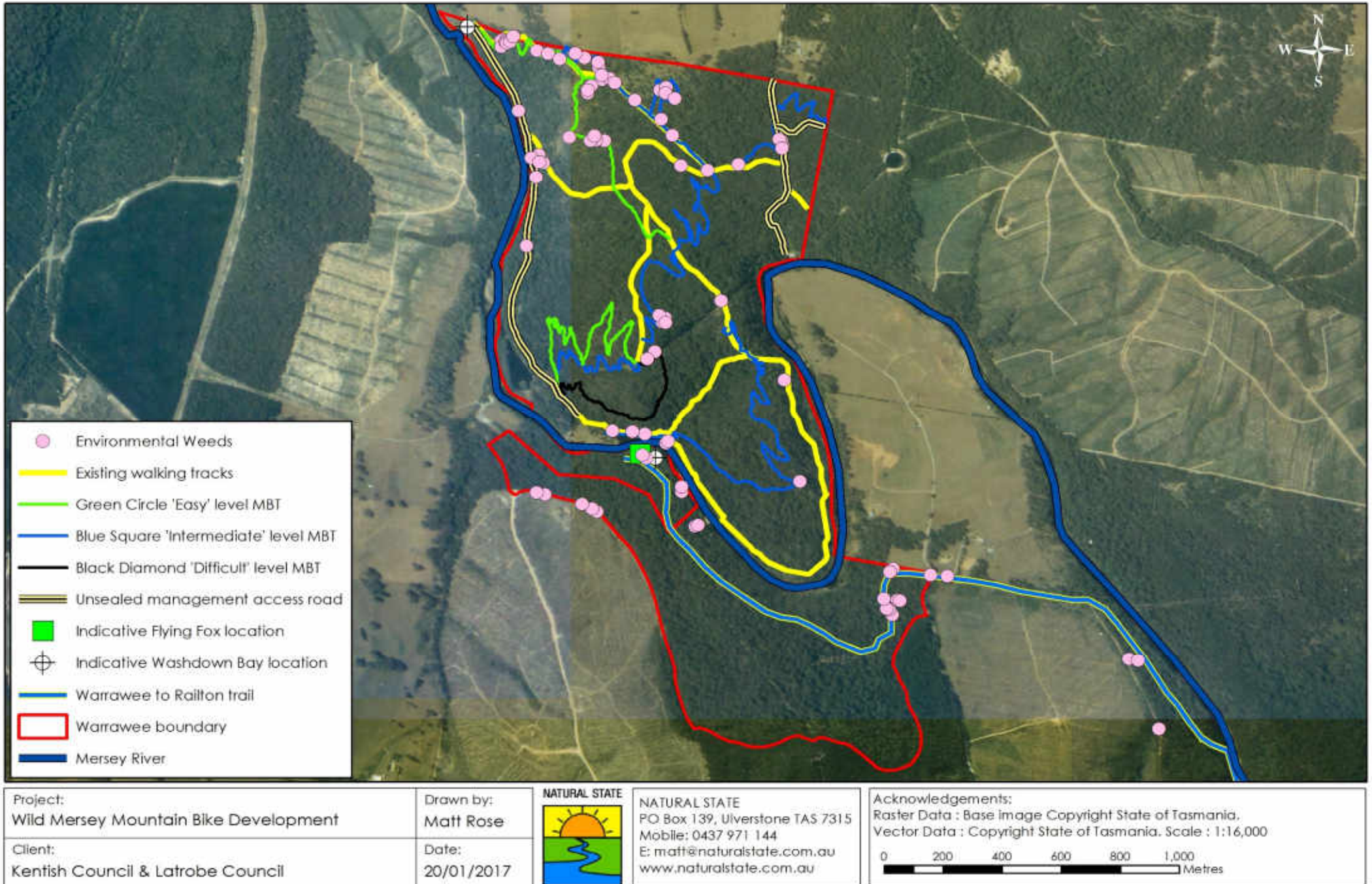
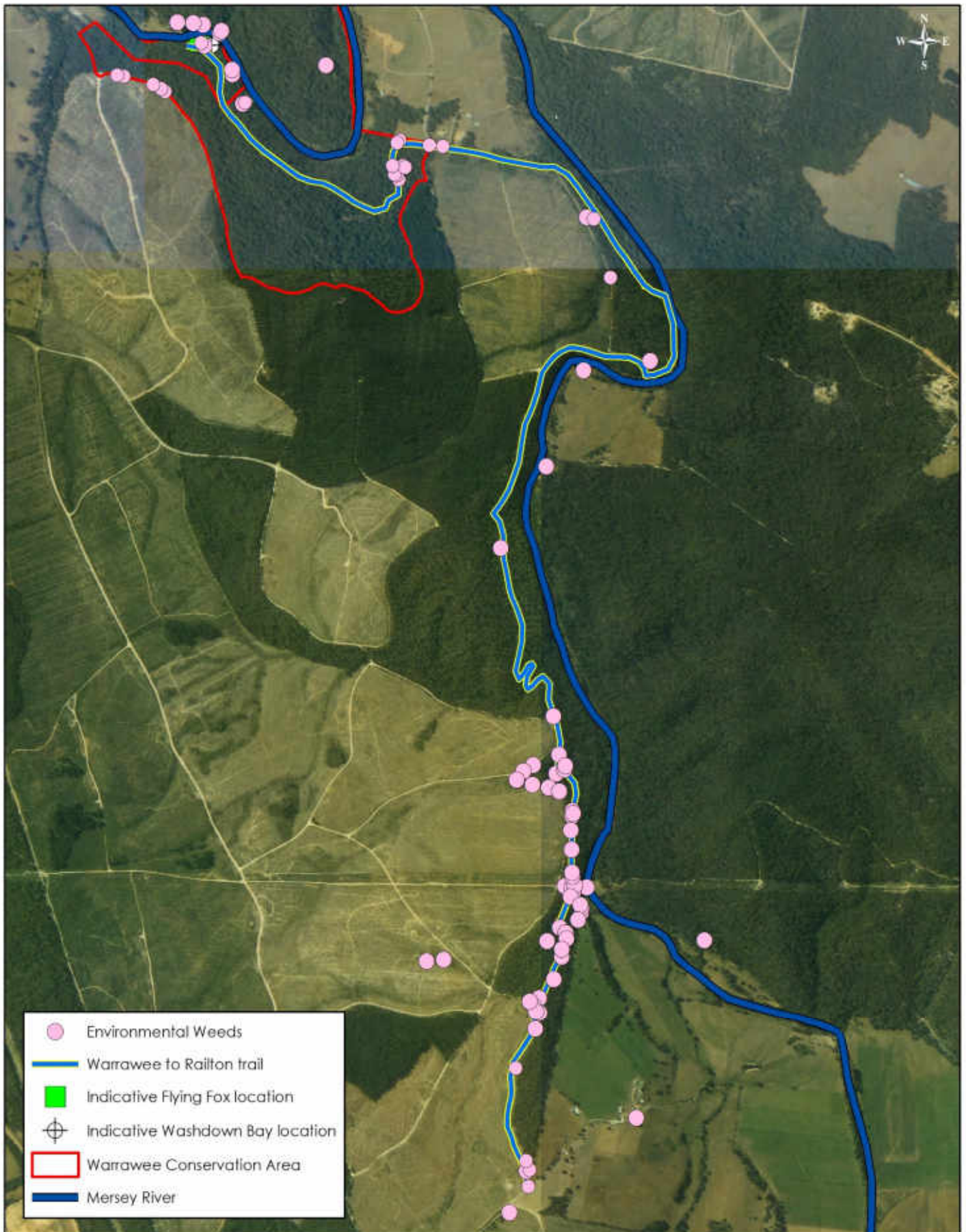


Figure 15: Environmental weeds Warrawee Conservation Area.

Warrawee to Railton - Environmental Weeds




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Figure 16: Environmental weeds Warrawee to Railton trail.

Table 9: Environmental weeds Warrawee Conservation Area

Scientific Name	Common Name	Declared weed in TAS	Weed of National Significance (WoNS)
<i>Anagallis arvensis</i>	Scarlet Pimpernel		
<i>Arum italicum</i>	Italian Arum Lily		
<i>Cardamine hirsute</i>	Hairy Bittercress		
<i>Centaureum erythraea</i>	Common Centaury		
<i>Chaenomeles japonica</i>	Japanese Quince		
<i>Cirsium vulgare</i>	Spear Thistle		
<i>Conium maculatum</i>	Hemlock		
<i>Cortaderia seloana</i>	White Pampas Grass	YES - Zone A	
<i>Crataegus monogyna</i>	Hawthorn		
<i>Cupressus macrocarpa</i>	Monterey Pine		
<i>Dipsacus fullonum</i>	Wild Teasel		
<i>Echium plantagineum</i>	Paterson's Curse	YES - Zone A	
<i>Erica lusitanica</i>	Spanish Heath	YES - Zone B	
<i>Galium aparine</i>	Cleavers		
<i>Genista monspessulana</i>	Montpellier Broom	YES - Zone B	YES
<i>Hyacinthoides species</i>	Common Bluebells		
<i>Lotus angustissimus</i>	Slender Birds-foot Trefoil		
<i>Philadelphus species</i>	Mock Orange		
<i>Pinus radiata</i>	Radiata Pine		
<i>Polygonatum multiflorum</i>	Solomon's Seal		
<i>Prunus laurocerasus</i>	Cherry Laurel		
<i>Rubus fruticosus</i> var. aggregate	Blackberry	YES - Zone B	YES
<i>Salix x fragilis</i> nothovar. <i>fragilis</i>	Crack Willow	YES - Zone B	YES
<i>Senecio jacobaea</i>	Ragwort	YES - Zone B	
<i>Viburnum tinus</i>	Viburnum / Laurustinus		
<i>Vicia sativa</i>	Common Vetch		
<i>Vinca major</i>	Blue Periwinkle		
<i>Ulex europaeus</i>	Gorse	YES - Zone B	YES
<i>Zantedeschia aethiopica</i>	Arum Lily		

Table 10: Environmental weeds Warrawee to Railton trail

Scientific Name	Common Name	Declared weed in TAS	Weed of National Significance (WoNS)
<i>Anagallis arvensis</i>	Scarlet Pimpernel		
<i>Centaureum erythraea</i>	Common Centaury		
<i>Cirsium vulgare</i>	Spear Thistle		
<i>Conium maculatum</i>	Hemlock		
<i>Erica lusitanica</i>	Spanish Heath	YES - Zone B	
<i>Genista monspessulana</i>	Montpellier Broom	YES - Zone B	YES
<i>Pinus radiata</i>	Radiata Pine		
<i>Rubus fruticosus</i> var. aggregate	Blackberry	YES - Zone B	YES
<i>Ulex europaeus</i>	Gorse	YES - Zone B	YES

Several weeds were recorded along the alignment in the sections between the Pine plantations and the roadsides but were not mapped. These species included:

<i>Anthoxanthum odoratum</i>	Sweet Vernal
<i>Dactylis glomerata</i>	Cocksfoot
<i>Lolium perenne</i>	Perennial Ryegrass
<i>Taraxacum officinale</i>	Dandelion

7.4 Weed Management Legislation

The Warrawee Conservation Area and the Warrawee to Railton trail is located within the Latrobe and Kentish Council municipalities. Landowners within the Latrobe and Kentish Council areas are legally responsible for managing all Declared Weeds under the Weed Management Act 1999.

In Tasmania, when a weed is declared under the Weed Management Act 1999, it is then classified into appropriate management zones for each Council area, Zone A - for eradication, or Zone B - for containment.

Latrobe Council and Kentish Council are classified as Zone A municipalities for Paterson's and Pampas Grass.

Eradication is the most appropriate management objective for Zone A municipalities which have little or no Paterson's Curse or Pampas Grass, or when a credible plan for eradicating existing infestations is being developed and implemented. The ultimate management outcome for Zone A municipalities is achieving and maintaining the total absence of Paterson's Curse and Pampas Grass from within municipal boundaries.

Latrobe Council and Kentish Council are classified as Zone B municipalities for Blackberry, Crack Willow, Gorse, Montpellier Broom, Ragwort and Spanish Heath.

Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of these weeds from existing infestations to areas free, or in the process of becoming free, of these species.

Any weed must be controlled, where it is impacting negatively upon any vegetation community, flora or fauna species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC) and/or the Tasmanian Threatened Species Protection Act 1995 (TSP).

Blackberry, Gorse, Montpellier Broom and Willows are classified as Weeds of National Significance. Weeds of National Significance or (WoNS) are weeds that are considered to require a national response for their management due to their degree of invasiveness, high potential to spread, and their high social, environmental and economic impacts. There are currently 32 species in Australia classed as WoNS; and each of these species has a National Strategy and Best Practice Management Guidelines.

The National Strategies and Best Practice Management Guidelines can be downloaded from the Weeds Australia website:

Blackberry - <http://weeds.ala.org.au/WoNS/blackberry/>

Gorse - <http://www.weeds.org.au/WoNS/gorse/>

Montpellier Broom - <http://www.weeds.org.au/WoNS/brooms/>

Willows - <http://weeds.ala.org.au/WoNS/willows/>

8. Geology, soils and geoconservation

8.1 Geology

Table 11: The geology of the area surrounding the proposed development activities

Era	Period	Age / Years	Description
Cenozoic	Quaternary	0 - 1.65 Million	Stream alluvium, swamp and marsh deposits
Cenozoic	Quaternary	0 - 1.8 Million	Older alluvium of river terraces
Cenozoic	Tertiary	1.65 - 65 Million	Basalt
Paleozoic	Permian	270 -298 Million	Poorly sorted pebbly mudstone, sandstone and minor conglomerate marine fossils present in places
Proterozoic	Mesoproteriozoic	1000 - 1600 Million	Dominantly quartz-mica schist and foliated micaceous metaquartzite and quartzitic schist with dolomite

Source: Mineral Resources Tasmania Digital Geological Atlas 1:25,000 scale, Latrobe Sheet 4443 & Railton Sheet 4442.

8.2 Soils

Unfortunately site specific soil sampling and mapping was not able to be conducted during the very limited time afforded to conduct field survey work. Some general forest soil types were observed whilst conducting the surveys including: Red clayey soils under wet forest, Sandy/loamy over clayey soils under dry forest (Grant et al, 1995). Some general observations were recorded. The dominant soil types observed were brown dermosol, alluvial sand, silt, coble and boulders, exposed basalt and quartzite bedrock, and clayey soils with mudstone and siltstone.

The Natural Values Atlas report indicates that the Acid Sulphate Soil probability along nearby sections of the Mersey River floodplain is extremely low to low. This will have no impact on the proposed development activities as they are not within the affected zone.

The Mineral Resources Tasmania Landslide Database indicates that no landslides have been recorded within the proposed development footprint.

The area surrounding the Warrawee Conservation Area was extensively mined during the past century focussing on extracting Tasmanite to produce shale oil. Several open mine shafts and adits are still present.

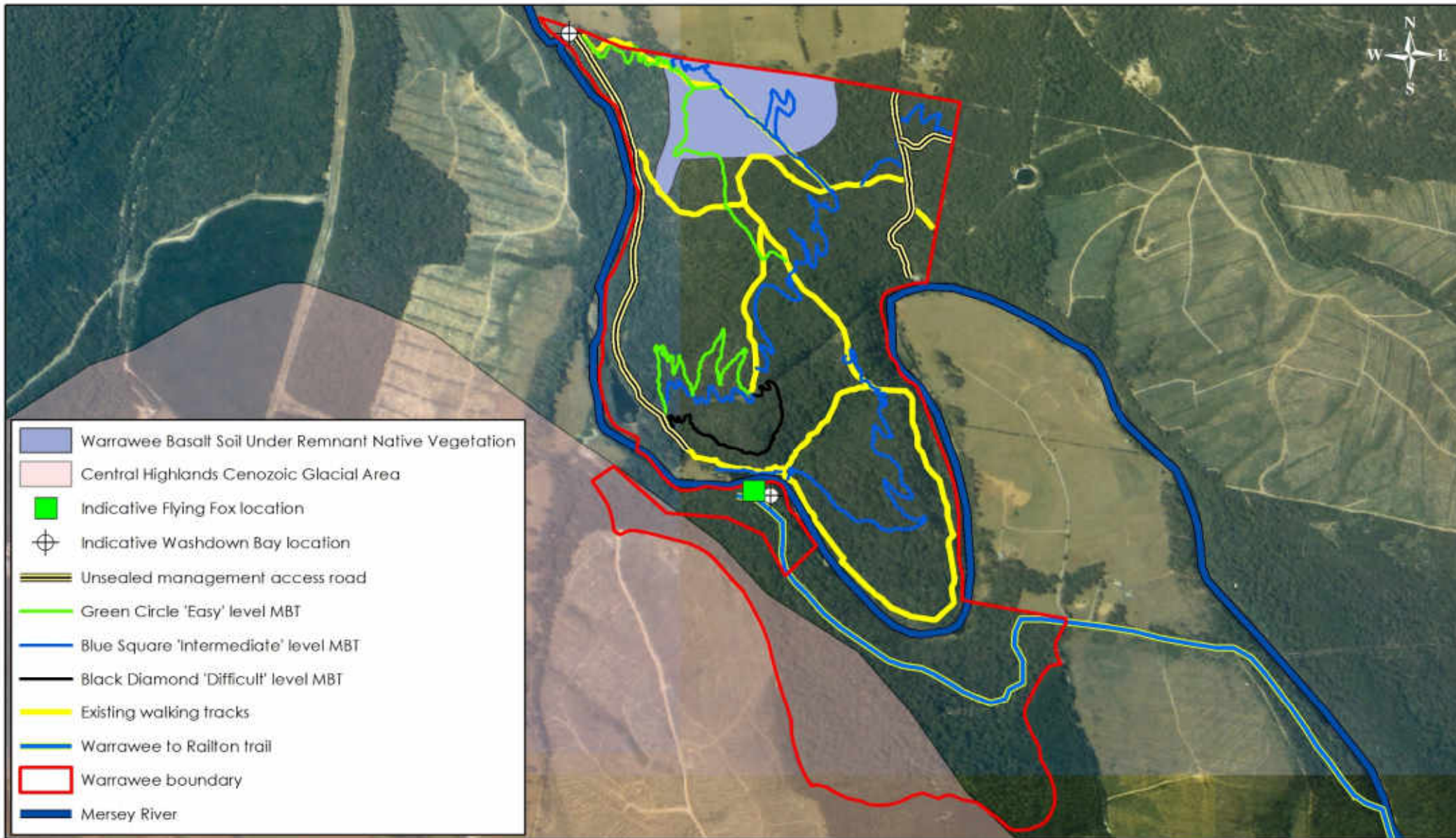
8.3 Geoconservation sites

The desktop analysis highlighted two geoconservation sites in the vicinity of the proposed development activities. These sites are listed as:

- a. Warrawee Basalt Soil Under Remnant Native Vegetation - Representative of undisturbed basalt derived soils in the Northern Slopes bioregion.
- b. Central Highlands Cenozoic Glacial Area - This site contains significant glaciogene values, including World Heritage values, however the nature and distribution of landforms and deposits is incompletely known or documented.

Approximately 1.5 Km of the proposed trails will be constructed above the Warrawee Basalt Soil Under Remnant Native Vegetation Geoconservation site within the Warrawee Conservation Area. Approximately 3.6 Km of the proposed Warrawee to Railton trail will be constructed above the Central Highlands Cenozoic Glacial Area Geoconservation site.

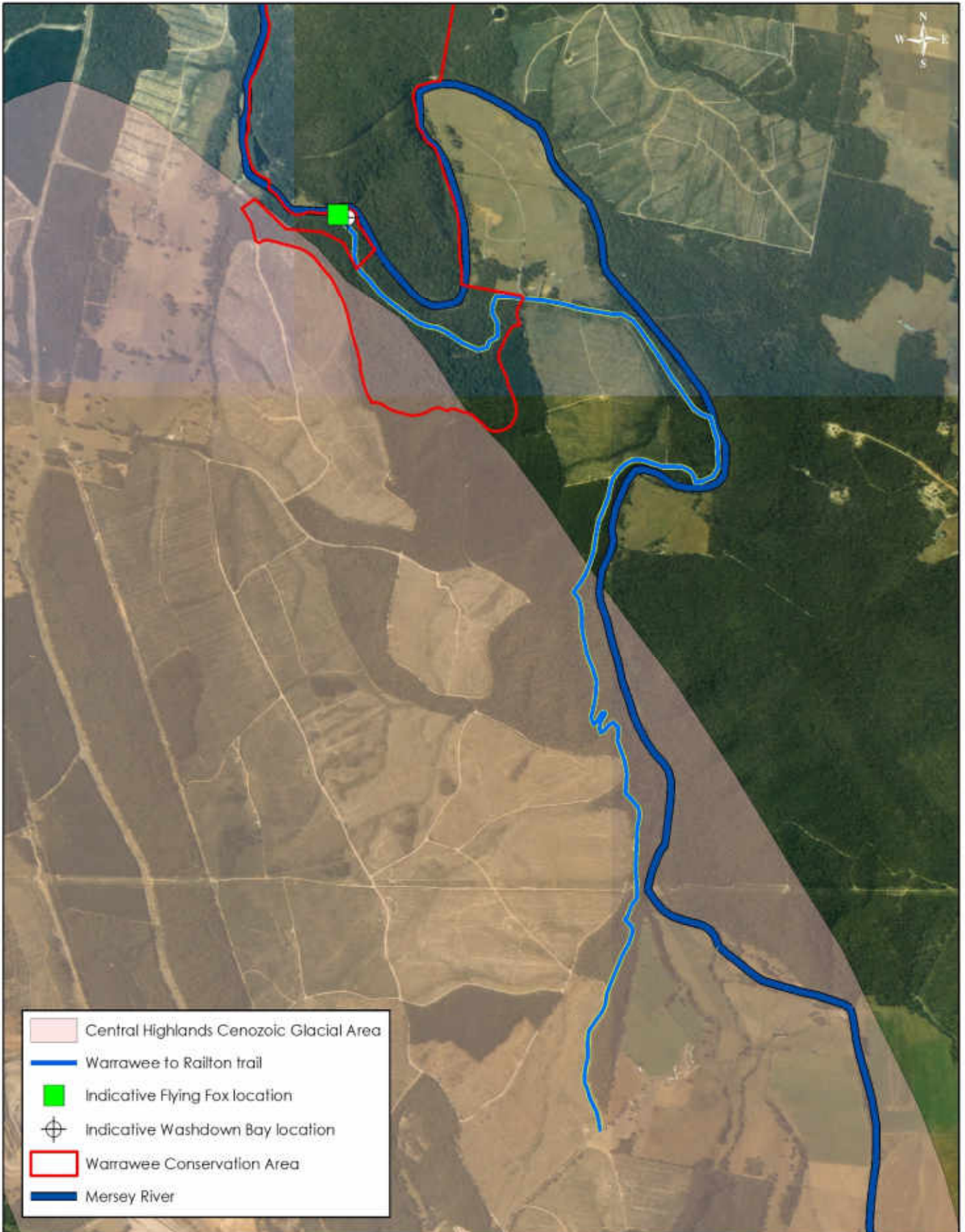
Warrawee Conservation Area - Geoconservation sites



Project: Wild Mersey Mountain Bike Development	Drawn by: Matt Rose		NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania. Scale : 1:16,000 
Client: Kentish Council & Latrobe Council	Date: 05/01/2017			

Figure 17: Geoconservation sites Warrawee Conservation Area.

Warrawee to Railton - Geoconservation sites



Project: Wild Mersery Mountain Bike Development	Drawn by: Matt Rose	 NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base Image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania, Scale : 1:25,000. 
Client: Kentish Council & Latrobe Council	Date: 05/01/2017		

Figure 18: Geoconservation sites Warrawee to Railton trail.

9. Freshwater ecosystem values

The study areas are located within the Mersey catchment area. The proposed trail crosses over 8 freshwater creeks, and will include reinstating an existing track on the bank of the Mersey River damaged by the June flood.

According to the Tasmanian Government Conservation of Freshwater Ecosystem Values (CFEV) modelling, the proposed Flying Fox and Washdown Bay location is sited within a reach of the Mersey River containing very high freshwater ecosystem conservation values.

Along the Warrawee to Railton trail, one creek has very high freshwater ecosystem conservation values, three creeks have high freshwater ecosystem conservation values, and two creeks have low freshwater ecosystem conservation values.

The surveys confirm that the conservation values identified in the modelling are accurate.

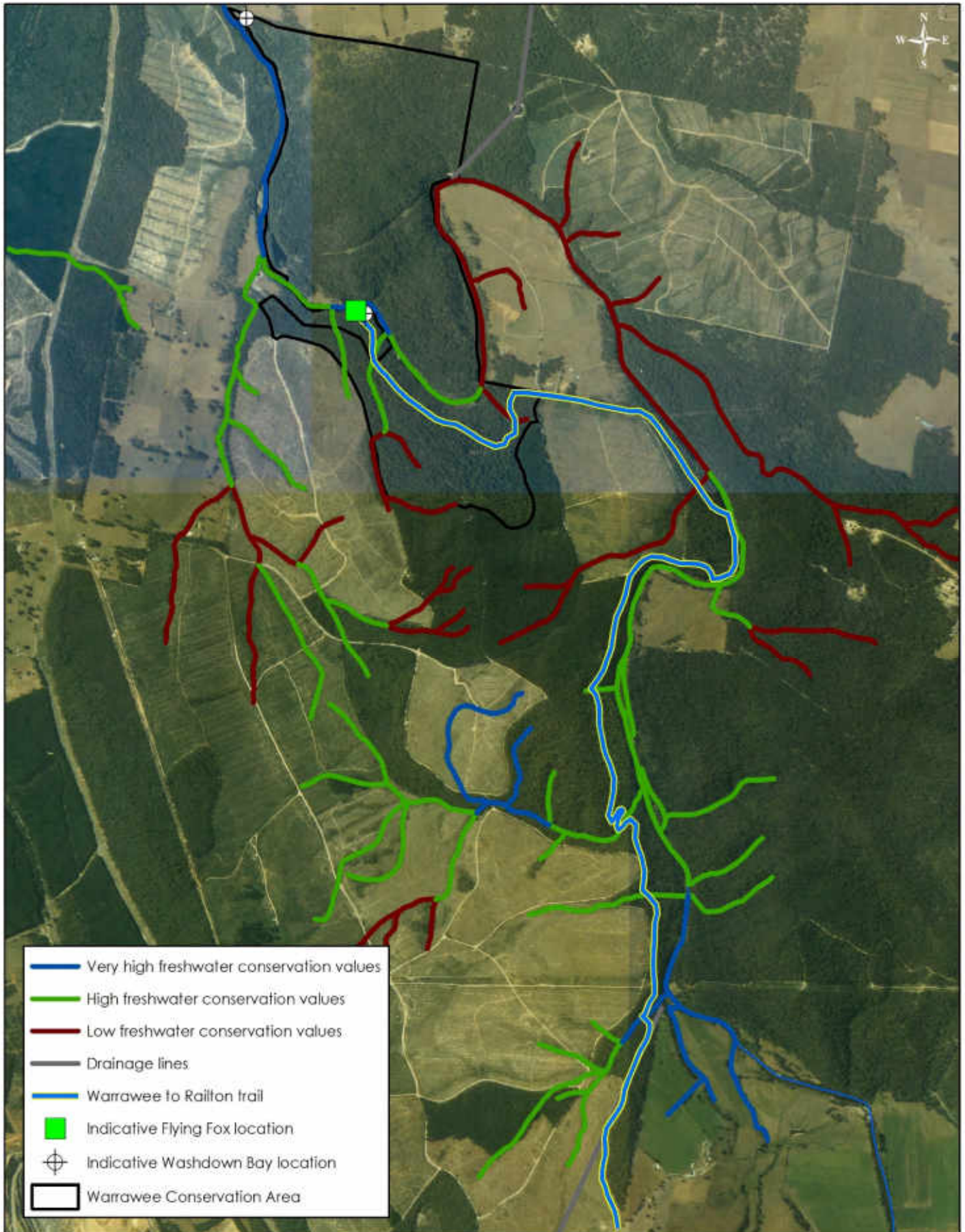
A trail realignment is recommended where the proposed trail could impact upon the high freshwater conservation values of the Mersey River, opposite the Great Bend. This realignment avoids track construction within the flood zone and clearing vegetation within 40m of a class 1 stream.

The 8 creek crossings will require bridges of varying lengths and design to avoid potential impacts to sensitive freshwater dependent ecosystems.



Figure 19: Tadpoles utilising a puddle on the existing Shale Trail Loop walking track. Note the ATV tyre tread mark in the bottom right corner. M.Rose, 22/10/16.

Warrawee to Railton - Conservation freshwater ecosystem values (CFEV)



- Very high freshwater conservation values
- High freshwater conservation values
- Low freshwater conservation values
- Drainage lines
- Warrawee to Railton trail
- Indicative Flying Fox location
- + Indicative Washdown Bay location
- Warrawee Conservation Area

Project: Wild Mensery Mountain Bike Development	Drawn by: Matt Rose	 NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base Image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania, Scale : 1:25,000. 0 250 500 750 1,000 1,250 1,500 Metres
Client: Kentish Council & Latrobe Council	Date: 12/01/2017		

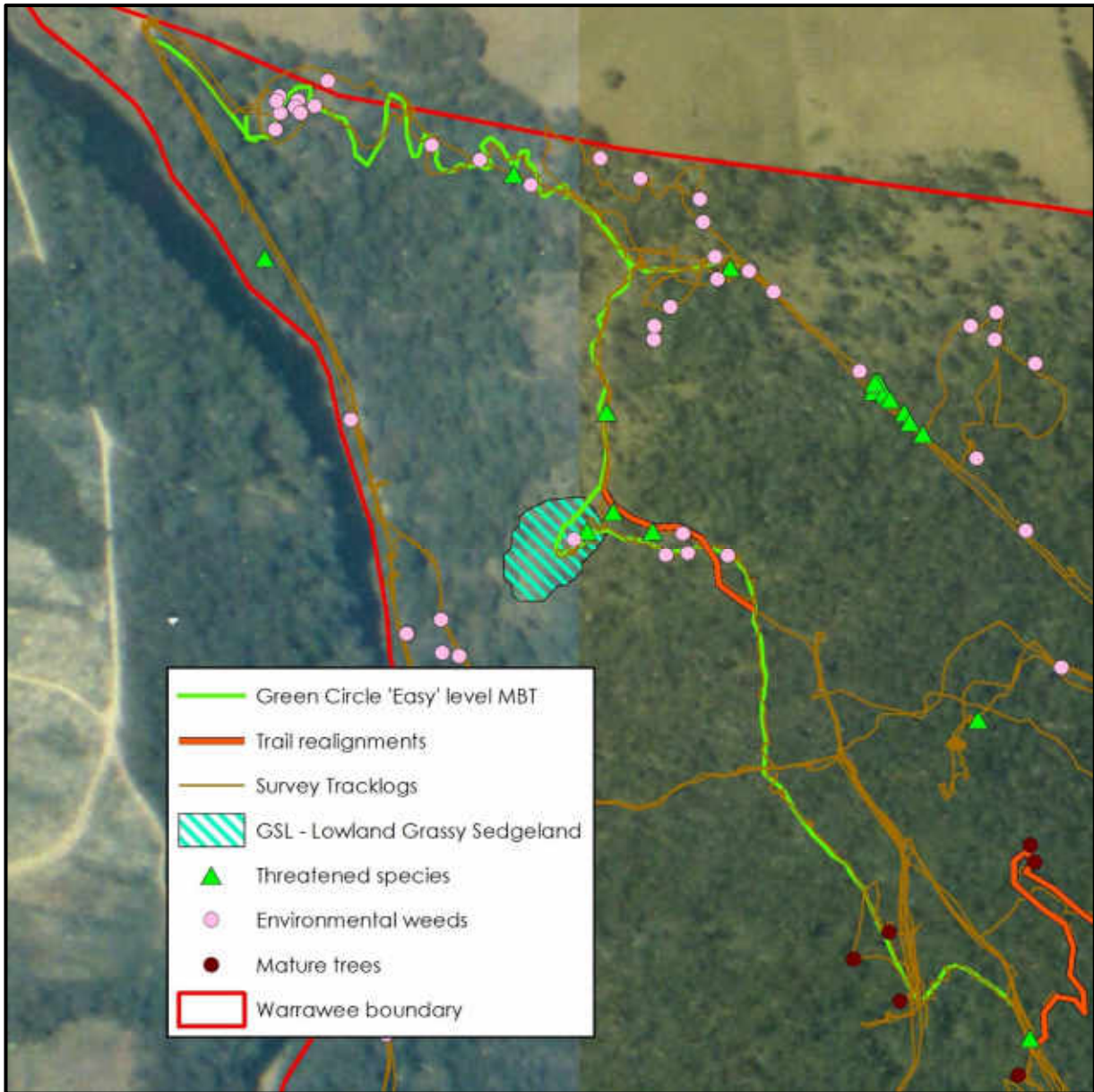
Figure 20: Freshwater Ecosystem Values.

10. Survey Notes

10.1 Green trail near the Warrawee Conservation Area entrance

Difficulty level: Green Circle 'Easy' level trail

Approximate trail length: 4,020 m



Realignment required? YES
 Figure 12: Flora species recorded near or within the trail alignment in relation to the proposed Green trail.

Reason for realignment: To prevent unnecessary clearing and further fragmentation of mid-storey shrubs and small trees and to avoid disturbance of under-represented remnant Lowland Grassy Sedgeland native vegetation community. There were many Tasmanian Devil scats within this small vegetation community which is possibly used as a latrine site. The realignment utilises an informal track where vegetation has been cut leading back to the reservoir.

the
 existing

Table 12: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acianthus caudatus</i>	Mayfly Orchid			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Ajuga australis</i>	Australian Bugle			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Anagallis arvensis</i>	Scarlet Pimpernel	YES		
<i>Austrostipa mollis</i>	Soft Spear Grass			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Centaurium erythraea</i>	Common Centaury	YES		
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Conium maculata</i>	Hemlock	YES		
<i>Coprosma quadrifida</i>	Native Currant			
<i>Davesia ulicifolia</i>	Yellow Spiky Bitter Pea			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Drosera peltata ssp. auriculata</i>	Tall Sundew			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Galium aparine</i>	Cleavers	YES		
<i>Genista monspessulana</i>	Montpellier Broom	YES		
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Goodia lotifolia</i>	Native Broom			
<i>Hyacinthoides species</i>	Common Bluebells	YES		
<i>Indigofera australis</i>	Native Indigo			
<i>Juncus procerus</i>	Great Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Leptomeria drupacea</i>	Erect Currantbush			
<i>Leptospermum scoparium</i>	Manuka			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Olearia lirata</i>	Forest Daisy			
<i>Oxalis perennans</i>	Native Woodsorrel			
<i>Poa labillardieri</i>	Silver Tussock Grass			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Prunus laurocerasus</i>	Cherry Laurel	YES		
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus fruticosus var. aggregate</i>	Blackberry	YES		
Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status

<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Striped Wallaby Grass			
<i>Themeda triandra</i>	Kangaroo Grass			
<i>Viburnum tinus</i>	Viburnum / Laurustinus	YES		
<i>Vicia sativa</i>	Common Vetch	YES		
<i>Vinca major</i>	Blue Periwinkle	YES		
<i>Ulex europaeus</i>	Gorse	YES		
<i>Zantedeschia aethiopica</i>	Arum Lily	YES		

Additional observations: There are many environmental weeds requiring ongoing control along the trail alignment. Pasture grass weeds were not identified as they were not flowering at the time of the surveys. This proposed trail crosses over sections of the Shale Trail Loop walking track. The threatened species observation near the trail realignment was a Grey Goshawk and several Tasmanian Devil scats. The other isolated threatened species point was an NVA observation which was not actually present at that location.



Figure 22: Lowland Grassy Sedgeland remnant native vegetation community to be avoided. Facing South West. M.Rose, 23/10/16.

10.2 Blue trails near the old tramline

Difficulty level: Blue Square 'Intermediate' level trails

Approximate trail length: 980 m

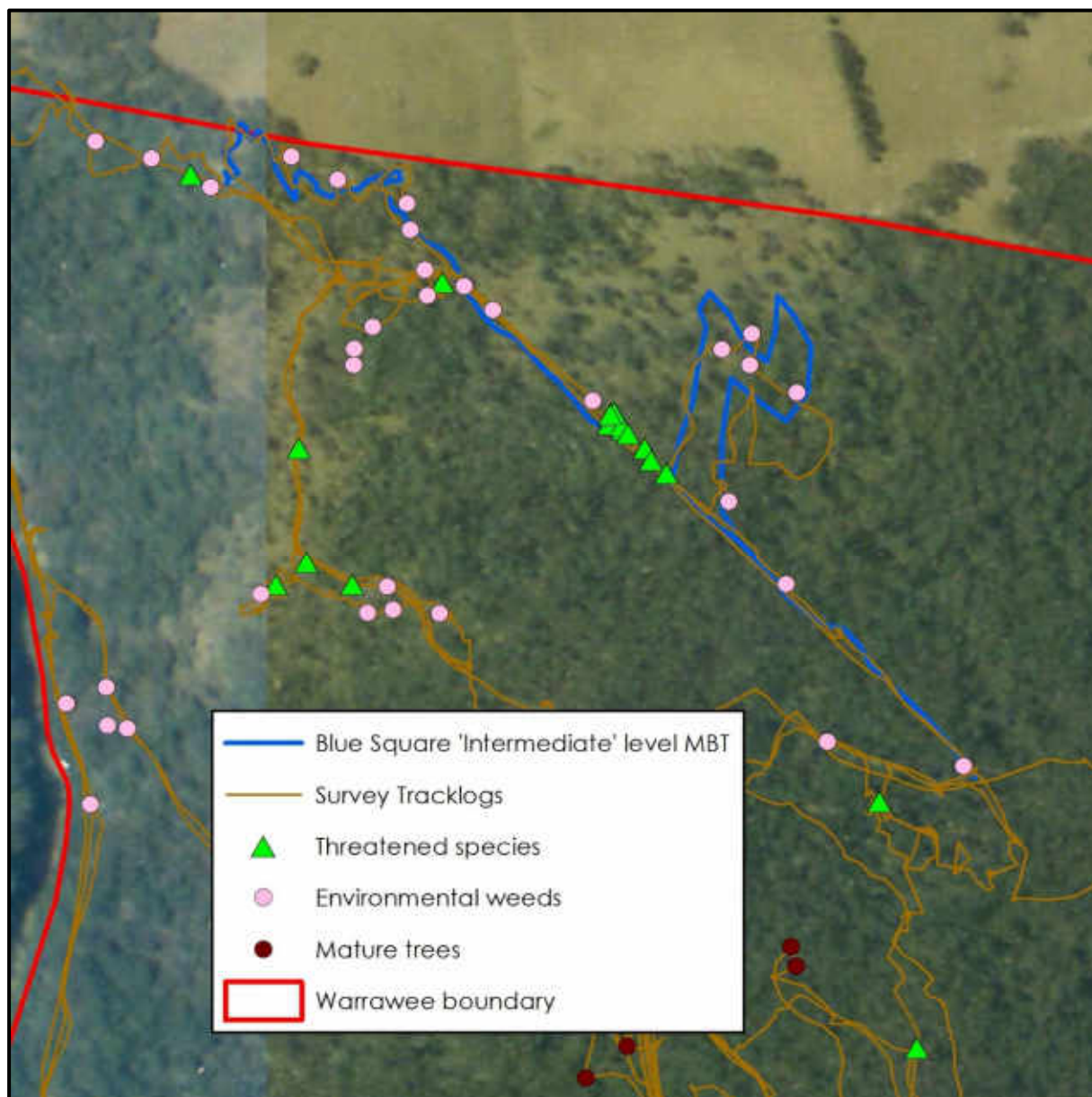


Figure 23: Survey tracklogs and natural values in relation to the proposed Blue trail.

Realignment required? NO

Additional observations: A small patch of the threatened species *Pimelea curviflora ssp. gracilis* – Slender Curved Riceflower are growing on both sides of the old tramline. Trail construction work will need to avoid disturbing these plants. Several mature Spanish Heath and Gorse bushes require ongoing weed control.

This proposed trail crosses over sections of the Shale Trail Loop walking track.

Table 13: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia stricta</i>	Hop Wattle			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Austrostipa mollis</i>	Soft Spear Grass			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Bossiaea prostrata</i>	Creeping Bossiaea			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Cassytha melantha</i>	Large Dodderlaurel			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Comesperma volubile</i>	Blue Love Creeper			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Coronidium scorpioides</i>	Button Everlasting			
<i>Davesia ulicifolia</i>	Yellow Spiky Bitter Pea			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Galium australe</i>	Tangled Bedstraw			
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Goodia lotifolia</i>	Native Broom			
<i>Hyacinthoides species</i>	Common Bluebells	YES		
<i>Indigofera australis</i>	Native Indigo			
<i>Juncus procerus</i>	Great Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Leptospermum scoparium</i>	Manuka			
<i>Linum marginale</i>	Native Flax			
<i>Lomandra longifolia</i>	Sagg			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Olearia lirata</i>	Forest Daisy			
<i>Oxalis perennans</i>	Native Woodsorrel			
<i>Pimelea curviflora</i> var. <i>gracilis</i>	Slender Curved Riceflower		Rare	
<i>Poa labillardieri</i>	Silver Tussock Grass			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Stellaria pungens</i>	Prickly Starwort			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Themeda triandra</i>	Kangaroo Grass			
<i>Ulex europaeus</i>	Gorse	YES		
<i>Viola hederacea</i>	Native Violet			



Figure 24: The threatened *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower is growing here on both sides of the old tramline. These plants should be protected from disturbance. Facing South East. M.Rose, 22/10/16.

10.3 Blue trails near the North East corner

Difficulty level: Blue Square 'Intermediate' level trails

Approximate trail length: 730 m

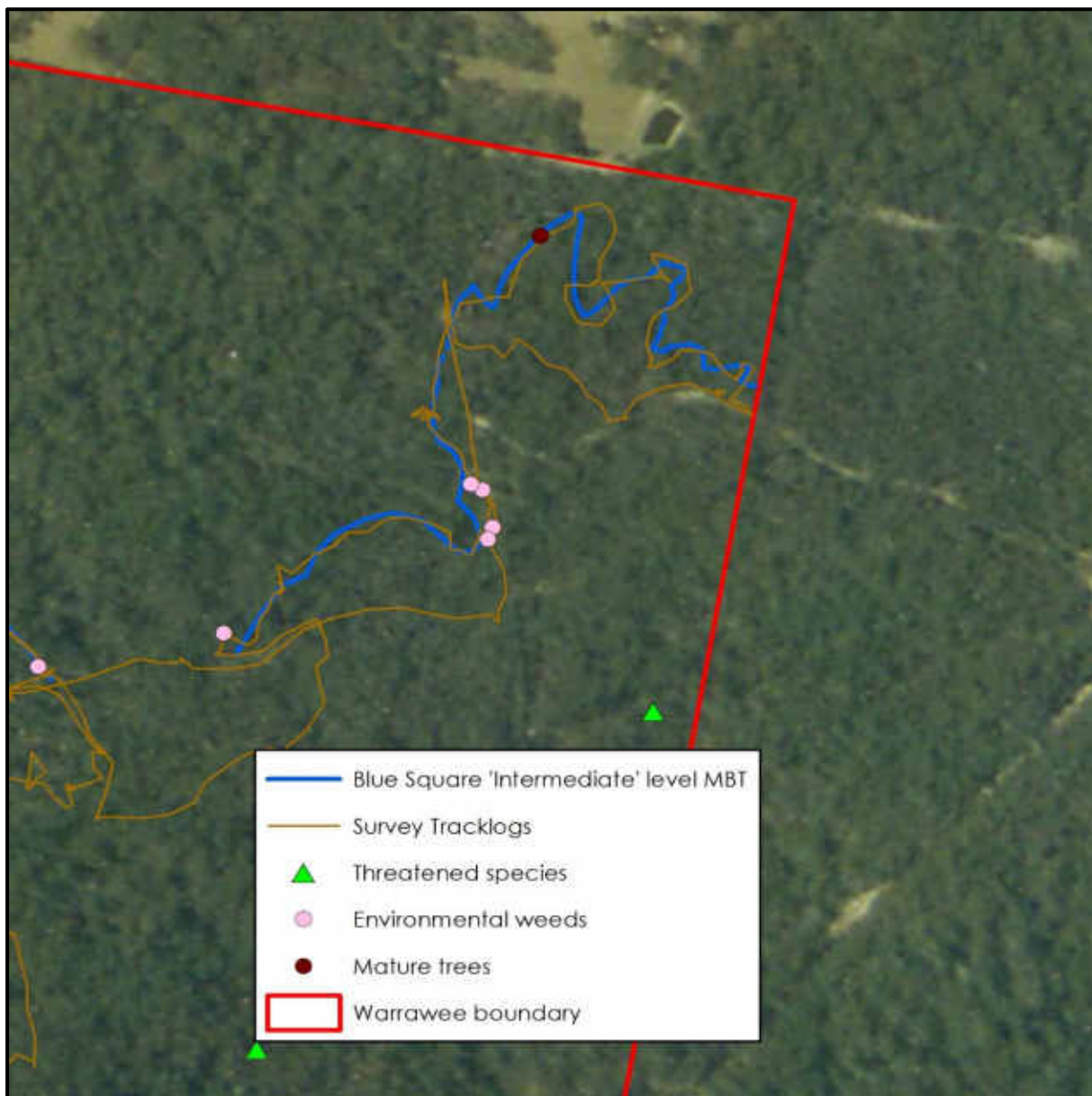


Figure 25: Survey tracklogs and natural values in relation to the proposed Blue trail.

Realignment required? NO

Additional observations: Very dry forest and woodland with dense coverage of large woody debris from fallen timber. Very limited understorey vegetation present. Several mature Gorse bushes requiring ongoing weed control.

This trail crosses over the main access roads to the water tank.

Table 14: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia stricta</i>	Hop Wattle			
<i>Acianthus caudatus</i>	Mayfly Orchid			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Caladenia carnea</i>	Dusky Fingers			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Dichondra repens</i>	Kidney Weed			
<i>Epacris impressa</i>	Common Heath			
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Glossodia major</i>	Waxlip Orchid			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma inops</i>	Fan Sedge			
<i>Lomandra longifolia</i>	Sagg			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Melaleuca squarrosa</i>	Scented Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Pteridium esculentum</i>	Bracken			
<i>Pterostylis nutans</i>	Nodding Greenhood			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Thelymitra species</i>	Sun Orchid			
<i>Viola hederacea</i>	Native Violet			



Figure 26: Fallen timber and very sparse understorey recruitment. Fire scarring is evident on most of the trees, probably due to the 2007 bushfire. Facing North. M.Rose, 22/10/16.

10.4 Blue trail where construction has already started

Difficulty level: Blue Square 'Intermediate' level trail

Approximate trail length: 1,000 m

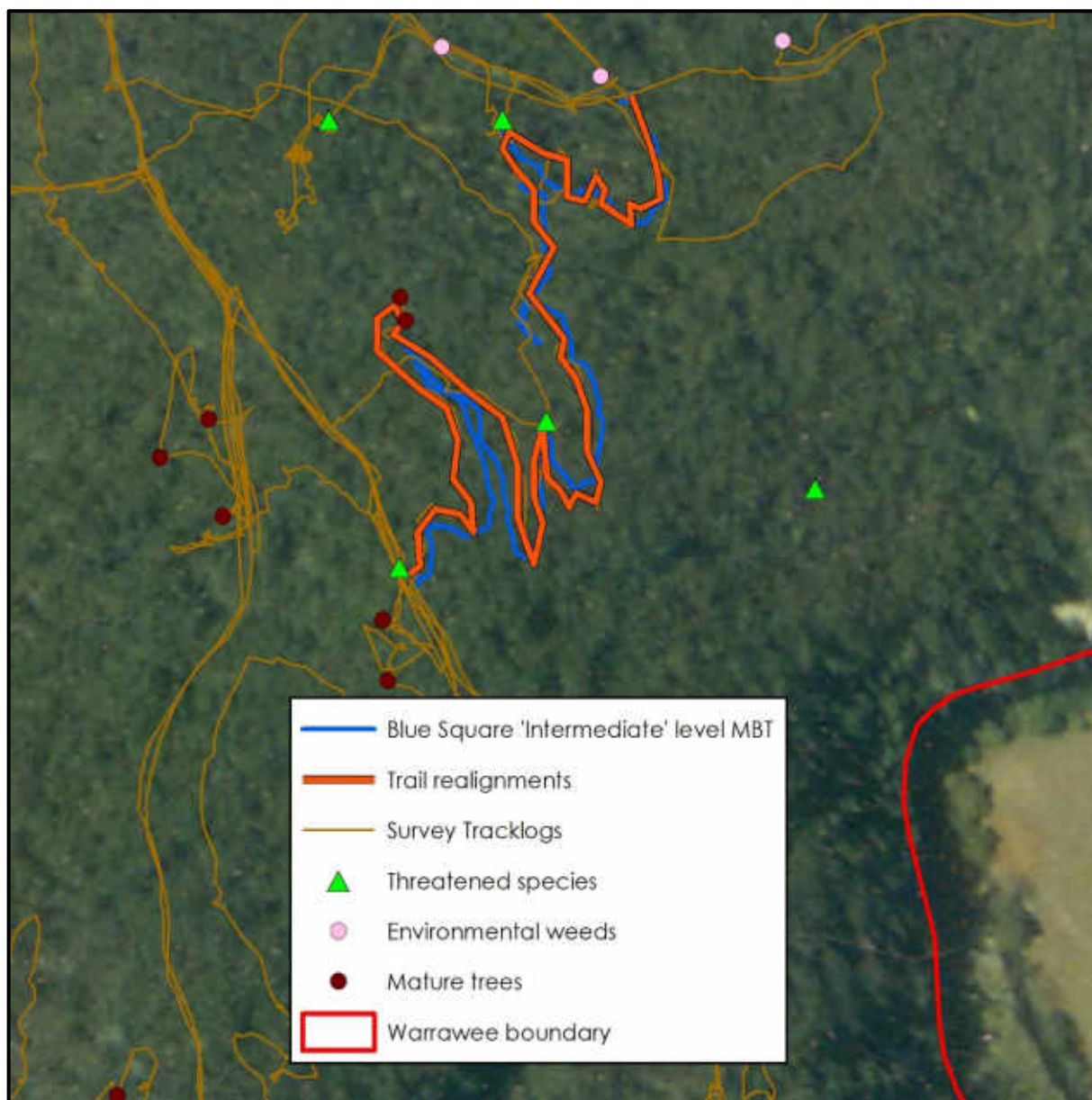


Figure 27: Survey tracklogs and natural values in relation to the proposed Blue trail.

Realignment required? YES, FURTHER RESEARCH IS REQUIRED BEFORE COMMENCING

Reason for realignment: When it came to surveying the proposed blue trail, construction of this trail had already started. Log ramps were in position, fallen timber over the proposed trail had been cut for firewood, leaf litter had been raked aside and ATV tyre tracks were evident. The trail realignment shown above was mapped as a tracklog whilst following the path of the newly constructed trail. Work on this trail should stop immediately. Further orchid monitoring and mapping is required to determine the location and status of the critically endangered orchid species *Caladenia tonellii* – Robust Fingers, which was previously recorded in this area. This species is listed under the EPBC Act (1999).

Table 15: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia leprosa</i>	Varnished Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Davesia ulicifolia</i>	Yellow Spiky Bitter Pea			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Drosera peltata ssp. auriculata</i>	Tall Sundew			
<i>Epacris impressa</i>	Common Heath			
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lomandra longifolia</i>	Sagg			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			

Additional observations: This proposed trail crosses over sections of the Shale Trail Loop walking track as well as the trail marked as 5.3.



Figure 28: Unauthorised trail construction and timber harvesting amongst critically endangered orchid habitat. Facing North. M.Rose, 27/12/16.

10.5 Cluster of trails

Difficulty level: Green Circle 'Easy' level trail, Blue Square 'Intermediate' level & Black Diamond 'Difficult' level trail

Approximate trail lengths: Green 2020m, 2 x Blue 1,350m & Black 1,350m.

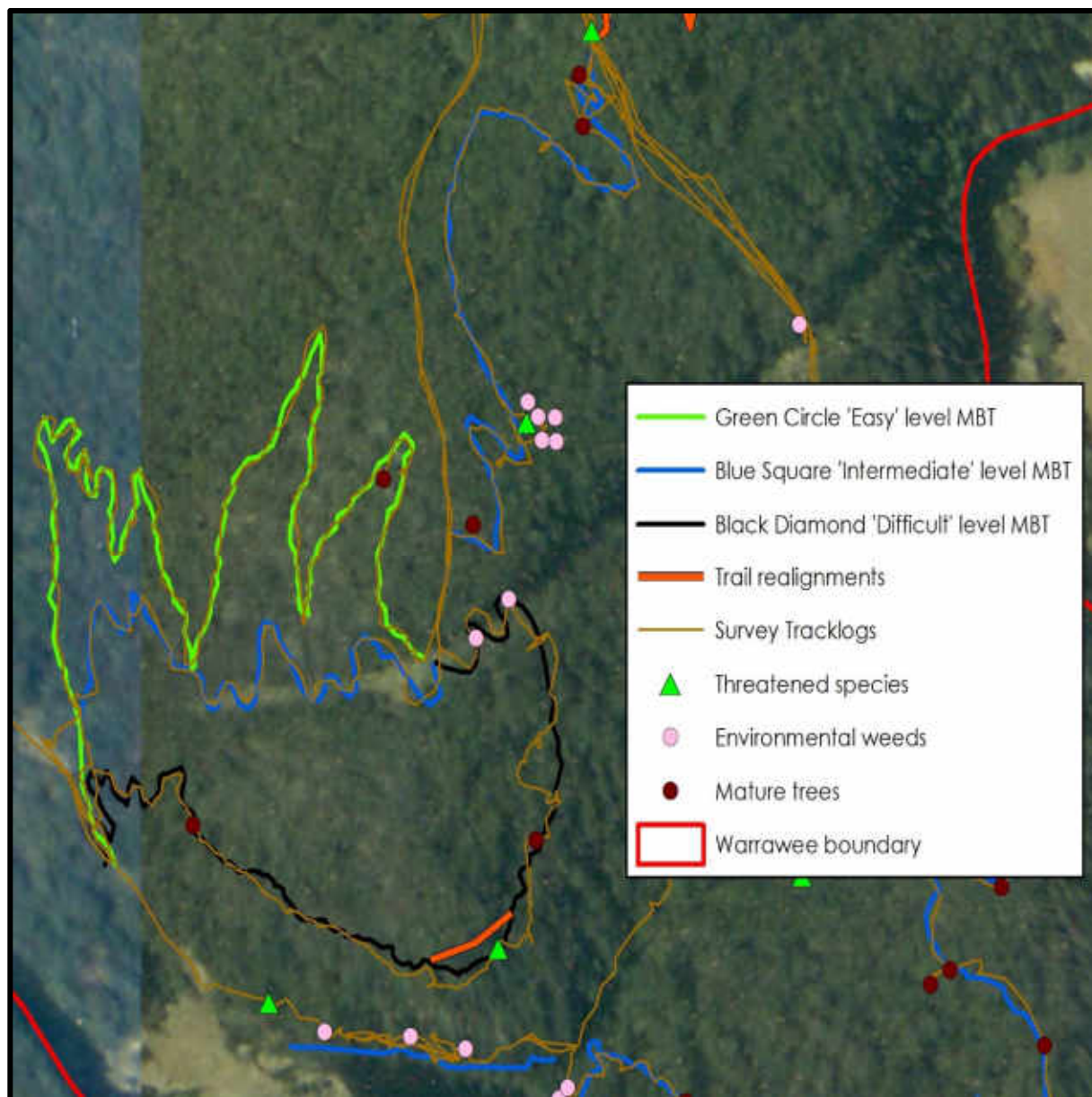


Figure 29: Survey tracklogs and natural values in relation to the proposed trail cluster.

Realignment required? YES, on the Black trail only.

Reason for realignment: To avoid disturbance of several *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower plants.

Additional observations: The proposed trails cross over sections of the track marked as 5.3. Part of the Black trail, west of the threatened *Pimelea*'s, is very rocky and steep. There is a large patch of Spanish Heath at the top of the trail cluster which requires ongoing weed control.

Table 16: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Caladenia carnea</i>	Dusky Fingers			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Davesia ulicifolia</i>	Yellow Spiky Bitter Pea			
<i>Dichondra repens</i>	Kidney Weed			
<i>Dicksonia antarctica</i>	Soft Treefern			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Glossodia major</i>	Waxlip Orchid			
<i>Hystiopteris incise</i>	Batswing Fern			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma species</i>	Sword Sedge			
<i>Lindsaea linearis</i>	Screw Fern			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Olearia lirata</i>	Forest Daisy			
<i>Pimelea curviflora var. gracilis</i>	Slender Curved Riceflower		Rare	
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea linifolia</i>	Slender Riceflower			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Viola hederacea</i>	Native Violet			

10.6 Big blue trail

Difficulty level: Blue Square 'Intermediate' level

Approximate trail length: 2,200m

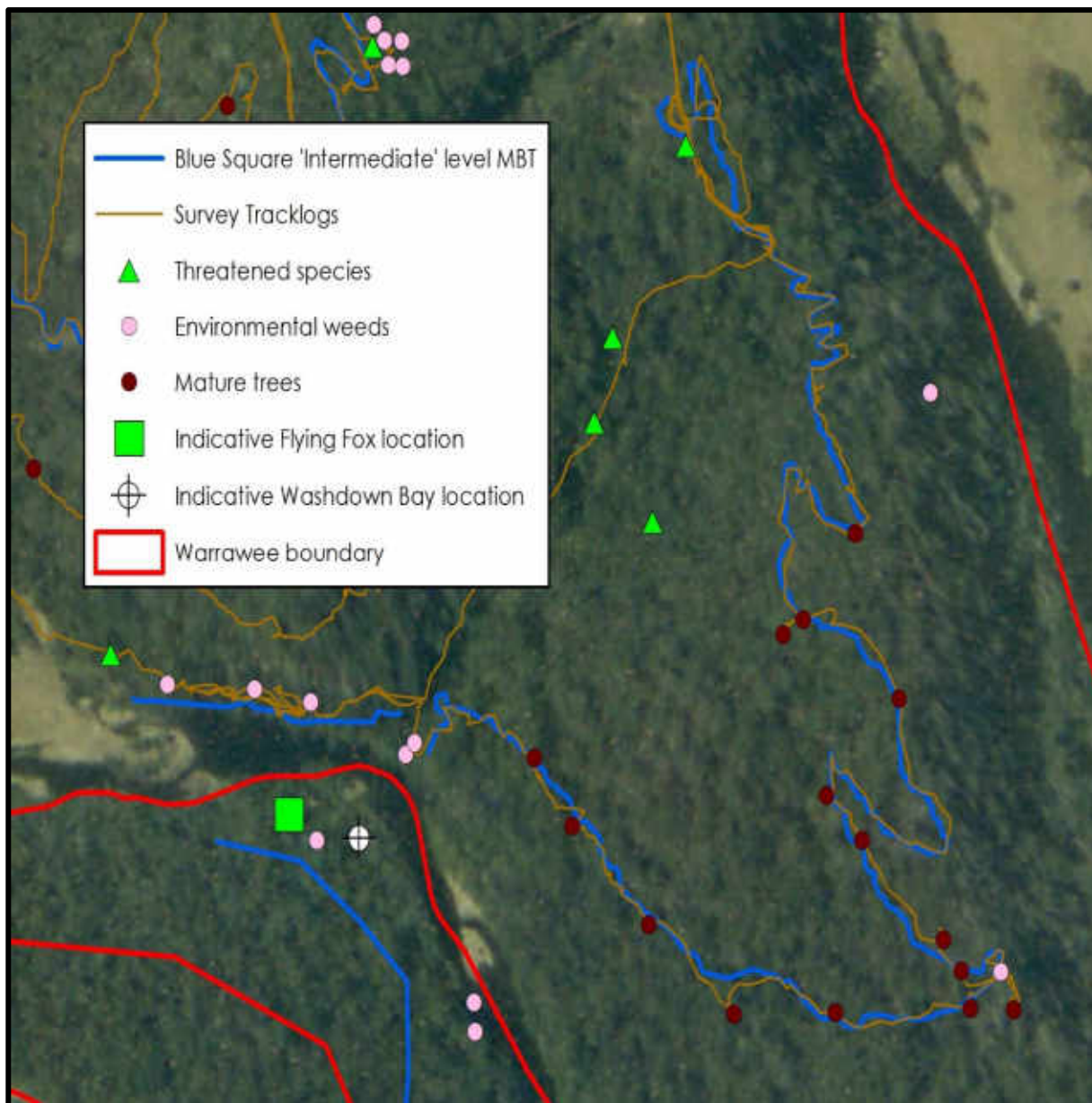


Figure 30: Survey tracklogs and natural values in relation to the proposed Blue trail.

Realignment required? NO

Additional observations: This proposed trail crosses over sections of the Fern Gully walking track and the 'Fisherman's' Track along the Mersey River. The trail crosses over the unmarked Fern Gully Creek and will require a bridge to link up with the proposed Flying Fox.

The proposed western section of the trail has been severely eroded and washed away during the last flood. Earthworks will be required along the Mersey River to shift very large boulders and to reinstate the walking tracks in this proposed section of trail. This section is currently very rocky and steep, and hard to navigate. This section of the river has very high conservation freshwater ecosystem values.

Ongoing weed management will be required along the Mersey River after the flooding.

Table 17: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acianthus caudatus</i>	Mayfly Orchid			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Asplenium flabellifolium</i>	Necklace Fern			
<i>Banksia marginate</i>	Silver Banksia			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Caladenia carnea</i>	Dusky Fingers			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Cardamine hirsute</i>	Hairy Bittercress	YES		
<i>Cassytha melantha</i>	Large Dodderlaurel			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Chiloglottis reflexa</i>	Autumn Bird Orchid			
<i>Clematis aristata</i>	Old Man's Beard			
<i>Comesperma volubile</i>	Blue Love Creeper			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Cyathea australis</i>	Rough Tree Fern			
<i>Dianella tasmanica</i>	Forest Flax Lily			
<i>Dicksonia antarctica</i>	Soft Treefern			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Drosera peltata ssp. auriculata</i>	Tall Sundew			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Genista monspessulana</i>	Montpellier Broom	YES		
<i>Glossodia major</i>	Waxlip Orchid			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Luzula species</i>	Woodrush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma species</i>	Sword Sedge			
<i>Leptospermum scoparium</i>	Manuka			
<i>Lindsaea linearis</i>	Screw Fern			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Microsorium pustulatum</i>	Kangaroo Fern			
<i>Microtis species</i>	Onion Orchid			
<i>Olearia lirata</i>	Forest Daisy			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pimelea nivea</i>	Bushman's Bootlace			
<i>Poa labillardieri</i>	Silver Tussock Grass			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pterostylis nutans</i>	Nodding Greenhood			
<i>Pterostylis pedunculata</i>	Maroon Greenhood			
Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status

<i>Pultenaea daphnoides</i>	Heart Leaf Bush Pea			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus fruticosus</i> var. <i>aggregate</i>	Blackberry	YES		
<i>Salix x fragilis</i> nothovar. <i>fragilis</i>	Crack Willow	YES		
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Tasmannia lanceolata</i>	Mountain Pepper			
<i>Viola hederacea</i>	Native Violet			
<i>Wahlenbergia stricta</i>	Tall Bluebell			



Figure 31: The Mersey River where the walking track used to be and where a section of trail is proposed. Looking West upstream. M.Rose, 27/12/16.

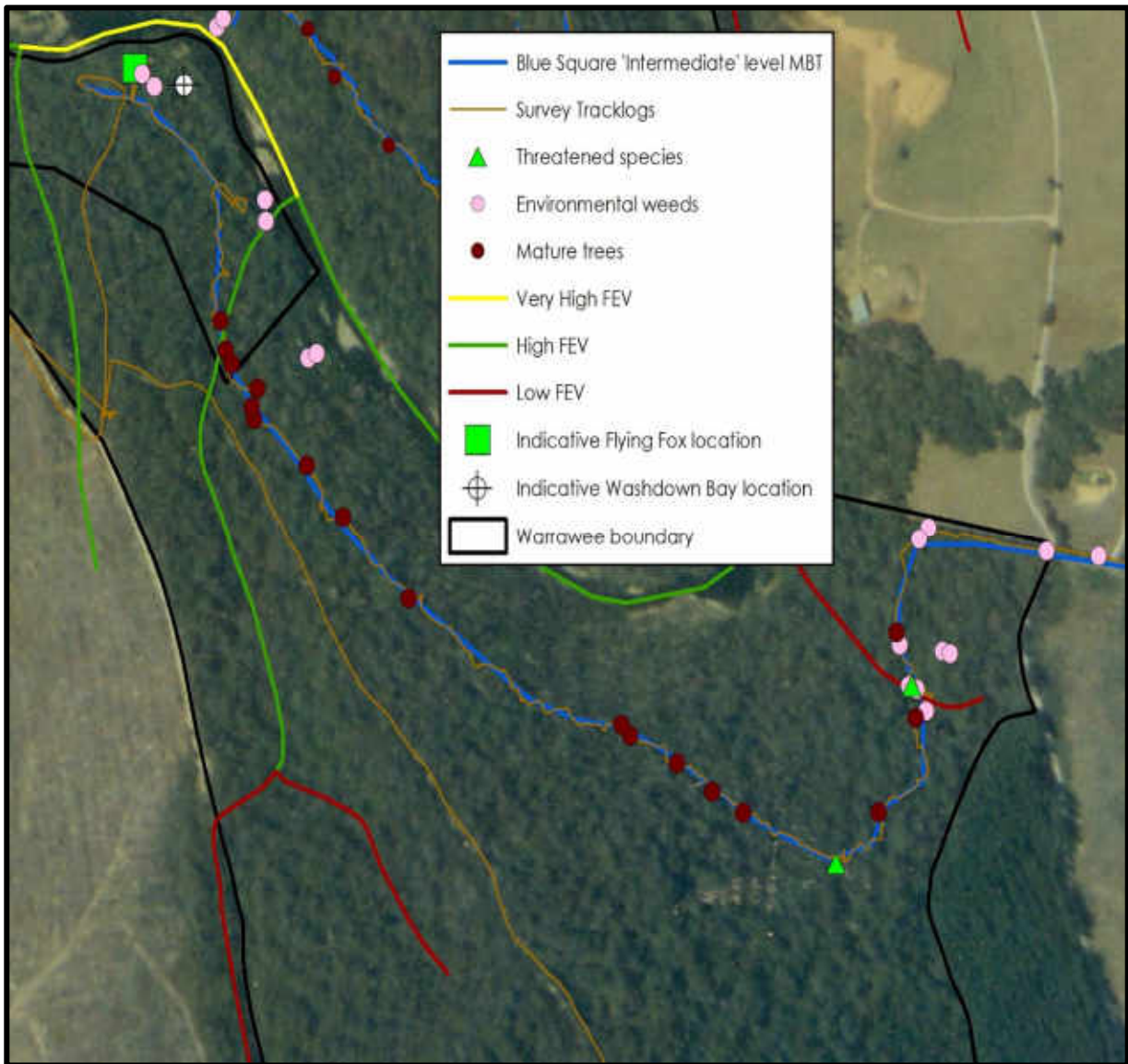
10.7 South side of the Mersey River within the Warrawee Conservation Area

Difficulty level: Blue Square 'Intermediate' level

Approximate trail length: 1,650m

Realignment required? YES, FURTHER RESEARCH IS REQUIRED BEFORE COMMENCING

Reason for realignment: To avoid disturbance of potential threatened fauna. Burrowing Crayfish



ing the creek and a possible Spotted-tailed Quoll den site. The proposed Blue trail.

Additional observations: This proposed trail crosses over two creeks, one with high freshwater ecosystem conservation values and the other with low freshwater ecosystem conservation values. Both creeks will require bridges to avoid disturbing waterways and impacting upon potentially threatened species.

the

Many weeds are colonising the bare ground along the riparian area since the Blackberry, Hemlock and Spear Thistle are the dominant species in this area.

flood.

Table 18: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia myrtifolia</i>	Redstem Wattle			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Astroloma humifusum</i>	Native Cranberry			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Blechnum watsii</i>	Hard Water Fern			
<i>Bossiaea prostrata</i>	Creeping Bossiaea			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Conium maculata</i>	Hemlock	YES		
<i>Coprosma quadrifida</i>	Native Currant			
<i>Cyperus lucidus</i>	Leafy Flat-Sedge			
<i>Dichondra repens</i>	Kidney Weed			
<i>Dicksonia antarctica</i>	Soft Tree Fern			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Dipodium roseum</i>	Rosy Hyacinth Orchid			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Genista monspessulana</i>	Montpellier Broom	YES		
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Glycine clandestina</i>	Twining Glycine			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Goodia lotifolia</i>	Native Broom			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Hystiopteris incisa</i>	Batswing Fern			
<i>Juncus procerus</i>	Great Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lomandra longifolia</i>	Sagg			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Melaleuca squarrosa</i>	Scented Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Microsorium pustulatum</i>	Kangaroo Fern			
<i>Olearia lirata</i>	Forest Daisy			
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Poa labillardieri</i>	Silver Tussock Grass			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea juniperum</i>	Prickly Beauty			
Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status

<i>Rubus fruticosus</i> var. <i>aggregate</i>	Blackberry	YES		
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rumohra adiantiformis</i>	Leathery Shield Fern			
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Striped Wallaby Grass			
<i>Tasmania lanceolata</i>	Mountain Pepper			
<i>Tetralochea pilosa</i>	Black Eyed Susan			
<i>Wahlenbergia stricta</i>	Tall Bluebell			



10.8 Warrawee boundary towards the Great Bend

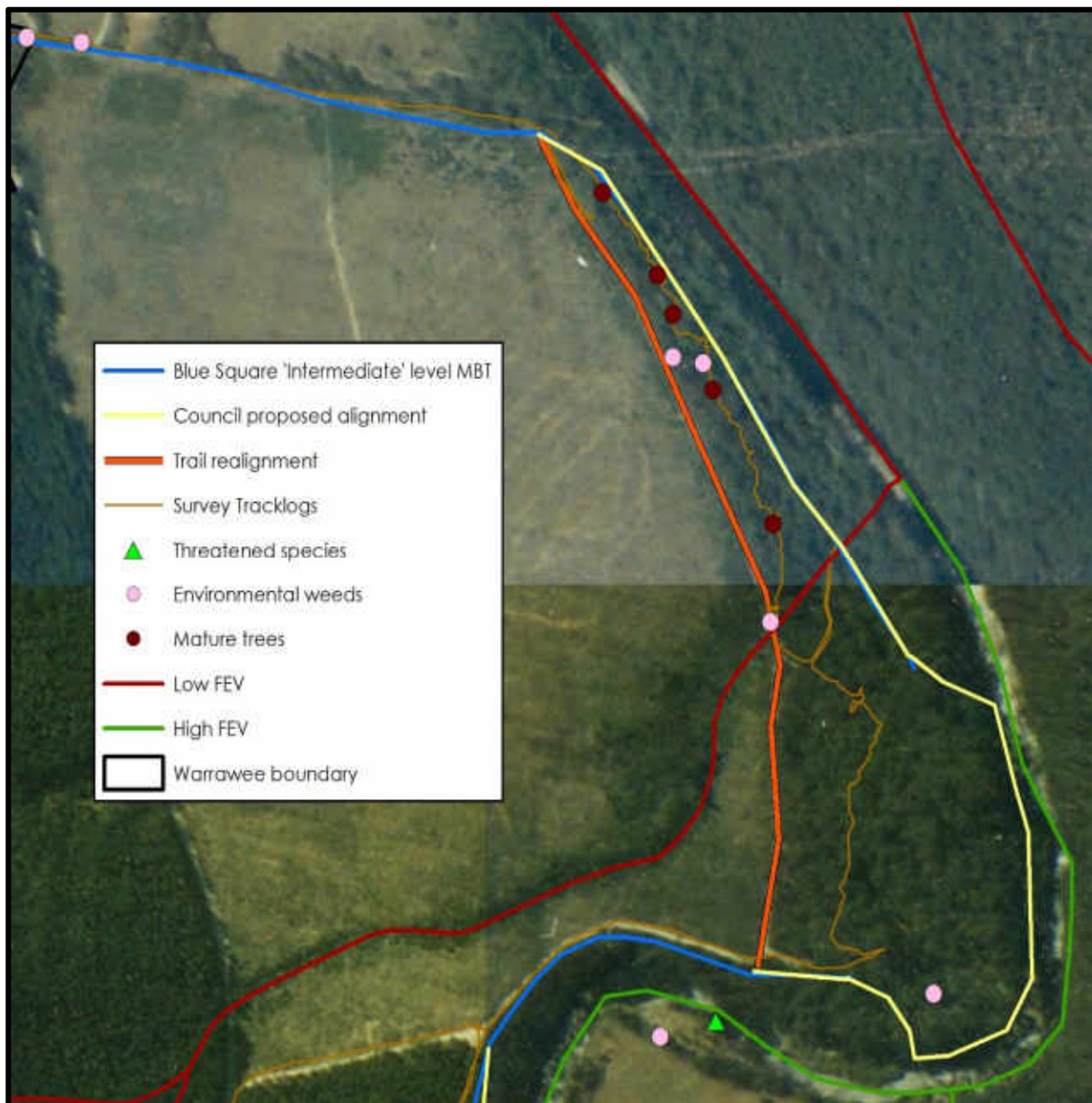


Figure 33 & 34: Top: A possible den site. M.Rose 19/01/17. Bottom: The creek site where burrowing crayfish stacks were located. Facing North East, M.Rose 19/01/17.

Difficulty level: Blue Square 'Intermediate' level

Approximate trail length: 2,000m.

Realignment required? YES.



Reason for realignment: To avoid clearing vegetation within 40m of a class 1 stream (Mersey River) and to prevent trail construction within the flood zone. This reach of the river has high freshwater conservation values. The Forest Practices Authority should be consulted regarding options for this section of trail if the recommended alignment is not accepted.

Additional observations: There is a significant amount of large woody debris which has been deposited amongst the flood zone along this section of the Mersey River. The eastern side of the Great Bend has several landslip areas due to the flood event. The map shows the proposed trail alignment (which is amongst the debris), the survey tracklog along the 30m contour and the recommended alignment which would utilise the existing track nearby resulting in minimal environmental impacts. The vegetation is very dense and there are many large fallen logs in this section of forest. The creek bed assessed as having low ecosystem conservation values is very wide and would require a longer bridge to avoid disturbing the waterway.

Table 19: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia leprosa</i>	Varnish Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Dichondra repens</i>	Kidney Weed			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Epacris impressa</i>	Common Heath			
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Gleichenia dicarpa</i>	Pouched Coralfern			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Hystiopteris incisa</i>	Batswing Fern			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Notelaea ligustrina</i>	Native Olive			
<i>Olearia lirata</i>	Forest Daisy			
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pittosporum bicolor</i>	Cheesewood			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus fruticosus</i> var. aggregate	Blackberry	YES		
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Viola hederacea</i>	Native Violet			

10.9 Trail near threatened native vegetation communities

Difficulty level: Blue Square 'Intermediate' level

Approximate trail length: 3,100m.

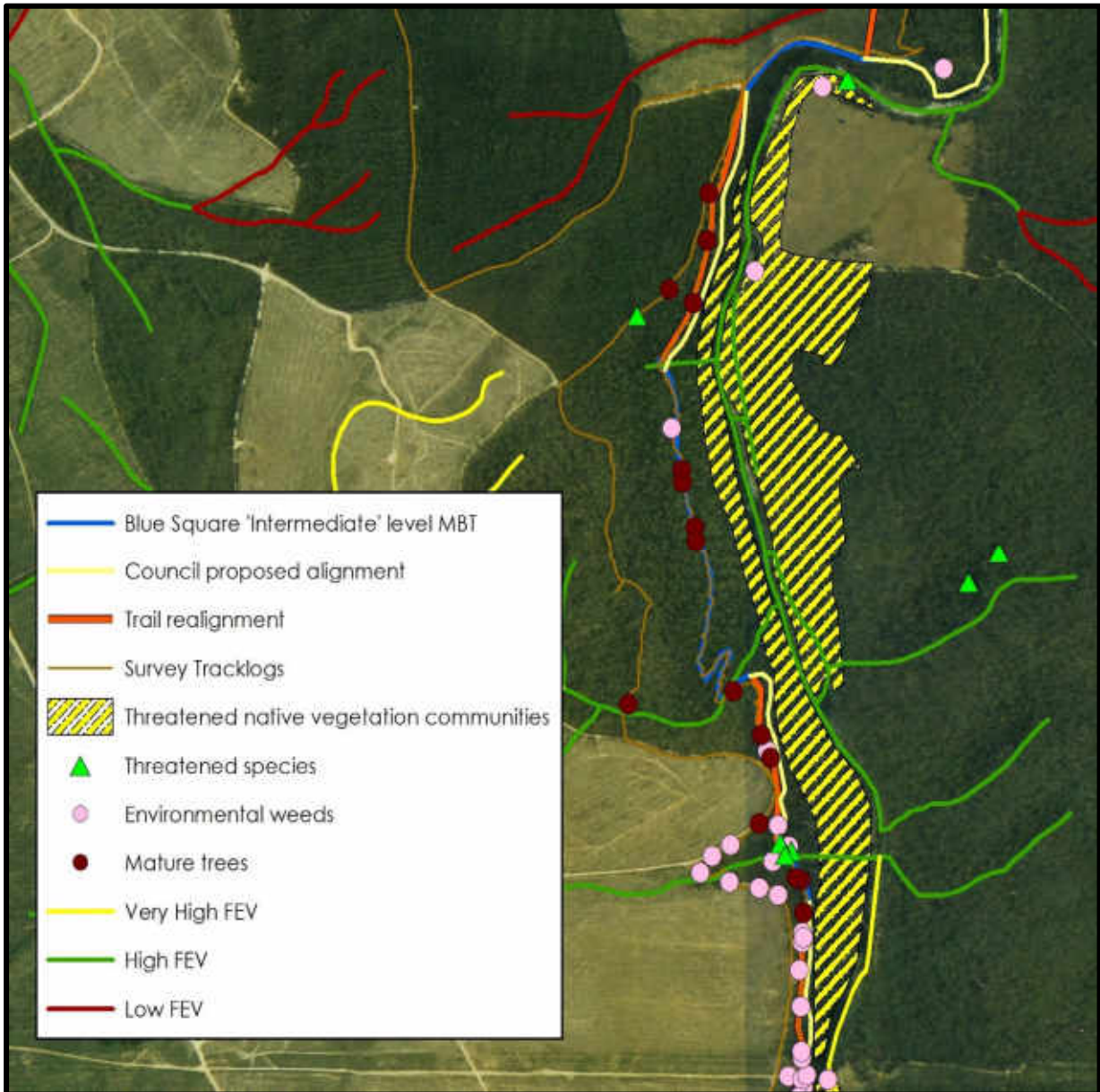


Figure 36: Survey tracklogs and natural values in relation to the proposed trail.

Realignment required? YES, FURTHER RESEARCH IS REQUIRED BEFORE COMMENCING.

Reason for realignment: To avoid disturbance of nearby threatened native vegetation communities.

Additional observations: The proposed trail crosses over three high freshwater ecosystem value creeks which support the threatened Burrowing Crayfish. These crossings will require bridges to avoid disturbing the waterways and impacting threatened species.

upon

There are very large patches of Spanish Heath growing on the forestry track verges, amongst the Pine plantations and underneath the transmission lines. A protective weed free buffer should be implemented along the roadsides and amongst the native forest before trail construction work commences. The DPIPWE Threatened Species Section and the Forest Practices Authority should be consulted regarding options

weed forest

for this

section of trail due to the proximity to Wedge-tailed Eagle nests, Burrowing Crayfish habitat and threatened native vegetation communities.

Table 20: Flora species recorded near or within the trail alignment

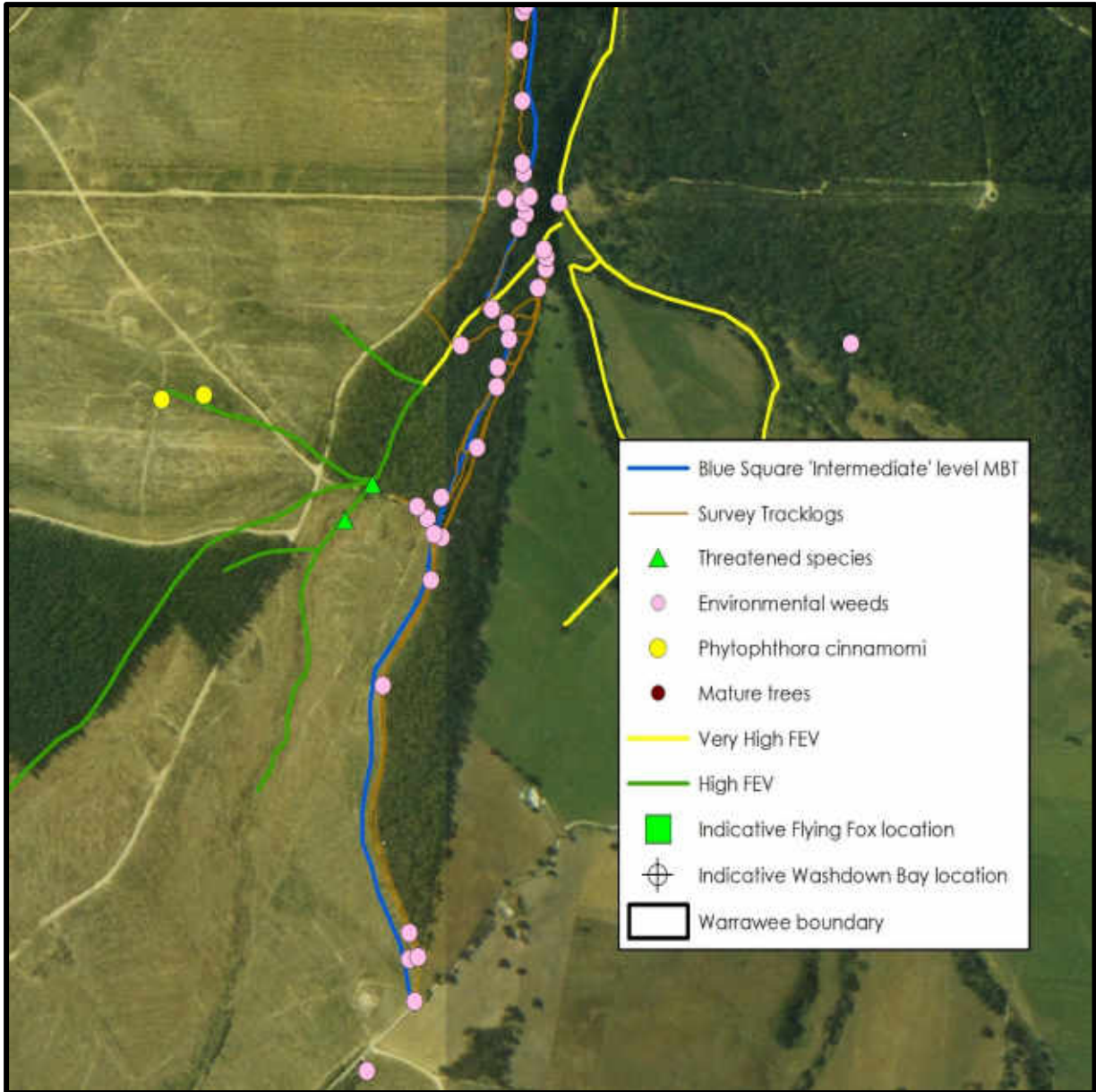
Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia stricta</i>	Hop Wattle			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Astroloma humifusum</i>	Native Cranberry			
<i>Atherosperma moschatum</i>	Sassafras			
<i>Banksia marginata</i>	Silver Banksia			
<i>Bedfordia salicina</i>	Tasmanian Blanketleaf			
<i>Beyeria viscosa</i>	Pinkwood			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Blechnum watsii</i>	Hard Water Fern			
<i>Brachyscome decipiens</i>	Field Daisy			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Correa lawrenceana</i> var. <i>lawrenceana</i>	Mountain Correa			
<i>Dianella tasmanica</i>	Forest Flaxlily			
<i>Dichondra repens</i>	Kidney Weed			
<i>Dicksonia antarctica</i>	Soft Treefern			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Dipodium roseum</i>	Rosy Hyacinth Orchid			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Galium australe</i>	Tangled Bedstraw			
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Gonocarpus teucroides</i>	Forest Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Hystiopteris incisa</i>	Batswing Fern			
<i>Juncus pallidus</i>	Pale Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma inops</i>	Fan Sedge			
<i>Leucopogon virgatus</i>	Twiggy Beardheath			
<i>Lindsaea linearis</i>	Screw Fern			

<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss			
Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Melaleuca squarrosa</i>	Scented Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Microsorium pustulatum</i>	Kangaroo Fern			
<i>Notelaea ligustrina</i>	Native Olive			
<i>Olearia argyphylla</i>	Musk			
<i>Olearia lirata</i>	Forest Daisy			
<i>Oxalis perennans</i>	Native Woodsorrel			
<i>Persoonia juniperinum</i>	Prickly Geebung			
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pinus radiata</i>	Radiata Pine	YES		
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rubus fruticosus</i> var. <i>aggregate</i>	Blackberry	YES		
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Stiped Wallaby Grass			
<i>Sticherus lobatus</i>	Spreading Fan Fern			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Tasmania lanceolata</i>	Mountain Pepper			
<i>Tetradlea pilosa</i>	Black Eyed Susan			
<i>Todea barbara</i>	Austral Kingfern			
<i>Viola hederacea</i>	Native Violet			
<i>Wahlenbergia stricta</i>	Tall Bluebell			

10.10 Lower trail section adjoining Pump Road

Difficulty level: Blue Square 'Intermediate' level

Approximate trail lengths: Blue 1,350m.



Realignment required? No. *Map only requires minor natural values in relation to the proposed Blue trail.*

Additional observations: The proposed trail crosses over a very high freshwater ecosystem value creek. This crossing will require a raised platform or bridge to avoid disturbing the waterways.

avoid

Blackberry is spreading into the native vegetation. A Telstra line is buried along part of the proposed alignment.

of the

The Pump Road section of the alignment is a highly modified and degraded roadside adjacent to a Pine plantation. The roadside verge is covered in dense and Blackberry infestations along the length of the entire road. Spanish Heath is present.

Thisle also

Table 21: Flora species recorded near or within the trail alignment

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acacia terminalis</i>	Sunshine Wattle			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Anagallis arvensis</i>	Scarlet Pimpernel	YES		
<i>Anthoxanthum odoratum</i>	Sweet Vernal	YES		
<i>Astroloma humifusum</i>	Native Cranberry			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Bossiaea prostrata</i>	Creeping Bossiaea			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Centaurium erythraea</i>	Common Centaury	YES		
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Cirsium vulgare</i>	Spear Thistle	YES		
<i>Clematis aristata</i>	Old Man's Beard			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Dactylis glomerata</i>	Cocksfoot	YES		
<i>Dichondra repens</i>	Kidney Weed			
<i>Dichelachne micrantha</i>	Short-haired Plume Grass			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Dipodium roseum</i>	Rosy Hyacinth Orchid			
<i>Epacris impressa</i>	Common Heath			
<i>Erica lusitanica</i>	Spanish Heath	YES		
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Hystiopteris incisa</i>	Batswing Fern			
<i>Juncus pallidus</i>	Pale Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Leptospermum scoparium</i>	Manuka			
<i>Lolium perenne</i>	Perennial Ryegrass			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Olearia lirata</i>	Forest Daisy			
<i>Persoonia juniperina</i>	Prickly Geebung			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pinus radiata</i>	Radiata Pine			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus fruticosus</i> var. aggregate	Blackberry	YES		

Scientific Name	Common Name	Introduced Weed	TSP Act status	EPBC Act status
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Striped Wallaby Grass			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Taraxacum officinale</i>	Dandelion			
<i>Viola hederacea</i>	Native Violet			
<i>Ulex europaeus</i>	Gorse	YES		



Figure 38 & 39: Top: The steep gully of the very high freshwater ecosystem values creek. Facing North West, M.Rose, 21/01/17. Bottom: Dense areas of Spanish Heath growing on the roadsides all the way back into Railton. Facing South West, M.Rose, 21/01/17.

11. Recommendations to avoid, mitigate or offset impacts

The following recommendations aim to assist the Kentish and Latrobe Councils to avoid, mitigate or offset the environmental impacts related to the proposed development activities, whilst also leading to greater conservation outcomes for the native forest reserves.

These recommendations aim to assist the proponents to comply with the following legislation:

1. Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)
2. Environmental Management and Pollution Control Act 1994 (Tasmania)
3. Forest Practice Act 1985 (Tasmania)
4. Nature Conservation Act 2002 (Tasmania)
5. Plant Quarantine Act 1997 (Tasmania)
6. Threatened Species Protection Act 1995 (Tasmania)
7. Weed Management Act 1999 (Tasmania)

Ongoing consultation with the management authorities, the Parks and Wildlife Service (PWS) and Forestry Tasmania (FT) is recommended before proceeding.

The recommendations cover a number of actions which are relevant to the potential activities assessed at this time. The Kentish Council and Latrobe Council are aware that the proposed development could result in unanticipated activities which may require further assessment to consider the environmental impacts.

Trail realignments are recommended in several areas to avoid environmental impacts. These realignments are shown in the maps in the Survey Notes section (pp. 39-64).

11.1 Clearing vegetation

This patch of native forest is an important habitat refuge from a landscape scale perspective. The clearing of understorey vegetation along the proposed trail routes will further fragment the native forest reserves and is likely to impact on the vegetation condition.

The proponent is required to avoid impacts to threatened species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and the Tasmanian Threatened Species Protection Act 1995, and threatened native vegetation communities listed under the Tasmanian Nature Conservation Act 2002.

Under The Forest Practice Act 1985, a Forest Practices Plan is required if more than a hectare or 100 tonnes of timber and residue is cleared. The proposed development activities are expected to clear approximately 2.5 hectares.

As this proposed development is situated on reserved land under the management authority of both the Parks and Wildlife Service (PWS) and Forestry Tasmania (FT), it is a statutory requirement to ensure that all of the appropriate approvals are in place before any clearing of vegetation commences.

Recommended avoidance actions:

- Use the recommended trail realignments to avoid impacts to threatened species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and the Tasmanian Threatened Species Protection Act 1995, and threatened native vegetation communities listed under the Tasmanian Nature Conservation Act 2002.
- Do not clear vegetation within 40m of a class 1 stream – Mersey River (Forest Practices Authority, 2015).
- Do not clear vegetation within the flood zone.
- Engage an experienced environmental consultant to monitor the vegetation clearing phases to ensure this project complies with relevant legislation, particularly near sensitive areas e.g. threatened species, threatened vegetation communities and waterways.
- Engage an experienced environmental consultant to provide onsite training and education for contractors and volunteers.

Recommended mitigation actions:

- Ensure all permits and approvals are confirmed in writing by the appropriate management authorities.
- Stage the vegetation clearing over several years ensuring that less than a hectare is cleared in one year.
- Minimise the width of the trail to be cleared, avoiding the clearing of trees and shrubs.
- Leave fallen trees and timber insitu, only move the minimum width required for the trail.
- Where possible, save resources by utilising existing roads, culverts etc.

Recommended offset actions:

- Revegetation using indigenous species to add structural composition where fire, flood or other disturbance has occurred. Encourage natural regeneration in specific areas.
- Document the baseline condition of the surrounding vegetation communities through conducting Vegetation Condition Assessments.

11.2 Track construction

The track construction phase of the proposed development will need to be planned and implemented with great care to avoid and mitigate ongoing environmental impacts such as soil erosion, weed and disease introduction and spread, and protection of threatened species and freshwater ecosystems.

Track construction of any kind creates greater management obligations and responsibilities. High rainfall events will affect even the most stable of tracks. Soil stabilisation and drainage management will be required to avoid potential soil erosion issues particularly near the creek crossings, the switchbacks and grade reversals, and along the steeper Mersey River sections affected by recent flooding.

The proposed development crosses over several high conservation value creeks which support threatened species. The ground is very uneven and some sections have steep valleys either side of the creeks where the trails are proposed. The construction of bridge structures, above the high water mark, will be necessary to avoid disturbing the creek beds and impacting on EPBC Act listed threatened species.

Once the trail construction is complete, revegetation may be required to stabilise vulnerable slopes and drainage lines, or to beautify points of interest.

Recommended avoidance actions:

- Use the recommended trail realignments to avoid impacts to threatened species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and the Tasmanian Threatened Species Protection Act 1995, and threatened native vegetation communities listed under the Tasmanian Nature Conservation Act 2002.
- Engage an experienced environmental consultant to monitor the track construction phase to ensure this project complies with relevant legislation, particularly near sensitive areas e.g. threatened species, threatened vegetation communities and waterways.

Recommended mitigation actions

- Follow the biosecurity standards listed in the 11.3 Biosecurity risk management section.
- Ensure all permits and approvals are confirmed in writing by the appropriate management authorities.
- Targeted soil sampling should be undertaken to determine the erodibility class of soils along the steeper or potentially vulnerable sections of the trail alignments.
- Ensure that the proposed trails are built and designed to the International Mountain Bicycling Association (IMBA) standards within 'Trail Solutions: IMBA's Guide to Building Sweet Singletrack' (IMBA, 2004).
- Follow the road construction guidelines in the Forest Practices Code 2015.
- Work with the PWS and FT to plan and design suitable bridges over the 8 creeks.
- Minimise the soil disturbance, particularly near waterways and geoconservation sites.
- Seek permission from the management authorities to use logs or rocks cleared from the trail alignment for erosion prevention purposes and use revegetation, matting, log and rock contouring/armouring where required.
- Revegetation species should be restricted to indigenous species ideally grown from seed or vegetative material collected locally. Tubestock supplied from nurseries should be weed and disease free.

- Ensure that the ongoing track maintenance follows the International Mountain Bicycling Association (IMBA) standards within 'Managing Mountain Biking: IMBA's Guide to Providing Sweet Riding' (IMBA, 2004).
- Gravel used from external sources should be certified weed & disease free.
- Ensure adequate resources are allocated for the ongoing management and maintenance of all trails when needed, particularly after high rainfall events or storms.

11.3 Biosecurity risk management

As the Kentish Council & Latrobe Council propose to encourage international, national and state-wide riders to access the mountain bike trails, ongoing biosecurity risk management will be essential. Diligent mountain bike hygiene procedures will need to be implemented with a commitment from the Councils and the local mountain bike community, to adhere to, and encourage these biosecurity standards.

The track construction phase will involve ground disturbance leading to a heightened risk that *Phytophthora cinnamomi*, *Chytrid* fungus and environmental weeds could establish, or spread further, throughout the trail alignments.

The development proposal includes the installation of two closed-loop bike washdown bays at the entry and exit points of the Warrawee Conservation Area. Details describing the design, exact locations, disinfectant chemicals proposed, waste water disposal, overflow and runoff prevention, and ongoing management requirements are yet to be confirmed.

Further planning is required to ensure that this infrastructure adheres to the Tasmanian Biosecurity Strategy 2013-2017 (DPIPWE, 2012) and the biosecurity standards listed below.

Recommended mitigation actions:

- Develop a Biosecurity Management Plan for the proposed development activities based on the guidelines 'Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania' (DPIPWE, 2015).
- Ensure all construction machinery, equipment, tools and clothing to be weed and disease free before entering and exiting the site.
- Contractors and volunteers working on the trails should be required to adhere to the following biosecurity standards:
 1. the 'Keeping it clean - A Tasmanian field hygiene manual to prevent the spread of freshwater pests and pathogens' (DPIPWE, 2013).
 2. the 'Tasmanian Washdown Guidelines for Weed and Disease Control - Machinery, Vehicles & Equipment, Edition 1' (DPIWE, 2004).
- Follow the recommended prescriptions within the Interim *Phytophthora cinnamomi* Management Guidelines (Rudman 2005, pp. 10-15)
- Confirm the design, exact locations, disinfectant chemicals proposed, waste water disposal, overflow and runoff prevention, and ongoing management requirements for the closed-loop washdown bays.
- Consider another closed-loop washdown bay near the Pump Road section of the trail. This area is infested with weeds and is close to the known *Phytophthora cinnamomi* observations. Weed and disease spread is highly probable from this end of the trail into the cleaner areas of native forest towards the Warrawee Conservation Area.
- Ensure adequate resources are allocated for the ongoing biosecurity risk management and maintenance activities.

11.4 Threatened species and threatened native vegetation communities

The proposed development activities have the potential to impact upon a variety of threatened species and one threatened native vegetation community.

The proponent is required to avoid impacts to threatened species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and the Tasmanian Threatened Species Protection Act 1995 (TSP Act), and threatened native vegetation communities listed under the Tasmanian Nature Conservation Act 2002 (NC Act).

High priority should be afforded to protect the critically endangered orchid species previously recorded in the vicinity of recent unauthorised track construction and firewood harvesting activities in the Warrawee Conservation Area. Several possible *Caladenia tonellii* – Robust Fingers orchids were mapped and will require confirmation of identification before proceeding.

All threatened species recorded within the study areas will need to be monitored closely before, during, and after construction to avoid disturbance.

Recommended avoidance actions:

- Seek advice from the Threatened Species Unit and the Forest Practices Authority regarding the Wedge-tailed Eagle nests approximately 540m away from the proposed Warrawee to Railton trail before commencing.
- Targeted surveys and ongoing monitoring is required to determine the presence / absence, and to map the locations of the *Caladenia tonellii* - Robust Fingers and *Caladenia caudata* - Tailed Spider-orchids before commencing.
- Further monitoring of the Burrowing Crayfish observations is required to confirm if the species is the *Engaeus granulatus* – Central North Burrowing Crayfish before commencing.
- Further monitoring is required to confirm the presence / absence of the Spotted-tailed Quoll at the possible den site in the Warrawee Conservation Area before commencing.
- Develop temporary exclusion zones around vulnerable threatened species (e.g. *Caladenia tonellii* - Robust Fingers, *Caladenia caudata* - Tailed Spider-orchid, *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower & *Engaeus granulatus* – Central North Burrowing Crayfish).
- Engage an experienced environmental consultant to monitor the trail alignment, vegetation clearing and track construction phases to ensure this project complies with relevant legislation, particularly near sensitive areas e.g. threatened species, threatened vegetation communities and waterways.
- Engage an experienced environmental consultant to provide onsite training and education for contractors and volunteers involved in the vegetation clearing and track construction phases (provide maps, photos and onsite familiarisation with the threatened species most likely to be impacted by development activities (e.g. *Caladenia tonellii* - Robust Fingers, *Caladenia caudata* - Tailed Spider-orchid, *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower & *Engaeus granulatus* – Central North Burrowing Crayfish).
- Use the recommended trail realignments to avoid impacts to threatened species listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and the Tasmanian Threatened Species Protection Act 1995, and threatened native vegetation communities listed under the Tasmanian Nature Conservation Act 2002.
- Limit the frequency or avoid riding the trails under torch light after dusk. Mountain bike trail riding within the study areas at night could interrupt the foraging activities of several nocturnal species.

Recommended mitigation actions:

- Ongoing monitoring is required along sections of the trail in the Warrawee Conservation Area to ensure the *Pimelea curviflora* var. *gracilis* - Slender Curved Riceflower is protected throughout the construction phase.
- Clearing of understorey vegetation along the trail routes should be restricted to the minimum width, where possible less than 1 metre wide.
- Large logs and timber should not be removed or taken for firewood.
- Do not destroy or remove any dead stags as they are providing valuable perching / hunting habitat.
- Further targeted surveys and ongoing monitoring is required to determine if there are any active *Accipiter novaehollandiae* - Grey Goshawk, *Lathamus discolor* - Swift Parrot, or *Tyto novaehollandiae* - Masked Owl nests within 100m of the proposed development activities.
- If any active nests are found within 100m of the trails, works should stop immediately and further advice should be sought from PWS & FT staff.
- Ensure adequate resources are allocated for ongoing threatened species monitoring activities.

11.5 Environmental weeds

Weed management is required throughout the study areas. The patch size and density of the infestations is manageable at this stage. Disturbance events will encourage introduced species to colonise the bare ground. Without a weed management regime there will be a significant spread of environmental weeds throughout the reserves as a direct result of the trail construction and ongoing use.

The weed management objective should be to eradicate the environmental weed species close to the proposed trails and to contain the weeds on access roads which lead to these trails.

Vehicle and machinery access points are adequate for implementing weed control work ASAP. Weed control methodologies will require a combination of the cut and paint technique, spot spraying, and where appropriate, digging out or hand pulling.

Recommended mitigation actions:

- Develop a best practice management Weed Management Plan for the Warrawee Conservation Area and the Warrawee to Railton trail section.
- All of the weeds mapped within the Warrawee Conservation Area and in close proximity to the Warrawee to Railton trail should be controlled several times before, during and after trail construction to comply with statutory obligations and to significantly reduce the biosecurity risk to the protected native forest reserves.
- Create a managed weed buffer zone around the reserved native forest by controlling the weed infestations, particularly Spanish Heath, along the roadsides linking this proposed development to the towns of Latrobe and Railton.
- Ensure adequate resources are allocated for ongoing weed management activities.

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13. Appendices

Appendix 1. Flora assessments

Please note these species lists are not a complete list of all flora species found within the development footprint. The species lists combine observations made during the field surveys and observations recorded within the NVA database. For a more comprehensive assessment of the indigenous flora present, several surveys should be conducted at different times of the year to account for seasonal variables and active growing seasons.

Flora assessment Warrawee Conservation Area

Table 22: Indigenous flora species Warrawee Conservation Area

Scientific Name	Common Name	Endemic	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia leprosa</i>	Varnish Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia myrtifolia</i>	Redstem Wattle			
<i>Acacia stricta</i>	Hop Wattle			
<i>Acacia terminalis</i>	Sunshine Wattle			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acianthus caudatus</i>	Mayfly Orchid			
<i>Acianthus pusillus</i>	Small Mosquito Orchid			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Ajuga australis</i>	Australian Bugle			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Aristotelia peduncularis</i>	Heart Berry	YES		
<i>Asplenium flabellifolium</i>	Necklace Fern			
<i>Astroloma humifusum</i>	Native Cranberry			
<i>Austrostipa mollis</i>	Soft Spear Grass			
<i>Banksia marginata</i>	Silver Banksia			
<i>Bedfordia salicina</i>	Tasmanian Blanketleaf	YES		
<i>Beyeria viscosa</i>	Pinkwood			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Blechnum watsii</i>	Hard Water Fern			
<i>Bossiaea prostrata</i>	Creeping Bossiaea			
<i>Brachyscome decipiens</i>	Field Daisy			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Caladenia carnea</i>	Dusky Fingers			
<i>Caladenia caudata</i>	Tailed Spider-orchid	YES	Vulnerable	Vulnerable
<i>Caladenia dilatata</i>	Green Spider-orchid			
<i>Caladenia tonellii</i>	Robust Fingers	YES	Endangered	Critically Endangered
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Cassytha melantha</i>	Large Dodderlaurel			
<i>Cassytha pubescens</i>	Downy Dodderlaurel			
<i>Chiloglottis grammata</i>	Small Bird Orchid	YES		
<i>Chiloglottis reflexa</i>	Autumn Bird Orchid			
<i>Clematis microphylla</i>	Small-leaf Clematis			
<i>Clematis aristata</i>	Old Man's Beard			
<i>Comesperma volubile</i>	Blue Love Creeper			

Scientific Name	Common Name	Endemic	TSP Act status	EPBC Act status
<i>Coprosma quadrifida</i>	Native Currant			
<i>Coronidium scorpioides</i>	Button Everlasting			
<i>Correa lawrenceana</i> var. <i>lawrenceana</i>	Mountain Correa	YES		
<i>Cryptostylis subulata</i>	Large Tongue-orchid			
<i>Cyathea australis</i>	Rough Tree Fern			
<i>Cyperus lucidus</i>	Leafy Flat-sedge			
<i>Davesia latifolia</i>	Hop Bitterpea			
<i>Davesia ulicifolia</i>	Yellow Spiky Bitter Pea			
<i>Dianella revoluta</i>	Black Anther Flaxlily			
<i>Dianella tasmanica</i>	Forest Flaxlily			
<i>Dichondra repens</i>	Kidney Weed			
<i>Dicksonia antarctica</i>	Soft Treefern			
<i>Diplarrena latifolia</i>	Western Flag Iris	YES		
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Dipodium roseum</i>	Rosy Hyacinth Orchid			
<i>Drosera peltata</i> ssp. <i>auriculata</i>	Tall Sundew			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Eleocharis sphacelata</i>	Tall Spike-sedge			
<i>Epacris franklinii</i>	Western Riverheath	YES		
<i>Epacris impressa</i>	Common Heath			
<i>Eucalyptus amygdalina</i>	Black Peppermint	YES		
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Galium australe</i>	Tangled Bedstraw			
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Gleichenia dicarpa</i>	Pouched Coralfern			
<i>Glossodia major</i>	Waxlip Orchid			
<i>Glycine clandestina</i>	Twining Glycine			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Goodenia ovata</i>	Hop Native Primrose			
<i>Goodia lotifolia</i>	Native Broom			
<i>Hymenophyllum cupressiforme</i>	Common Filmyfern			
<i>Hystiopteris incisa</i>	Batswing Fern			
<i>Indigofera australis</i>	Native Indigo			
<i>Juncus pallidus</i>	Pale Rush			
<i>Juncus procerus</i>	Great Rush			
<i>Kennedia prostrata</i>	Running Postman			
<i>Lachnagrostis species</i>	Blown Grass			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma ensiforme</i>	Arching Sword Sedge			
<i>Lepidosperma inops</i>	Fan Sedge	YES		
<i>Leptomeria drupacea</i>	Erect Currantbush			
<i>Leptospermum scoparium</i>	Manuka			
<i>Leptospermum lanigerum</i>	Woolly Teatree			
<i>Leptospermum glaucescens</i>	Smoky Teatree			
<i>Leucopogon virgatus</i>	Twiggy Beardheath			
<i>Lindsaea linearis</i>	Screw Fern			
<i>Linum marginale</i>	Native Flax			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant	YES		
<i>Luzula</i> spp.	Wood Rush			

Scientific Name	Common Name	Endemic	TSP Act status	EPBC Act status
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Melaleuca squarrosa</i>	Scented Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Microsorium pustulatum</i>	Kangaroo Fern			
<i>Microtis species</i>	Onion Orchid			
<i>Monotoca glauca</i>	Goldey Wood			
<i>Notelaea ligustrina</i>	Native Olive			
<i>Nothofagus cunninghamii</i>	Myrtle Beech			
<i>Notogrammitis heterophylla</i>	Gypsy Fern			
<i>Olearia argyphylla</i>	Musk			
<i>Olearia lirata</i>	Forest Daisy			
<i>Oxalis perennans</i>	Native Woodsorrel			
<i>Pimelea curviflora</i> var. <i>gracilis</i>	Slender Curved Riceflower		Rare	
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pimelea linifolia</i>	Slender Riceflower			
<i>Pimelea nivea</i>	Bushmans Bootlace	YES		
<i>Pittosporum bicolor</i>	Cheesewood			
<i>Poa labillardieri</i>	Silver Tussock Grass			
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pratia pedunculata</i>	Star Creeper			
<i>Pteridium esculentum</i>	Bracken			
<i>Pterostylis pedunculata</i>	Maroon Greenhood			
<i>Pterostylis nutans</i>	Nodding Greenhood			
<i>Pultenaea daphnoides</i>	Heart Leaf Bush Pea			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rumohra adiantiformis</i>	Leathery Shield Fern			
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Stiped Wallaby Grass			
<i>Stackhousia monogyna</i>	Forest Candles			
<i>Stellaria pungens</i>	Prickly Starwort			
<i>Sticherus tener</i>	Silky Fan Fern			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Tasmania lanceolata</i>	Mountain Pepper			
<i>Tetralochea pilosa</i>	Black Eyed Susan			
<i>Thelymitra</i> spp.	Sun Orchid			
<i>Themeda triandra</i>	Kangaroo Grass			
<i>Todea barbara</i>	Austral Kingfern			
<i>Viola hederacea</i>	Native Violet			
<i>Wahlenbergia stricta</i>	Tall Bluebell			
<i>Zieria arborescens</i>	Stinkwood			

Flora assessment Warrawee to Railton trail

Table 23: Indigenous flora species observed Warrawee to Railton trail

Scientific Name	Common Name	Endemic	TSP Act status	EPBC Act status
<i>Acacia dealbata</i>	Silver Wattle			
<i>Acacia leprosa</i>	Varnish Wattle			
<i>Acacia melanoxylon</i>	Blackwood			
<i>Acacia stricta</i>	Hop Wattle			
<i>Acacia terminalis</i>	Sunshine Wattle			
<i>Acacia verticillata</i>	Prickly Moses			
<i>Acaena novae-zelandiae</i>	Buzzy			
<i>Acrotriche serrulata</i>	Ants Delight			
<i>Adiantum aethiopicum</i>	Maidenhair Fern			
<i>Allocasuarina littoralis</i>	Black Sheoak			
<i>Amperea xiphoclada</i>	Broom Spurge			
<i>Astroloma humifusum</i>	Native Cranberry			
<i>Atherosperma moschatum</i>	Sassafras			
<i>Banksia marginata</i>	Silver Banksia			
<i>Bedfordia salicina</i>	Tasmanian Blanketleaf			
<i>Beyeria viscosa</i>	Pinkwood			
<i>Billardiera mutabilis</i>	Green Appleberry			
<i>Blechnum nudum</i>	Fishbone Fern			
<i>Blechnum wattsii</i>	Hard Water Fern			
<i>Brachyscombe decipiens</i>	Field Daisy			
<i>Bursaria spinosa</i>	Prickly Box			
<i>Calochlaena dubia</i>	Rainbow Fern			
<i>Carex appressa</i>	Tall Sedge			
<i>Cassinia aculeata</i>	Dolly Bush			
<i>Chiloglottis grammata</i>	Small Bird Orchid			
<i>Clematis aristata</i>	Old Man's Beard			
<i>Coprosma quadrifida</i>	Native Currant			
<i>Correa lawrenceana</i> var. <i>lawrenceana</i>	Mountain Correa			
<i>Dianella tasmanica</i>	Forest Flaxlily			
<i>Dichelachne micrantha</i>	Short-haired Plume Grass			
<i>Dichondra repens</i>	Kidney Weed			
<i>Dicksonia antarctica</i>	Soft Treefern			
<i>Diplarrena moraea</i>	White Flag Iris			
<i>Dipodium roseum</i>	Rosy Hyacinth Orchid			
<i>Drymophylla cyanocarpa</i>	Turquoise Berry			
<i>Epacris impressa</i>	Common Heath			
<i>Eucalyptus amygdalina</i>	Black Peppermint			
<i>Eucalyptus obliqua</i>	Messmate Stringybark			
<i>Eucalyptus ovata</i>	Swamp Gum			
<i>Eucalyptus viminalis</i>	White Gum			
<i>Exocarpus cupressiformis</i>	Native Cherry			
<i>Gahnia grandis</i>	Cutting Grass			
<i>Galium australe</i>	Tangled Bedstraw			
<i>Geranium solanderi</i>	Solander's Geranium			
<i>Gleichenia dicarpa</i>	Pouched Coralfern			
<i>Gonocarpus tetragynus</i>	Common Raspwort			
<i>Gonocarpus teucrioides</i>	Forest Raspwort			
<i>Goodenia lanata</i>	Trailing Native Primrose			
<i>Hystiopteris incisa</i>	Batswing Fern			

Scientific Name	Common Name	Endemic	TSP Act status	EPBC Act status
<i>Juncus pallidus</i>	Pale Rush			
<i>Lepidosperma elatius</i>	Tall Sword Sedge			
<i>Lepidosperma inops</i>	Fan Sedge			
<i>Leucopogon virgatus</i>	Twiggy Beardheath			
<i>Lindsaea linearis</i>	Screw Fern			
<i>Lomandra longifolia</i>	Sagg			
<i>Lomatia tinctoria</i>	Guitar Plant			
<i>Lycopodium deuterodensum</i>	Bushy Clubmoss			
<i>Melaleuca ericifolia</i>	Swamp Paperbark			
<i>Melaleuca squarrosa</i>	Scented Paperbark			
<i>Microlaena stipoides</i>	Weeping Grass			
<i>Microsorium pustulatum</i>	Kangaroo Fern			
<i>Notelaea ligustrina</i>	Native Olive			
<i>Olearia argyphylla</i>	Musk			
<i>Olearia lirata</i>	Forest Daisy			
<i>Oxalis perennans</i>	Native Woodsorrel			
<i>Persoonia juniperinum</i>	Prickly Geebung			
<i>Pimelea drupacea</i>	Cherry Riceflower			
<i>Pimelea humilis</i>	Common Riceflower			
<i>Pittosporum bicolor</i>				
<i>Polystichum proliferum</i>	Mother Shield Fern			
<i>Pomaderris apetala</i>	Common Dogwood			
<i>Pteridium esculentum</i>	Bracken			
<i>Pultenaea gunnii</i>	Golden Bush Pea			
<i>Pultenaea juniperum</i>	Prickly Beauty			
<i>Rubus parvifolius</i>	Native Raspberry			
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	Stiped Wallaby Grass			
<i>Sticherus lobatus</i>	Spreading Fan Fern			
<i>Stylidium graminifolium</i>	Narrowleaf Triggerplant			
<i>Tasmannia lanceolata</i>	Mountain Pepper			
<i>Tetralthea pilosa</i>	Black Eyed Susan			
<i>Todea barbara</i>	Austral Kingfern			
<i>Viola hederacea</i>	Native Violet			
<i>Wahlenbergia stricta</i>	Tall Bluebell			

Appendix 2. Fauna assessment

The fauna assessments were limited in sampling method and was based on opportunistic observations rather than targeted surveys. Further targeted surveys are recommended.

Fauna assessment Warrawee Conservation Area

Table 24: Indigenous fauna observed Warrawee Conservation Area

Scientific Name	Common Name	Endemic	Evidence if not seen or heard
<i>Acanthiza pusilla</i>	Brown Thornbill		
<i>Accipiter novaehollandiae</i>	Grey Goshawk		
<i>Anthochaera paradoxa</i>	Yellow Wattlebird	YES	
<i>Artamus cyanopterus</i>	Dusky Woodswallow		
<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo		
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo		
<i>Colluricincla harmonica</i>	Grey Shrike Thrush		
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike		
<i>Corvus tasmanicus</i>	Forest Raven		
<i>Cracticus torquatus</i>	Grey Butcherbird		
<i>Danaus plexippus</i>	Wanderer		
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll		Scat
<i>Gymnorhina tibicen</i>	Australian Magpie		
<i>Hirudo neoxena</i>	Welcome Swallow		
<i>Isoodon obesulus</i>	Southern Brown Bandicoot		
<i>Junonia vallida</i>	Meadow Argus		
<i>Lichenostomus flavicollis</i>	Yellow-throated Honeyeater	YES	
<i>Lymnodynastes dumerili</i>	Eastern Banjo Frog		
<i>Malurus cyaneus</i>	Superb Fairy Wren		
<i>Melithreptus affinis</i>	Black-headed Honeyeater	YES	
<i>Notechis scutatus</i>	Tiger Snake		
<i>Ornithorhynchus anatinus</i>	Platypus		
<i>Pardalotus striatus</i>	Striated Pardalote		
<i>Petroica rodinogaster</i>	Pink Robin		
<i>Phaps elegans</i>	Brush Bronzewing		
<i>Platycercus caledonicus</i>	Green Rosella	YES	
<i>Pseudocheirus peregrinus</i>	Ringtail Possum		Scats
<i>Rhipidura fuliginosa</i>	Grey Fantail		
<i>Sarcophilus harrisi</i>	Tasmanian Devil	YES	NVA records & Scats
<i>Sericornis humilis</i>	Tasmanian Scrubwren	YES	
<i>Strepera versicolour</i>	Grey Currawong		
<i>Tachyglossus aculeatus</i>	Echidna		Diggings
<i>Tiliqua nigrolutea</i>	Blotched Blue-tongue Lizard		
<i>Thylogale billardierii</i>	Tasmanian Pademelon	YES	
<i>Trichosurus vulpecular</i>	Common Brushtail Possum		Scats
<i>Tyto novaehollandiae</i>	Masked Owl		NVA records
<i>Vombatus ursinus subsp. tasmaniensis</i>	Common Wombat		Scats
<i>Zosterops lateralis</i>	Silvereeye		

Fauna assessment Warrawee to Railton trail

Table 25: Indigenous fauna observed Warrawee to Railton trail

Scientific Name	Common Name	Endemic	Evidence if not seen or heard
<i>Acanthiza pusilla</i>	Brown Thornbill		
<i>Calyptorhynchus funereus</i>	Yellow-tailed Black Cockatoo		
<i>Colluricincla harmonica</i>	Grey Shrike Thrush		
<i>Corvus tasmanicus</i>	Forest Raven		
<i>Junonia vallida</i>	Meadow Argus		
<i>Malurus cyaneus</i>	Superb Fairy Wren		
<i>Melithreptus affinis</i>	Black-headed Honeyeater	YES	
<i>Petroica rodinogaster</i>	Pink Robin		
<i>Phaps elegans</i>	Brush Bronzewing		
<i>Platycercus caledonicus</i>	Green Rosella	YES	
<i>Pseudocheirus peregrinus</i>	Ringtail Possum		Scats
<i>Rhipidura fuliginosa</i>	Grey Fantail		
<i>Sarcophilus harrisii</i>	Tasmanian Devil	YES	NVA records & Scats
<i>Sericornis humilis</i>	Tasmanian Scrubwren	YES	
<i>Tachyglossus aculeatus</i>	Echidna		Diggings
<i>Thylogale billardierii</i>	Tasmanian Pademelon	YES	
<i>Trichosurus vulpecular</i>	Common Brushtail Possum		Scats
<i>Zosterops lateralis</i>	Silvereye		

Appendix 3. Introduced fauna

Introduced fauna Warrawee Conservation Area

Table 26: Introduced fauna observed Warrawee Conservation Area

Scientific Name	Common Name
<i>Canis lupus familiaris</i>	Dog
<i>Carduelis</i>	European Goldfinch
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Turdus merula</i>	Common Blackbird

Whilst there were no sightings of feral cats - *Felis catus* during the surveys, due to the proximity to nearby residential dwellings it is highly likely that they utilise the native forest for hunting.

Cattle hoof prints and fresh dung was observed throughout the Northern part of the reserve.

Introduced fauna Warrawee to Railton trail

Table 27: Introduced fauna observed Warrawee to Railton trail

Scientific Name	Common Name
<i>Canis lupus familiaris</i>	Dog
<i>Carduelis</i>	European Goldfinch
<i>Dacelo novaeguineae</i>	Laughing Kookaburra
<i>Turdus merula</i>	Common Blackbird

Whilst there were no sightings of feral cats - *Felis catus* during the surveys, due to the proximity to nearby residential dwellings it is highly likely that they utilise the native forest for hunting.

Appendix 4. Map of all recorded data

Warrawee to Railton - All recorded data

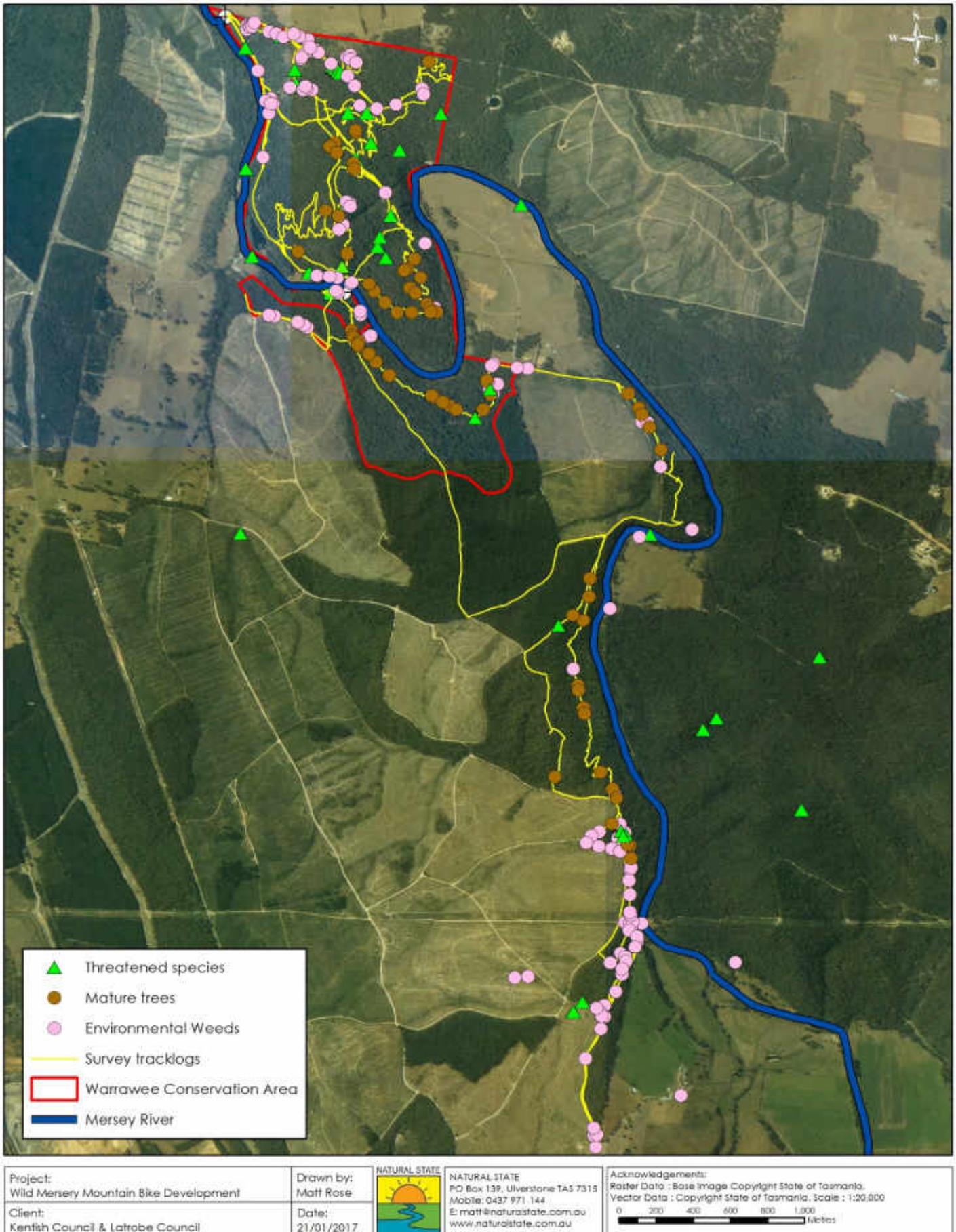


Figure 40: Map of all recorded data