Representation 63

From: Planning Policy
To: Break O Day Office Admin
Cc: Carroll, Patrick
Subject: State Growth submission - Break O"Day Draft Local Provisions Schedule
Date: Monday, 13 December 2021 8:48:34 AM
Attachments: image001.png
State Growth Submission - Break O Day LPS.pdf

To the General Manager,

Please find attached correspondence from the Director, Transport Systems & Planning Policy, Department of State Growth regarding the Break O'Day Draft Local Provisions Schedule.

Should you have any questions or queries, please do not hesitate in contacting us.

Kind Regards,

Patrick Carroll | Principal Land Use Planning Analyst
Transport Systems and Planning Policy Branch | Department of State Growth
Level 1, 2 Salamanca Square, Hobart TAS 7000 | GPO Box 536, Hobart TAS 7001
Phone: (03) 6166 4472
www.stategrowth.tas.gov.au

Department of State Growth

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Our Ref: D21/324303 Your Ref:

Tasmanian Government

Mr John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216

Via email: admin@bodc.tas.gov.au

Dear Mr Brown,

Break O'Day Draft Local Provisions Schedule

Thank you for the opportunity to comment on the Break O'Day Draft Local Provisions Schedule ('Draft LPS').

The Department of State Growth ('State Growth') has reviewed the Draft LPS, supporting mapping and overlay information and believes it largely reflects a sound translation from the *Break O'Day Interim Planning Scheme 2013* in accordance with the Tasmanian Planning Commission's *Guideline No. 1 Local Provisions Schedule (LPS) zone and code application*.

A detailed review has however highlighted a small number of issues that will require rectification or further discussion with Council officers and the Tasmanian Planning Commission. These issues are outlined in the attached document for your consideration.

Please do not hesitate to contact Patrick Carroll, Principal Land Use Planning Analyst at Patrick.Carroll@stategrowth.tas.gov.au or on 03 6166 4472 who can arrange for relevant officers to respond to the matters raised in this submission.

Yours sincerely

James Verrier
Director, Transport Systems and Planning Policy

10 December 2021

Attachment 1 – State Growth Comments – Break O'Day Draft Local Provisions Schedule

Attachment 1 – State Growth Comments – Break O'Day Draft Local Provisions Schedule

State Road Network

Zoning of the State Road Network

Consistent with UZ1 of Guideline No. 1 – Local Provisions Schedule (LPS): zone and code application (the 'Guidelines')[1] the Tasman Highway, Esk Main Road and Elephant Pass Road appear to be accurately zoned Utilities, based on the State Road Casement layer published on the LIST. This layer was developed in 2018 to assist Councils in drafting their LPSs, with the intent to clearly identify land forming part of the State Road network for inclusion within the Utilities Zone.

However, since 2018, there have been changes to the State Road network. As detailed in the Tasmanian Government Gazette on 20 October 2021, and a proclamation made under section 7 of the Roads and Jetties Act 1935, Binalong Bay Tourist Road has been declared a State Subsidiary Road, and consists of:

- Quail Street, from its intersection with Cecilia Street, St Helens, to its intersection with Binalong Bay Road, St Helens, for a distance of 0.453 km; and
- Binalong Bay Road, from its intersection with Quail Street, St Helens, to a point 108m south of its intersection with Cray Court and Main Road, Binalong Bay, for a distance of 8.367km.

Subsequently, Binalong Bay Tourist Road is not shown in the State Road Casement layer published on the LIST. As the road now forms part of the State Road network, Binalong Bay Tourist Road should be appropriately zoned Utilities.

The commencement and termination of Binalong Bay Tourist Road are depicted in green in Figures 1 & 2, below:

Figure 1. Commencement of Binalong Bay Tourist Road, as it meets Quail Street.

[1] Tasmanian Planning Commission (2018) Guideline No. 1 – Local Provisions Schedule (LPS): zone and code application. Version 2.0. Accessed at https://www.planning.tas.gov.au/__data/assets/pdf_file/0006/583854/Section-8A-Guideline-No.-1-Local-Provisions-Schedule-LPS-zone-and-code-application-version-2.pdf

Figure 2. Termination of Binalong Bay Tourist Road, 108m to the south of the Cray Court intersection.

Application of Road and Railway Attenuation Area

State Growth supports Council's approach to rely on the written application of the Road and Railway Attenuation Area provisions, rather than applying the Attenuation Area via overlay mapping. The latter approach would require the overlay mapping to be updated via a Planning Scheme Amendment each time a parcel of land is acquired or disposed of for road development purposes.

The approach taken ensures consistency with other approved LPSs, such as Sorell, Brighton, Meander Valley, West Coast, Circular Head, Burnie, Central Highlands and Devonport.

Application of Natural Assets Code Overlay

There are several instances where the Natural Assets Code overlay maps Priority Vegetation Areas over the existing carriageway of the State Road Network. Application of this overlay to the State Road Network has the potential to constrain future use and development of the road network.

As per NAC 11 of the Guidelines, it is requested that - unless sufficient justification can be provided - the Natural Assets Code Overlay Maps be reviewed to ensure that Priority Vegetation Areas do not overlap with any State Roads, which are appropriately zoned Utilities.

It is recommended that the draft Natural Assets Code overlay maps are removed from all State Road parcels.

Resources

Mineral Resources

The land contained in CT 85925/1 on Lottah Road, Weldborough is proposed to be zoned Utilities (see Figure 3). This land is subject to Mining Lease 30M/1997.

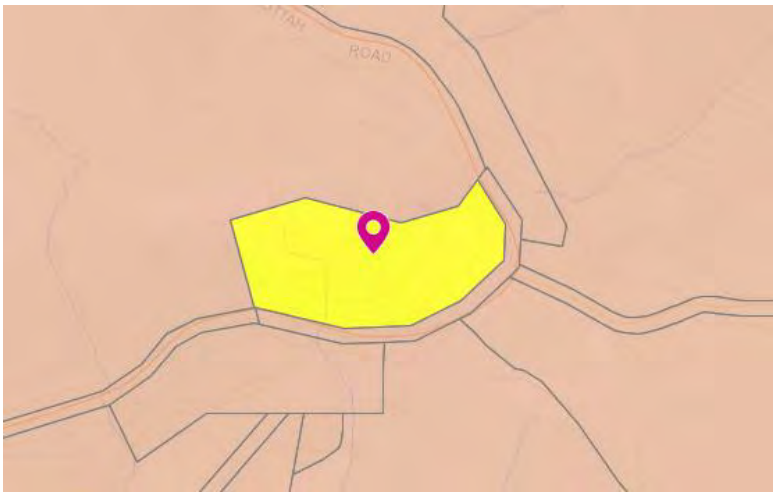


Figure 3. Proposed zoning of CT 85925/1. Yellow denotes the Utilities Zone; brown denotes the Rural Zone.

Extractive Industries is a prohibited use within the Utilities Zone. As such, unless there is a specific need for this land to be zoned Utilities, it is recommended that the land be zoned Rural, consistent with the zoning of adjoining land.

Forestry

There are several examples of parcels of land that are subject to a Private Timber Reserve which are proposed to be included within a zone other than the Rural Zone.

Under the Break O'Day Interim Scheme 2013, all Private Timber Reserves are currently zoned Rural Resource.

RZ 1 of the Guidelines states:

> *The Rural Zone should be applied to land in non-urban areas with limited or no potential for agriculture as a consequence of topographical, environmental or other characteristics of the area, and which is not more appropriately included within the Landscape Conservation Zone or Environmental Management Zone for the protection of specific values.*

It is State Growth's position that Private Timber Reserves are set aside specifically for forestry purposes, and thus have limited potential for agriculture. As such, Private Timber Reserves should be zoned Rural, consistent with RZ 1 of the Guidelines.

From:	John Brown
To:	Break O Day Office Admin
Subject:	Fwd: BOD Local Provisions - Representation from Break O"Day Chamber of Commerce and Tourism
Date:	Friday, 10 December 2021 4:57:24 PM
Attachments:	Local Provisions - Representation - 10 December 2021.pdf Local Provisions - Attachment to representation from BODCOC - 10 December 2021.pdf

Sent from my iPhone

Begin forwarded message:

From: St Helens Chamber <sthelenscoc@gmail.com>
Date: 10 December 2021 at 4:30:28 pm AEDT
To: John Brown <John.Brown@bodc.tas.gov.au>
Subject: BOD Local Provisions - Representation from Break O'Day Chamber of Commerce and Tourism

Mr John Brown
General Manager
Break O'Day Council

Please find attached the representation from the Break O'Day Chamber of Commerce and Tourism in relation to the draft Break O'Day Local Provision Schedule, and an attachment which forms part of that representation.

Yours sincerely,

Break O'Day Chamber of Commerce and Tourism Inc
E: sthelenscoc@gmail.com
W: www.visitsthelenstasmania.com.au

Break O'Day
Chamber of Commerce & Tourism

10th December 2021

Mr. John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
St Helens 7216

Via email – admin@bodc.tas.gov.au

Dear Mr Brown,

On behalf of the Break O'Day Chamber of Commerce (the Chamber) we write to make formal representation to the draft Local Provisions Schedule (LPS) for the Break O'Day municipal area. The following representation is submitted as part of the formal process required of the Council by the Tasmanian Planning Commission (TPC) under Section 35B of the Land Use Planning Approvals Act 1993 (the Act). We thank Council and the TPC for the opportunity to make a formal representation.

Included in this representation is the report by Woolcott Surveyors and we fully support and endorse the content and argument presented.

In addition, the Chamber has identified several areas of concern in consideration of the economic and social outcomes that would result if this draft is accepted in its current form.

The most concerning aspect of this draft is the wholesale, simplistic shift of the Environmental Living Zone (ELZ) to the newly created Landscape Conservation Zone (LCZ) without consideration of the historic development that has taken place over the over the past two decades.

This would appear to be in contravention to the LCZ 8A guidelines:

"The Landscape Conservation Zone is not a replacement zone for the Environmental Living Zone in interim planning schemes."

Residential dwellings are permitted in the current ELZ whereas in the new LCZ they are **discretionary and consequently not a guaranteed use**.

The Chamber has concerns this will have some serious impacts on the Break O'Day economy such as:

1. Developers or home builders may be reluctant to purchase land when there is no certainty of being able to build a dwelling;
2. A reduction in available housing land for people looking to move to Break O'Day further adding to the current housing shortage; (the fundamental solution for the housing crisis begins with the access to land for development).
3. Land currently zoned ELZ may lose value when transferred to LCZ with the prospect of building a dwelling in doubt;
4. Confidence that Break O'Day as a place to invest in or move to will be damaged;
5. Financial institutions and banks will be reluctant to finance potential home builders and developers in LCZ where the fundamental right to build is not guaranteed.

The Break O'Day municipality has worked very hard to promote our region with their strong investment in local infrastructure, and attractions such as the Mountain Bike Trails and is currently enjoying a buoyant economy that is attracting visitors and families to relocate to our community.

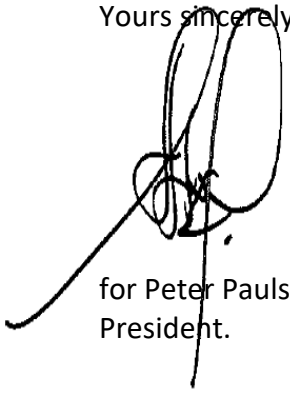
At its core, removing an existing 'right to build' and replacing it with the term 'discretionary' would act as a clear disincentive for any investment either private or commercial. The Chamber is concerned that by casting doubt on the residential use of large areas of land in Break O'Day will have a long lasting impact on the local economy.

It is important when considering decisions such as this to consider the desires of the government of the day when the Act that directed a Tasmanian Planning Scheme (TPS) to be created. On the 24th of September 2015, the Minister for Planning and Local Government the **Hon. Peter Gutwein** stated the following:

"For too long, the planning system has acted like a handbrake on our economy. We want to fix the planning system to attract investment, grow our economy and create jobs.'

We respectfully request the council revise their draft plan and give serious consideration to our concerns and those presented by Woolcott Surveyors and supported by legitimate, meaningful consultation.

Yours sincerely,



for Peter Paulsen
President.

WOOLCOTT SURVEYS

EAST COAST SURVEYING

06/12/2021

Planning Department
Break O'Day Council

Via Email: admin@bodc.tas.gov.au

RE: BREAK O'DAY LOCAL PROVISON SCHEDULE - REPRESENTATION

To The General Manager

We wish to provide this submission in relation to the Break O'Day Local Provision Schedule (LPS), which is currently on public exhibition until the 13th December 20201.

East Coast Surveying (established in 1987), is located within the St Helens Township, and has provided subdivision and Town Planning services to the Break O'Day community for over 30 years. In preparing this submission, we believe we are well placed in our understanding of the municipality given our work in the area over many years.

Our representation has sought to raise general issues, which warrant further examination given the potential ramifications that future use and development will experience.

In making this representation, we wish to congratulate Council on the LPS work to date, and acknowledge the challenges faced in transitioning from the existing *Break O'Day Interim Planning Scheme 2013.*

Section 32 (2) of the *Land Use Planning and Approvals Act 1993* (the Act) requires that a Council apply an LPS to a municipal area, which includes zoning and code overlays. To assist Council in preparing the LPS through the application of zone and code overlays, the Minister has issued guidelines under section 8a of the Act. These guidelines are regularly referred to throughout this submission.

Application of the Landscape Conservation Zone (LCZ)
The LCZ is a new zone which has been introduced under the Tasmanian Planning Scheme (TPS). It does not exist under the existing Interim Planning Scheme. In applying the LCZ, Council has stated that:

"The LPS provides adequate protection of natural and physical resources through, applying the Landscape Conservation Zone where land was located in the Environmental Living Zone and the natural and landscape values support this and where otherwise justified" – page 8.

"All allotments, unless detailed otherwise or included in a particular purpose zone, within the ELZ in the Interim Planning Scheme have translated to the LCZ in the draft LPS" – page 67.

Based on the comments of page 67 in the supporting report, Council has generally rolled over all land currently within an ELZ into the LCZ as part of the draft LPS.

In relation to the LCZ, the 8A guidelines provide the following statements to provide direction for Council in appropriately applying the zone:

LCZ 1 *The Landscape Conservation Zone should be applied to land with landscape values that are identified for protection and conservation, such as bushland areas, large areas of native vegetation, or areas of important scenic values, where some small-scale use or development may be appropriate.*

LCZ 2 *The Landscape Conservation Zone may be applied to:*

a) *large areas of bushland or large areas of native vegetation which are not otherwise reserved, but contains threatened native vegetation communities, threatened species or other areas of locally or regionally important native vegetation;*

b) *land that has significant constraints on development through the application of the Natural Assets Code or Scenic Protection Code; or*

c) *land within an interim planning scheme Environmental Living Zone and the primary intention is for the protection and conservation of landscape values.*

LCZ 3 *The Landscape Conservation Zone may be applied to a group of titles with landscape values that are less than the allowable minimum lot size for the zone.*

LCZ 4 *The Landscape Conservation Zone should not be applied to:*

a) *land where the priority is for residential use and development (see Rural Living Zone); or*
b) *State-reserved land (see Environmental Management Zone).*

The 8A guidelines further state:

The Landscape Conservation Zone is not a replacement zone for the Environmental Living Zone in interim planning schemes. There are key policy differences between the two zones. The Landscape Conservation Zone is not a large lot residential zone, in areas characterised by native vegetation cover and other landscape values. Instead, the Landscape Conservation Zone provides a clear priority for the protection of landscape values and for complementary use or development, with residential use largely being discretionary.

One of our primary concerns is that Council appears to have applied the LCZ to the majority of residential lots which are currently within the ÉLZ under the Interim Scheme. While we note some existing ELZ areas are shown as going into a PPZ or LDRZ, there is no doubt that the majority of existing ELZ areas, are not proposed for residential zoning under the LPS.

In so doing, Council is clearly prioritizing the protection of landscape values over the existing and established residential uses that many of these lots provide for. In our opinion, the LCZ should be applied to large privately owned natural areas which are generally undeveloped, and demonstrate there are natural or landscape values which require protection.

Large ELZ lots which contain existing residential development, whilst also retaining native vegetation, should not automatically be assigned to the LCZ, regardless of whether they are in a coastal location.

Transitioning residential properties into a non-residential zone, primarily based on location and existing zoning, will diminish and water down land owners existing residential rights. Residential use within the LCZ will be discretionary. While a permitted pathway is provided for those lots which provide an existing building area as shown on a sealed plan, very few applications will meet this permitted status. Subsequently, any residential development not meeting the requirements of clause 7.2.1 of the scheme, will undergo public exhibition and can be refused at the discretion of Council.

The correct application of the natural assets and scenic codes within particular areas provides sufficient protection of such values without the need to apply a non-residential zone. To assist in illustrating this point, the following areas have been highlighted as examples where we believe the LCZ should not be applied:

The Gardens Road, Binalong Bay/ The Gardens
Land to the north of Binalong Bay Road, within the area along Gardens Road, is currently within the ELZ under the Interim Scheme. The majority of lots within this area, which provide access onto Gardens Road, contain established residential single dwellings. Only a very small percentage of these developed lots are included within the current Priority Habitat overlay under the Interim Scheme.

The owners of these areas have chosen a residential lifestyle within a natural setting. The primary intent and use of the land remains for residential purposes. Many of the lots are significantly cleared with hazard management areas around existing buildings. Protection of any values can be provided by the application of the Natural Assets code, or via the Scenic Management Tourist Road Corridor provisions which currently apply to Gardens Road. The underlying zoning for these developed lots should be residential, with many of the lots having a size of around 1 - 2ha. These are lifestyle properties within natural areas. Appropriate retention of native vegetation within the Rural Living Zone (RLZ) and ELZ was one of the recommendations put forward by the St Helens Structure Plan (page 44). Retaining vegetation did not remove their residential intent.

By means of illustration, I have provided a basic interpretation of how we believe the LPZ zoning should be applied. Those lots which contain established residential uses should be placed in the RLZ, as priority should be given to the existing use and development which has been approved on the land. We agree that it would be appropriate for the larger lots (i.e. 10ha+) on the periphery of this area to have the LCZ applied.

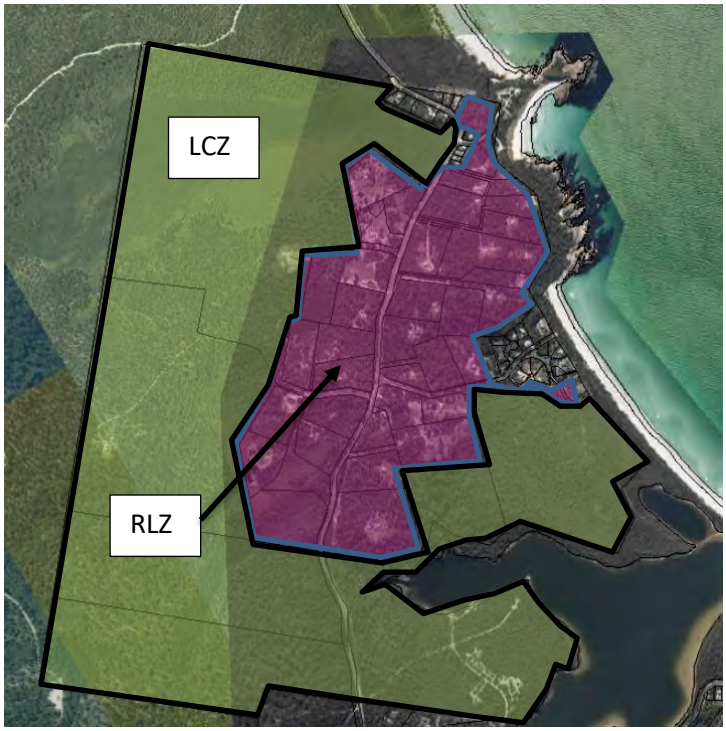


Figure 1 - Aerial view of a portion of the 'Gardens' with our opinion on future LPS zonings.

Application of the RLZ to this area would be consistent with RLZ 2, which states:

RLZ 2: *The Rural Living Zone should not be applied to land that is not currently within an interim planning scheme Rural Living zone unless:*

b) The land is within the Environmental Living Zone in an interim planning scheme and the strategic intention is for residential use and development within a rural setting, and a similar minimum allowable lot size is being applied, such as applying to Rural Living Zone D where the minimum lot size is 10ha or greater.

The lots are within a residential area, characterised by single dwellings in a natural environment. Recognition of this use and development is appropriate by application of the RL zone.

Sunshine Court – St Helens

The draft LPS shows that Sunshine Court, located off Binalong Bay Rd, within St Helens, will also be transitioned to the LCZ. This is a residential area, characterised by single dwellings on large clear lots within a coastal location adjoining Moulting Bay. Access to the lots is via a sealed cul-de-sac road which has constructed kerb and channel. This development was approved as a residential subdivision and contains lots in the region of 5000m^2 - 7000m^2.

While it is acknowledged the natural assets code applies to these lots, the land itself is typical of the character associated with lifestyle lots and as such, more aligns with a rural residential landscape. It is noted the existing priority habitat overly under the interim scheme does not apply to this area.

It is our view that the priority for this area should be residential use and development, as this aligns with the original and existing intent of the land. The code criteria provides a mechanism

for Council to maintain control of inappropriate development which impacts on native vegetation (noting that none currently remains), and scenic areas (most development is already well setback from Binalong Bay). To argue that landscape values of a cleared and largely developed area are to be prioritised appears unreasonable, and against the original intent of this area.

The guidelines relating to the RLZ indicate the purpose of the zone is still to retain existing natural and landscape values, however gives priority to residential amenity in the first instance.

Figure 2 - Aerial view of lots within Sunshine Court.

Figure 3 - typical character of Sunshine Court, sealed road with Kerb and Channel and large cleared lots.

Figure 4 - Existing single dwelling at the end of Sunshine Court cul-de-sac.

In providing guidance on RLZ and ELZ areas, the St Helens Structure Plan noted that:

"titles with open characteristics are included within the Rural Living zone, while those titles with the presence of natural values are include within the Environmental Living zone" – page 44.

We maintain that these areas are open, clear of native vegetation, and contain developed and established residential uses. Lots that are vacant within this subdivision, should not have to have a future residential dwelling classified as a discretionary use, when it is entirely consistent with the development and character of adjoining lots.

Subsequently, the lots are consistent with RLZ 1, which states:

a) *Residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), by priority is given to the protection of residential amenity.*

As per RLZ4, b), the values of these sites can be appropriately managed through the application and operation of the relevant codes.

Heritage Road/Land South of Golden Fleece Rivulet – St Helens
Land on the Southern side of the Golden Fleece Rivulet, and generally around Heritage Road, within St Helens, has been shown to transition to LCZ under the draft LPS.

The area is similar in character to Sunshine Court (discussed above), and in our view is typical of residential lifestyle choices on land which would normally be within the RLZ. The land has been transitioned into the LCZ on the basis that the site is currently within the ELZ under the Interim Planning Scheme.

Many of the lots, particularly along Heritage Road, are not impacted by the natural assets code, nor are there any scenic management overlays which impact the area. The lots are generally clear of native vegetation and contain established residential uses in the form of single dwellings. The area is identical in character to existing and proposed RLZ land on the northern side of Golden Fleece Rivulet.

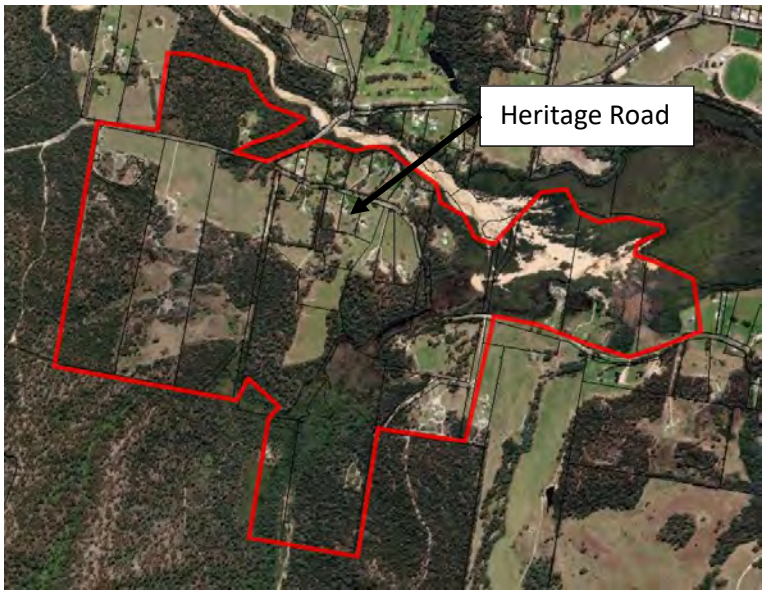


Figure 5 - Aerial view of Heritage Road and proposed LCZ zoned areas.

Once again, the application of the Rural Living zone to many of these areas would be consistent with RLZ 1 of the guidelines, which states:

The Rural Living Zone should be applied to:

a) *residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), but priority is given to the protection of residential amenity;*

The fact that these areas are classified as lifestyle lots suitable for the RLZ, is further emphasised within the St Helens Structure Plan.

The Structure Plan, which was endorsed by Council March 2013, indicates many of these lots should be removed from the ELZ, and replaced with the RLZ.

Page 30 the Structure Plan, provides an ultimate planning zone map and draws attention to proposed changes recommended in this area.

An extract of the plan is shown below (figure 6), with Heritage Road and land south of the Golden Fleece Rivulet highlighted as appropriate for RLZ. The Structure Plan further indicates on page 43 that lots of 2ha or less should be placed into the RLZ, The Structure plan provides recommended actions, stating that the RLZ should be applied to lifestyle land within an open rural setting. This has not happened under the draft LPS.

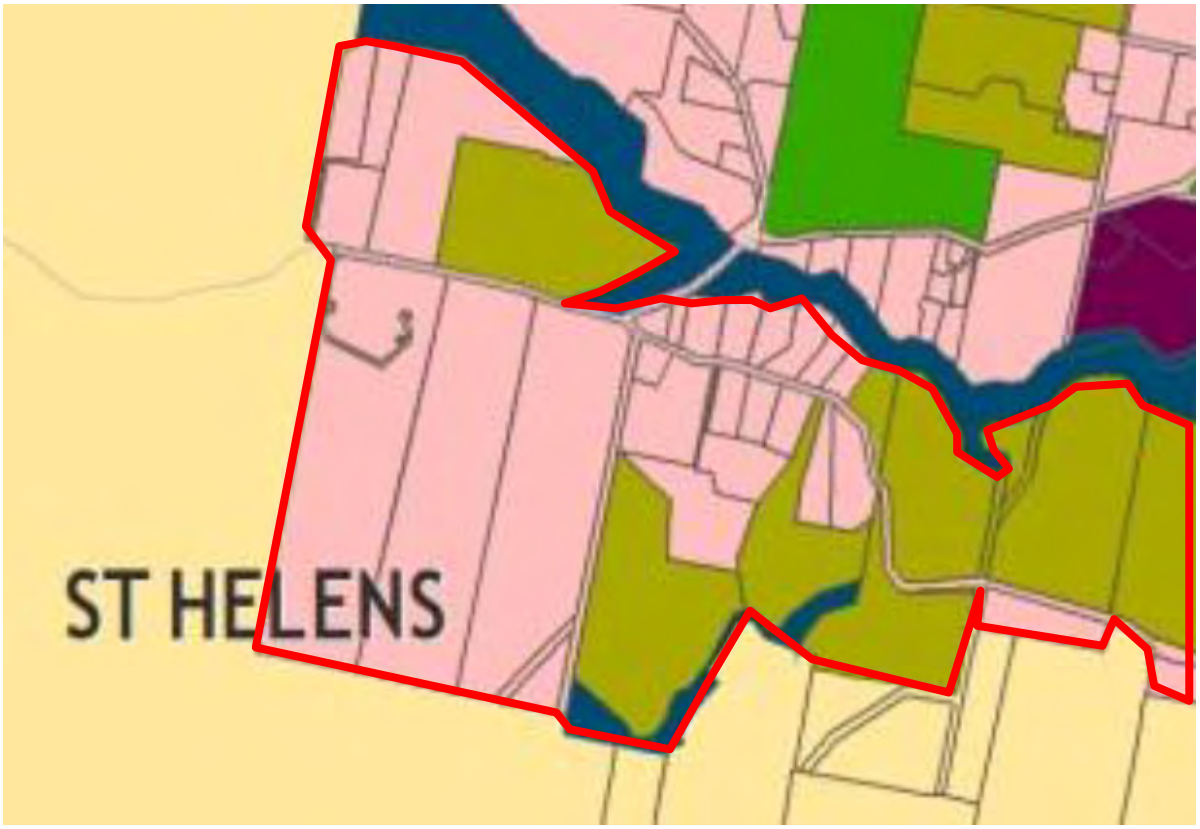


Figure 6 - Extract from St Helens Structure Plan - Ultimate Planning Zones - Page 30. Recommended areas to change to Rural Living shown in Pink.

Figure 7 - Looking west on Heritage Road, St Helens. Land is clear and typical of Rural Living areas.

Figure 8 - Looking south over cleared lifestyle lots along Heritage Road, St Helens.

Many of the lots in this area utilise the large cleared portions of land for low order agricultural activities (i.e. grazing), which is noted as a discretionary use under the proposed LCZ.

Riverview Road/Tasman Highway – Scamander

Land around Riverview Road and Tasman Highway in Scamander, has been identified on the draft LPS as being zoned LCZ. These areas are within the existing ELZ under the Interim Scheme. These areas are characterised by single dwellings on large bush blocks, a combination of which are cleared, and others that contain native vegetation.

In our opinion, the application of the Rural Living zone is appropriate under RLZ 1 a),

The Rural Living Zone should be applied to:

a) *residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), but priority is given to the protection of residential amenity;*

We note some of these areas have been identified under the Break O'Day Land Use Strategy as going to General Residential. While that particular zoning (GRZ) is questioned, it indicates that there is a clear intent for residential development in these areas. The lots in question are in close proximity to the Scamander township and General Residential areas. Nearly all the lots are developed for residential purposes.

The priority vegetation assets overlay applies to part of this land, however has pockets within the area that are not included within the overlay. The land is not subject to any scenic management overlay or is within a tourist road corridor.

An aerial view of the areas which are currently marked as going to LCZ is provided below. There are a number of small residential lots within the below map which contain single dwellings, on lots around 900m^2 – 2000m^2. Those lots have also been proposed for the LCZ, while it is our opinion that Council should consider the Low-Density Residential Zone (LDRZ) as appropriate for that section.

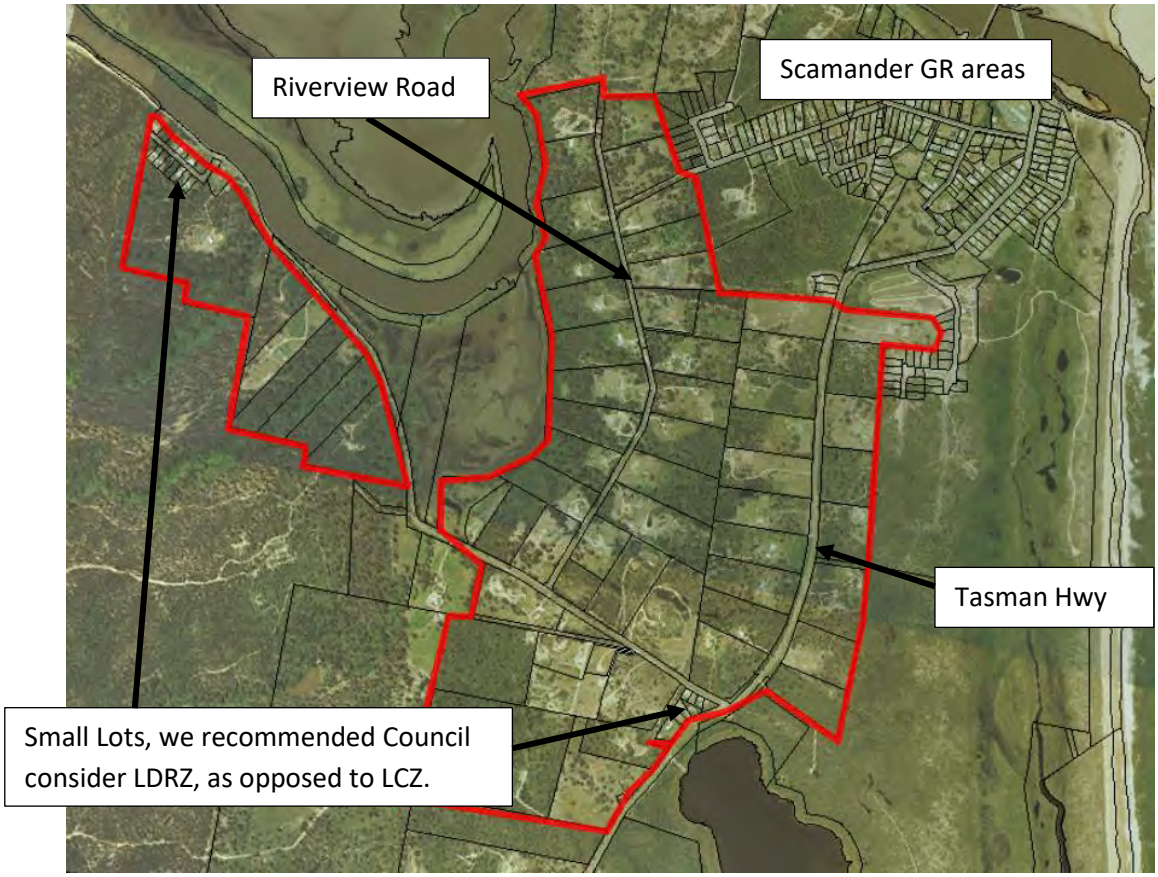


Figure 9 - Aerial view of LCZ proposed areas in Scamander. Recommend RLZ be applied to these areas.

Figure 10 - Lifestyle lot located on Riverview Road.

Figure 11 - Residential development typical on Riverview Road/Tasman Highway.

Application of the Rural Living Zone

The main areas of Rural Living (RL) within the St Helens township, appear to have been applied to the north and west of the existing industrial areas, around the areas of Baillieu Street, Tasman Highway, and Walker Street/Argonaut Road.

We are concerned that Council has determined 'Rural Living C' as the appropriate density for these areas.

'Rural Living C' provides for a minimum lot size of 5ha, with performance criteria allowing a minimum lot size of 4ha, which can be approved at the discretion of Council.

The current Interim Planning scheme Rural Living zone, provides an acceptable solution lot size of 3ha, and a performance criteria minimum lot size of 1ha. An extract from the existing interim planning scheme is provided below:

Acceptable Solutions	Performance Criteria
A1.1 Each lot must: a) have a minimum area of at least 3ha; or b) be required for public use by the Crown, an agency, or a corporation all the shares of which are held by Councils or a municipality; or c) for the provision of utilities; or d) for the consolidation of a lot with another lot with no additional titles created; or e) to align existing titles with zone boundaries and no additional lots are created. A1.2 Each lot must have new boundaries aligned from buildings that satisfy the relevant acceptable solutions for setbacks.	P1 Each lot must: a) be to facilitate protection of a place of Aboriginal, natural or cultural heritage; or b) provide for each lot, sufficient useable area and dimensions to allow for: i) a dwelling to be erected in a convenient, appropriate and hazard free location; and ii) appropriate disposal of wastewater and stormwater; and iii) on-site parking and manoeuvrability; and iv) adequate private open space; and v) vehicular access from the carriageway of the road to a building area on the lot, if any; or c) be consistent with the local area having regard to: i) the topographical or natural features of the site; and ii) the ability of vegetation to provide buffering; and iii) any features of natural or cultural significance; and iv) the presence of any natural hazards; and v) local area objectives, if any; and d) subdivision must not create lots less than 1.0ha; and e) any lot created by subdivision must not provide for development which will in any way restrain or hinder the use of land for lawful purposes on adjoining lots.

Figure 12 - Extract from Rural Living Zone, subdivision criteria of Break O'Day Interim Planning Scheme 2013.

Under the proposed changes, land owners will lose a subdivision right which they currently enjoy under the Interim Scheme. We are now in a position where we are seeing property owners rush to get permits under the interim scheme, as there will be no potential for further development under the LPS.

Under the proposed draft LPS, subdivision potential within the Rural Living Areas around St Helens would see indicatively less than 5 new lots created. This is on the basis that Rural Living lots would require a minimum size of 8ha to start with (to meet performance criteria.)

Under the current Interim Scheme, the subdivision potential could result in a possible yield of 40+ Rural Living lots. It is not clear to me from the supporting report why Council is seeking to remove nearly all of the existing subdivision potential from the Rural Living areas.

Page 48 of the supporting report states:

"The draft LPS mapping has applied these zone classifications based on allotment sizes with the intention to not grant or revoke existing development rights"

While the above sentence is somewhat confusing, it is clear that this process will remove existing subdivision rights currently available to land owners under the interim scheme.

In my opinion, application of the 'RLZ A or B' to existing Rural Living areas would be more consistent with the existing Rural Living provisions which currently apply.

The RLZ A or B would also be consistent with RLZ 3, which states:

> ***RLZ 3*** *The differentiation between Rural Living Zone A, Rural Living Zone B, Rural Living Zone C or Rural Living Zone D should be based on:*
>
> *a) a reflection of the existing pattern and density of development within the rural living area; or*
>
> *b) further strategic justification to support the chosen minimum lot sizes consistent with the relevant regional land use strategy, or supported by more detailed local strategic analysis consistent with the relevant regional land use strategy and endorsed by the relevant council.*

In relation to part a) of the above criteria, the St Helens Structure Plan states on page 42, that the average allotment size in proposed Rural Living areas is 2.5ha. Application of RLZ B, is therefore consistent with the reflection of the existing pattern and density of development within these areas.

In support of the chosen minimum lot sizes for Rural Living areas, the Structure Plan further states that:

"a minimum subdivision size of 2ha is recommended" – page 42

The St Helens Structure Plan provides further strategic justification which supports a minimum lot size of 2ha. This is consistent with RLZ 3 b) of the guidelines which allows a rural living density to be applied as per a detailed local strategy.

In relation to the current Rural Living areas under the interim planning scheme, the *Break O'Day Land Use Strategy 2015* states on page 68:

> *"……this Strategy recommends the rezoning of a conservative amount of additional residential and Rural Living zoned land to address potential delays or constraints in subdividing existing zoned land, to provide greater choice in housing location and to encourage opportunities for rural living and coastal living lifestyle choices"*

The strategy recommended, in addition to subdivision potential currently available under the interim scheme, that ***more*** rural living and lifestyle lots were provided to address existing constraints. The current draft LPS goes in the opposite direction to this advice, restricting existing subdivision capability and providing no new rural living areas.

The Break O'Day Land Use Strategy further states on page 68:

> *Further, it is recommended that the minimum lots size of Rural Living zoned land also be reduced to a minimum of 1 hectare under the Acceptable Solution where such land is sited in proximity to existing settlements.*

All of the strategic documentation (both the St Helens Structure Plan and BODC Land Use Strategy) indicates that Rural Living areas should not exceed 2ha (BODC Land Use Strategy recommends 1ha). Once again, the draft LPS appears to have gone contrary to this advice, making subdivision harder, and reducing residential opportunities around St Helens by increasing the minimum lot size to 4ha.

The proposed lot size of 4ha under performance criteria, has never been supported or proposed in any local strategic planning.

There are numerous other references within the Break O'Day Land Use Strategy 2015, and the St Helens Structure Plan which make recommendations relating to Rural Living land around St Helens.

It is noted that the areas to the east of St Helens, around Reservoir Rd and Tasman Highway have been identified as potential Rural Living under the Break O'Day Strategy, and St Helens Structure Plan. In particular the Structure Plan clearly identifies these areas on page 30 as going to the RLZ.

Most of these lots (especially along Cleland Drive) contain established single dwellings. The area is residential. It does not contain primary industry, and as such should have provisions applied which provide a degree of protection for residential amenity.

These areas are shown below, in an extract from the St Helens Structure Plan.

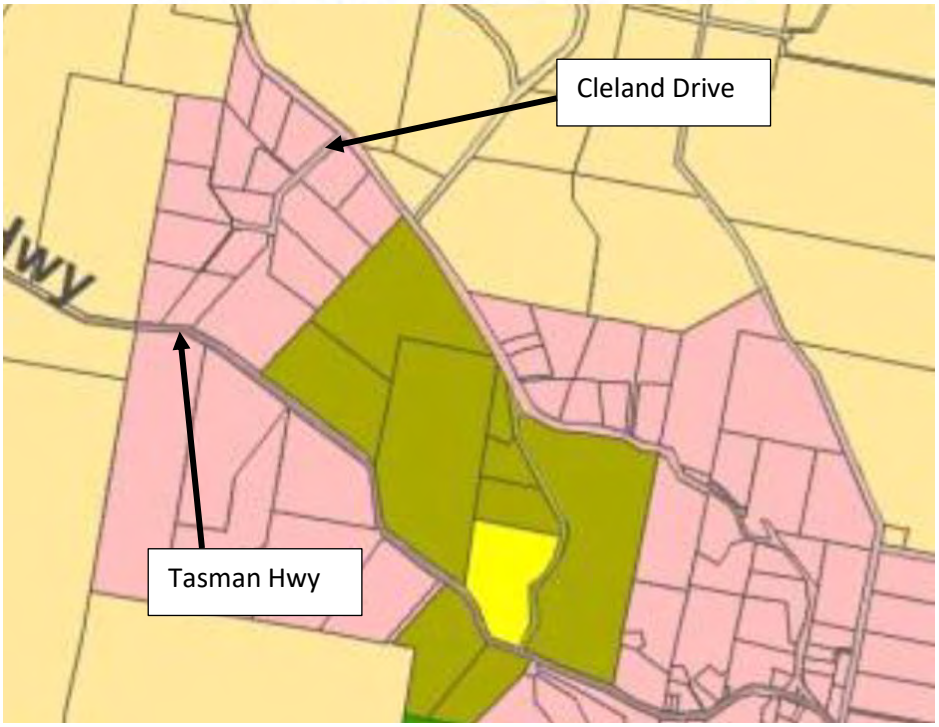


Figure 13 - Area to the north west of St Helens. Ultimate zoning plan. Source: St Helens Structure Plan.

While I note the draft LPS has recommended Rural for these areas to the north west of St Helens, there is in my opinion opportunity to rezone the titles RLZ, in accordance with the 8A Guidelines and consistent with strategic documentation.

RLZ 4 c) states that the RLZ can be applied to land, where it can be justified by a relevant regional land use strategy, or within a detailed local land use strategy which has been endorsed. The St Helens Structure Plan is this strategy, and as such, the RL zone can be applied to these titles.

The Regional Land Use Strategy (RLUS) provides guidelines under section D2.2.2 Rural Residential Areas. It states that the Rural Living Zone (or other appropriate zone), should be applied to areas which contains established rural residential land use patterns, or additional areas identified within a local strategy (page 19 - RLUS).

The areas identified above provide limited potential for efficient or practical agriculture and are located in an area where the land use pattern is predominantly residential in nature. While it is beyond us to commission agricultural reports for these general areas, should Council commission such a report it would certainly show these areas as being appropriate for residential development, consistent with what is presently developed on ground.

Application of BRE-P2.0 Coastal Settlement PPZ

The PPZ for coastal settlements is a new zoning proposed under the draft LPS. The provisions do not exist under the current interim planning scheme.

A PPZ can only be applied should it meet the requirements of section 32(4) of the Act, as shown below:

> *(4) An LPS may only include a provision referred to in subsection (3) in relation to an area of land if –*
>
> *(a) a use or development to which the provision relates is of significant social, economic or environmental benefit to the State, a region or a municipal area; or*
>
> *(b) the area of land has particular environmental, economic, social or spatial qualities that require provisions, that are unique to the area of land, to apply to the land in substitution for, or in addition to, or modification of, the provisions of the SPPs.*

Our primary concern is whether the areas proposed as Coastal Settlement PPZ , meet the above criteria and warrant inclusion of a PPZ. The legislation has purposefully provided an onerous test, by requiring PPZ's to meet section 32 (4)(b) of the Act. The intention of the TPS was to provide 80% consistency within planning schemes across the 29 local Councils. Creating PPZ's should be a last resort, and only undertaken on the basis that no existing zone meets the needs of a particular area.

In this instance, we question whether the Low Density Residential Zone (LDRZ) would be appropriate to apply to these sites. The lots are relativity small residential lots that face constraints in the form of servicing and/or location. This is reflected in the zone purpose for the LDRZ, which states that the intent is to:

"Provide for residential use and development in residential areas where there are infrastructure or environmental constraints that limit the density, location or form of development"

The 8A guidelines provides an indication on the types of environmental constraints being referred to, with land hazards, topography, or slope being referenced.

The 8A guidelines further go on to state under LDZR 1 (b), *The LDRZ should be applied to residential areas where one of the following conditions exist……small residential settlements without the full range of infrastructure services, or constrained by the capacity of existing or planned infrastructure services*"

All of the areas identified within the coastal settlements identified within the PPZ meet the above criteria.

The draft criteria of the PPZ requires a 10m setback. This is seen as excessive for the zone. All of the proposed PPZ lots along Binalong Bay Road (opposite Moulting Bay) only have a width of 20m, rendering any development of these lots as automatically discretionary. The same could be said for PPZ areas in Jeanerette Beach Rd, Gardens Road (near Margery's Corner), Four Mile Creek, and North of this area near the Gulch.

In regards to clause BRE-P2.6.6 Stormwater control, this is seen as unnecessary and a duplication of assessment for something which is required to occur under the Building Act. This issue will be more generally discussed later in this representation.

In relation to the use table, it is our opinion that Visitor Accommodation be listed as a discretionary use with no qualification. Land owners currently have the option to build a visitor accommodation unit or cabin, subject to meeting requirements of the zone. This right will be taken away under the proposed PPZ.

Our overall position in relation to this PPZ, is that many of the characteristics of the land are the same as those which are seen in an area such as Beaumaris (LDRZ) and Falmouth (LDRZ). We believe that the underlying zone of ELZ (Interim Scheme) was clearly incorrect for these areas, however the need to create a whole new PPZ and suite of provisions is questioned in relation to section 32 of the Act.

In closing comments, we note land in Simeon Place is currently zoned ELZ. This land has (in our view correctly) been recommended for the LDRZ. How this land can have the LDRZ applied but not the other areas is unclear. Both areas contain small residential clusters, are in a coastal locations, and are constrained by services and environmental factors.

Figure 14 - Aerial view of Simeon Place - residential cluster correctly proposed for LDRZ.

Application of BRE – P3.0 PPZ – St Helens Coastal Marine

We wish to state our support for the coastal marine PPZ zone under the draft LPS. The current Port and Marine Zone under the Interim Scheme does not capture the intent or flavour of some of these local areas. It is questioned whether the use class of Visitor Accommodation could be inserted as a discretionary use into this PPZ, noting that the desirable coastal location and unique site characteristics could have some potential to provide a suitable visitor accommodation development at Councils discretion.

A future visitor accommodation development of these areas would not create a conflict with the PPZ purpose statement.

Application of the Major Tourism Zone
It is noted that Major Tourism Zone has been proposed for the property at White Sands in Four Mile Creek. We agree that this is an appropriate zone for this regionally significant site on the East Coast of Tasmania. The current Rural Resource Zone was never an appropriate zone for this site. The proposed Major Tourism Zone now ensures appropriate use and development standards can be applied to the site. The application of the zone is supported my MTZ 1 and MTZ 2b), noting that support for the zoning is provided under the Break O'Day Land Use Strategy 2015.

Application of BRE-2.0 Stormwater Management Specific Area Plan
Council has sought to apply a Stormwater Management SAP to large parts of the municipality. This SAP applies in addition to standards found in the underlying zone criteria.

The Tasmanian Planning Scheme SPP's do not include provisions relating to stormwater, outside of those criteria relating to subdivisions, or where there is a potential impact on the natural environment (i.e. stormwater is addressed when development is within a future coastal refugia area).

The LPS supporting report refers to clause 6.11.2 of the SPP's which relates to conditions which a Council can impose. Reference is made to stormwater under clause g) of those criteria. The supporting report goes on to state that:

"……it is considered that the SPPs do not provide the same consideration regarding stormwater infrastructure that the current scheme provides".

This is true. Many of the current zones under the Break O'Day Interim Planning Scheme include a local provision which requires all development (buildings) to consider stormwater management as part of a planning application. The report notes that without proper consideration of stormwater infrastructure, external costs could be borne by ratepayers due to development exceeding capacity of existing infrastructure.

<u>Council does not need to assess stormwater (outside of subdivision) as part of a planning application.</u>

Assessment of stormwater is done as part of a plumbing permit and required under the *Building Act 2016*.

Section 9 (2) of the *Building Act 2016* states that the assessment of technical requirements relating to a plumbing work (i.e., assessment of stormwater) can only be approved under planning if The Minister has expressly provided so. In section 9 (4), the act goes on to state that:

(4) A condition that relates to the technical requirements of the design or construction of a building, building work or plumbing work that –

> *(a) is imposed on a permit issued under the Land Use Planning and Approvals Act 1993; and*
>
> *(b) has not been approved under subsection (3) as required before it was imposed on the permit –*

is of no effect unless the condition has been retrospectively approved by the Minister.

Stormwater, and all of the issues and concerns relating to stormwater, are assessed under separate legislation to the *Land Use Planning and Approvals Act*. These are issues that relate to technical requirements. To assess these matters as part of a planning application, is an unnecessary duplication which adds another potential discretion to what may be a straightforward application.

All of the concerns which Council have noted in the supporting report, can still be addressed as part of a building application and do not need to be considered at planning.

The same could be said for onsite wastewater. Council hasn't chosen to roll over the existing onsite wastewater code, presumably on the basis that these are technical matters which are assessed as part of a building application. The same logic and reasoning applies for management of stormwater. Assessment and regulation of stormwater and stormwater quality is limited in the TPS to the Part 6 assessment provisions of the SPP's as to what a Council can and cannot assess.

The current SAP criteria requires all development to connect to an existing reticulated storm water system. Where the development does not, or cannot, connect to a reticulated system, the performance criteria must be relied upon. Where Council does not have a reticulated stormwater system, an application for development will automatically be discretionary.

On the above note, I would like to draw Councils attention to the SAP boundaries at Mathinna as an example. The SAP has followed the LDRZ boundaries. Any development within that area will be discretionary unless they can connect to reticulated stormwater. While I do not have access to the Council stormwater assets maps, I could confidently guess that the large paddocks within the overlay do not contain a reticulated stormwater network. This will render all development in that area discretionary, on a matter which can be dealt with at the building approval stage.

In my experience of working with these provisions, it is unreasonable that a small extension or development which would otherwise be a 'NPR' development, get called in for advertising on the basis that the existing development is not connected to reticulated stormwater.

It is an added cost for applicants and makes an otherwise straightforward development more complicated. The performance criteria require the Planning Authority to have regard to advice from a suitably qualified person. This clause likely means that expert advice will be requested on simple applications. Once again, we have concerns that this has the potential to blow out costs and make a simple exercise unreasonable.

Our view is that Council can deal with stormwater management at the building stage. All of the concerns from Council can still be addressed. It is not a planning issue, and in my opinion goes against the explicit intent of section 9 of the *Building Act 2016*.

I understand there are Councils across Tasmania which have not rolled over their current stormwater provisions on this basis.

WOOLCOTT SURVEYS

EAST COAST SURVEYING

Flood Prone Areas

Council has proposed a flood prone hazard overlay. This appears to have been rolled over from what was the existing overlay under the Interim Planning Scheme. We understand Council has inhouse flood mapping, which maps a far larger area then the current scheme overlay shows.

This additional mapping (which is not publicly available unless requested), has resulted in confusion and delays when dealing with development applications. Council often needs to be contacted prior to lodging a development application, and asked to determine whether an area is classified as flood prone at a 1:100 year flood event, at which point Council will provide a copy of the internal mapping for that site.

From a customer service point of view, we request that if Council is going to apply the flood prone areas code based on this internal mapping, that Council consider updating the overlay to include this more recent information. It would assist all ratepayers, as well as anyone looking to prepare and lodge a planning application (i.e. Designers, Planners, Engineers etc).

Conclusion

In closing, we trust this submission will be taken as it is intended, with good planning outcomes and appropriate application of zones and codes as our primary aim.

We appreciate the amount of work that Councillors and staff have put into this project. This submission seeks in no way to ignore or diminish the challenges which are associated with this planning reform.

We thank Council for the opportunity to comment and look forward to discussing these issues in more detail.

If you have any questions regarding the contents of this submission, please don't hesitate to contact us on the numbers provided.

Kind regards
Woolcott Surveys

James Stewart
Senior Town Planner

Kind regards
Woolcott Surveys

Brett Woolcott
Managing Director & Registered Land Surveyor

Representation 65

From: Jennifer Jarvis
To: Break O Day Office Admin
Subject: Break O"Day Council Draft Draft Local Provisions Scheme
Date: Friday, 10 December 2021 4:29:33 PM
Attachments: image001.png
TasRail Response - Attachment A.pdf

Apologies, this time with attachment.

From: Jennifer Jarvis
Sent: Friday, 10 December 2021 4:28 PM
To: admin@bodc.tas.gov.au
Subject: Break O'Day Council Draft Draft Local Provisions Scheme

Thank you for notifying TasRail of the Break O'Day Council Draft Local Provisions Scheme.

TasRail has taken the opportunity to review the available information and makes the following comments:

- The *Rail Infrastructure Act 2007 (Tas)* forms part of the legal and regulatory framework that governs rail assets and operations in Tasmania. Under this Act, TasRail is the Rail Infrastructure Owner (RIO) and the Rail Infrastructure Manager (RIM) of the State Rail Network (and all of the attendant rail infrastructure). The Rail Network consists of the railways specified in Schedule One of the Act. It is important to read Schedule One in conjunction with the definition of rail infrastructure and subsection (2) of the Act.

- Subsection (2) states" 'In this Act, unless the contrary intention appears, a reference to a railway is taken to be a reference to the track of the railway, the land corridor along which the track of the railway is laid and all of the attendant rail infrastructure. *Rail infrastructure* is defined as being:
  a. Rail lines and fastenings; and
  b. Crossing loops, sidings, switches and points; and
  c. Sleepers and ballast; and
  d. Drains and culverts; and
  e. Bridges, cuttings, tunnels and embankments; and
  f. Poles and pylons; and
  g. Structures and supports; and
  h. Overhead lines; and
  i. Platforms and railway stations; and
  j. Rail yards; and
  k. Freight sheds, workshops and associated buildings; and
  l. Electrical substations; and
  m. Signs and signalling equipment; and
  n. Train control and communication systems; and
  o. Traffic control devices that are capable of being automatically activated by trains; and
  p. Plant, machinery and other fixed equipment;.

- TasRail notes your advice that significant public infrastructure including the railway and railway assets is protected through the Utilities Zoning consistent with the State Planning Provisions, including adoption of the Road and Rail Assets Code.

- Of the new Specific Area Plans (SAP) being introduced under the Draft LPS, we note one is for Stormwater Management covering areas of Fingal and permitting General Residential, Community Purpose, Village and General Industrial Zones. The majority of the land within this SAP is prone to frequent flood events which also poses a significant risk to the safety, operability and integrity of rail infrastructure and assets. TasRail therefore supports the adoption of an Acceptable Solution that requires future development of lots to be capable of connecting to a public stormwater system or on-site stormwater management system., with the planning authority able to impose conditions and restrictions on a permit as set out in the Draft LPS.

- TasRail has noted your advice that zones from the Interim Planning Scheme have been transferred into the draft LPS to deliver a 'like for like' transition where possible. However, TasRail has identified a total of two areas of State Rail Network land that appear to have the incorrect zoning and/or or where the Draft LPS proposes a zoning other than Utilities. Please refer to Attachment A (attached to this email) for details. TasRail requests these land parcels be zoned Utilities.

Please don't hesitate to contact property@tasrail.com.au should you have any questions re the above.

Kind regards

Jennifer Jarvis

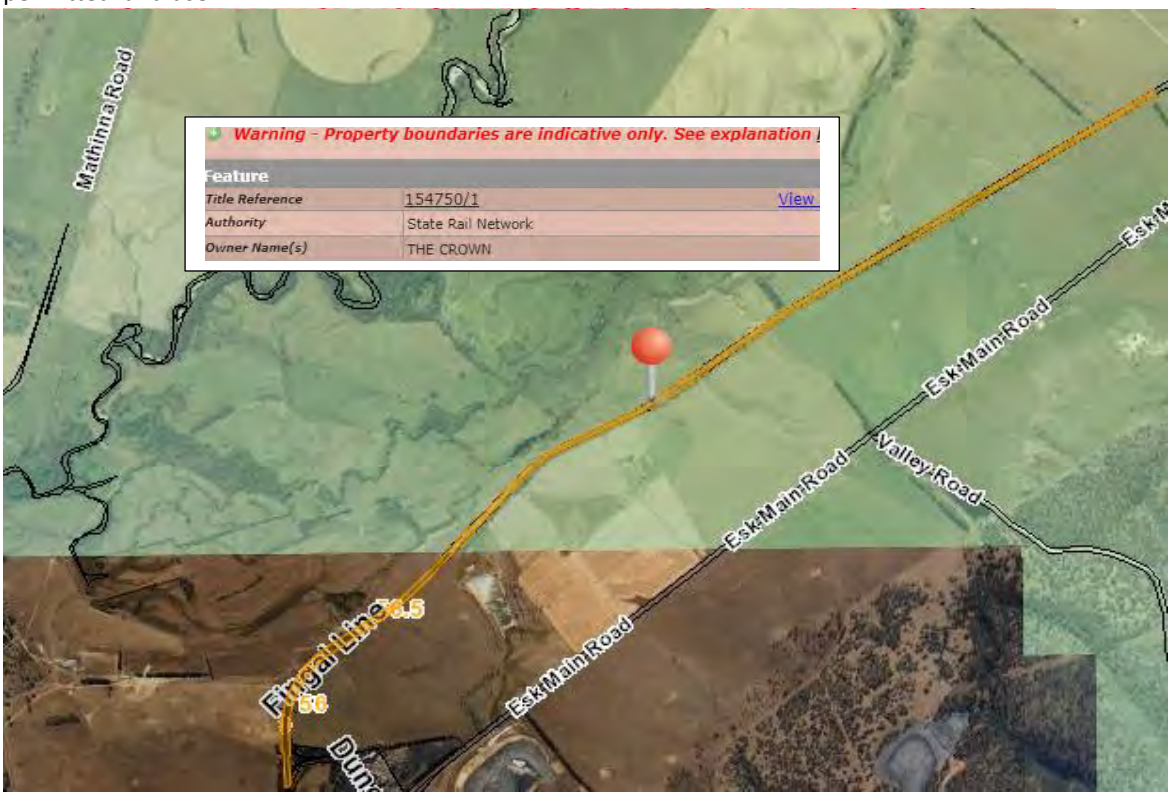
Manager Group Property & Compliance | Property
Phone: 03 6335 2603 | Mobile: 0428 139 238
11 Techno Park Drive, Kings Meadows, Tasmania, 7249
Jennifer.Jarvis@tasrail.com.au

ATTACHMENT A

Item 1

The land area highlighted in yellow below shows title reference 154750/1 as being part of the operational Fingal Rail Line which comprises part of the State Rail Network as defined in Schedule One of the *Rail Infrastructure Act (Tas) 2007.* TasRail therefore objects to the current zoning of this corridor which appears in the Interim Planning Scheme as an Environmental Management Zone and under the Draft LPS it is proposed to be zoned Agriculture.

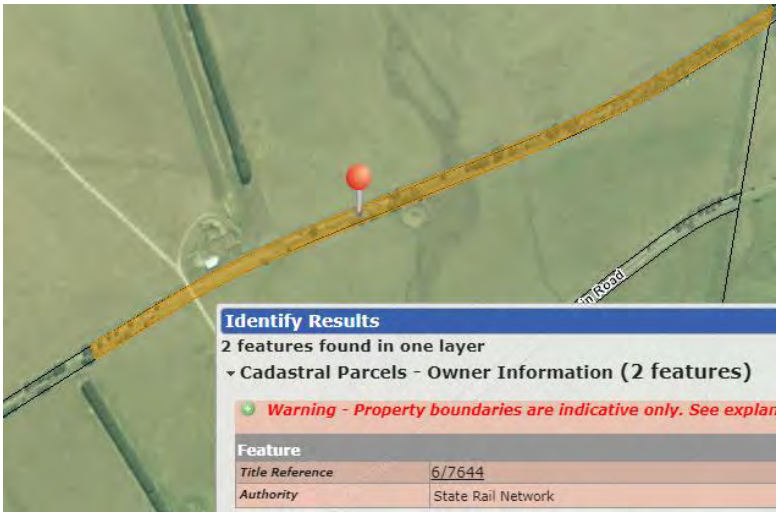
TasRail requests that its rail corridor land be zoned as Utilities, consistent with the rest of State Rail Network land and its permitted land use.



Item 2

The land area highlighted in yellow below shows title reference 6/744 as being part of the operational Fingal Rail Line which comprises part of the State Rail Network as defined in Schedule One of the *Rail Infrastructure Act (Tas) 2007.* TasRail therefore objects to the current zoning of this corridor which appears in the Interim Planning Scheme as an Environmental Management Zone and under the Draft LPS it is proposed to be zoned Agriculture.

TasRail requests that its rail corridor land be zoned as Utilities, consistent with the rest of State Rail Network land and its permitted land use.



Representation 66

From: Anita Bourn
To: Break O Day Office Admin
Subject: Break O"Day LPS - TasNetworks Submission
Date: Monday, 6 December 2021 12:26:50 PM
Attachments: image001.jpg
image002.gif
image003.png
image004.png
TasNetworks Submission - Break O"Day LPS.pdf

CAUTION: Do not click links or attachments unless you recognize the sender and know the content is safe

Dear Deb,
Please find attached TasNetworks representation regarding the Break O'Day Local Provisions Schedule.
Please don't hesitate to contact me if you require any further information. It would be appreciated if you could please confirm receipt of this representation.
Kind regards,

Anita Bourn
Land Use Planner
P 03 6271 6413 | **M** 0458 015 441
1 – 7 Maria Street, Lenah Valley 7008
PO Box 606, Moonah TAS 7009
www.tasnetworks.com.au
@TasNetworks
/TasNetworks

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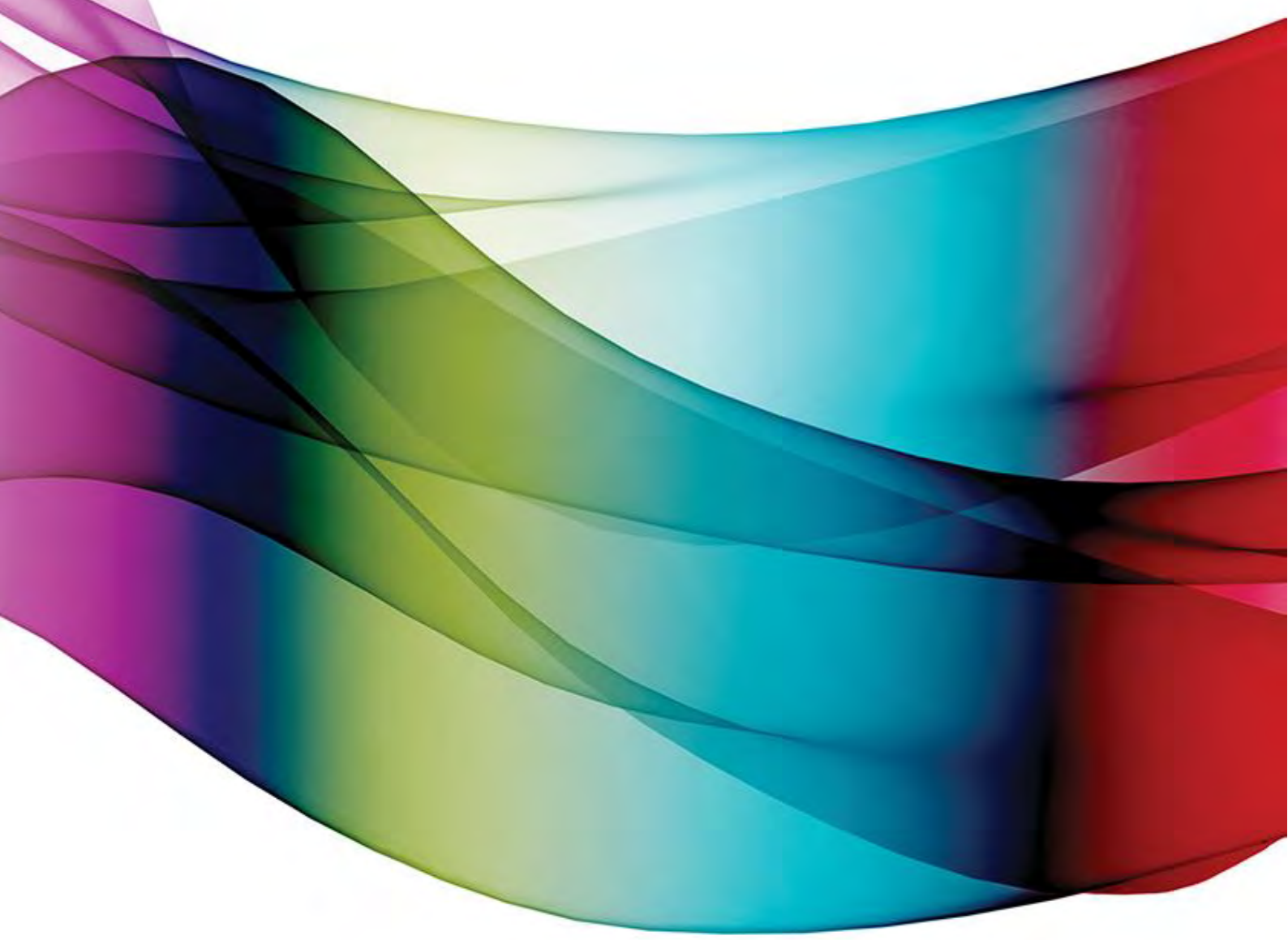
Break O'Day Council draft Local Provisions Schedule

TasNetworks' Submission

December 2021



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1. Who is TasNetworks?

TasNetworks was formed on 1 July 2014, through a merger between Aurora Energy's distribution network (the poles and wires) and Transend Networks (the big towers and lines). TasNetworks is a Tasmanian state-owned corporation that supplies power from the generation source to homes and businesses through a network of transmission towers, substations and powerlines.

Transmission

TasNetworks own, operate and maintain 3564 circuit kilometres of transmission lines and underground cables, 49 transmission substations and six switching stations across the State.

Distribution

TasNetworks own, operate and maintain 22,400km of distribution overhead lines and underground cables, 227,000 power poles, 18 large distribution substations and 33,000 small distribution substations. There's also 20,000 embedded generation and photovoltaic (PV) grid-connected installations connected to the distribution network.

Communications

TasNetworks own, operate and maintain communication network infrastructure to enable safe and efficient operation of the electricity system.

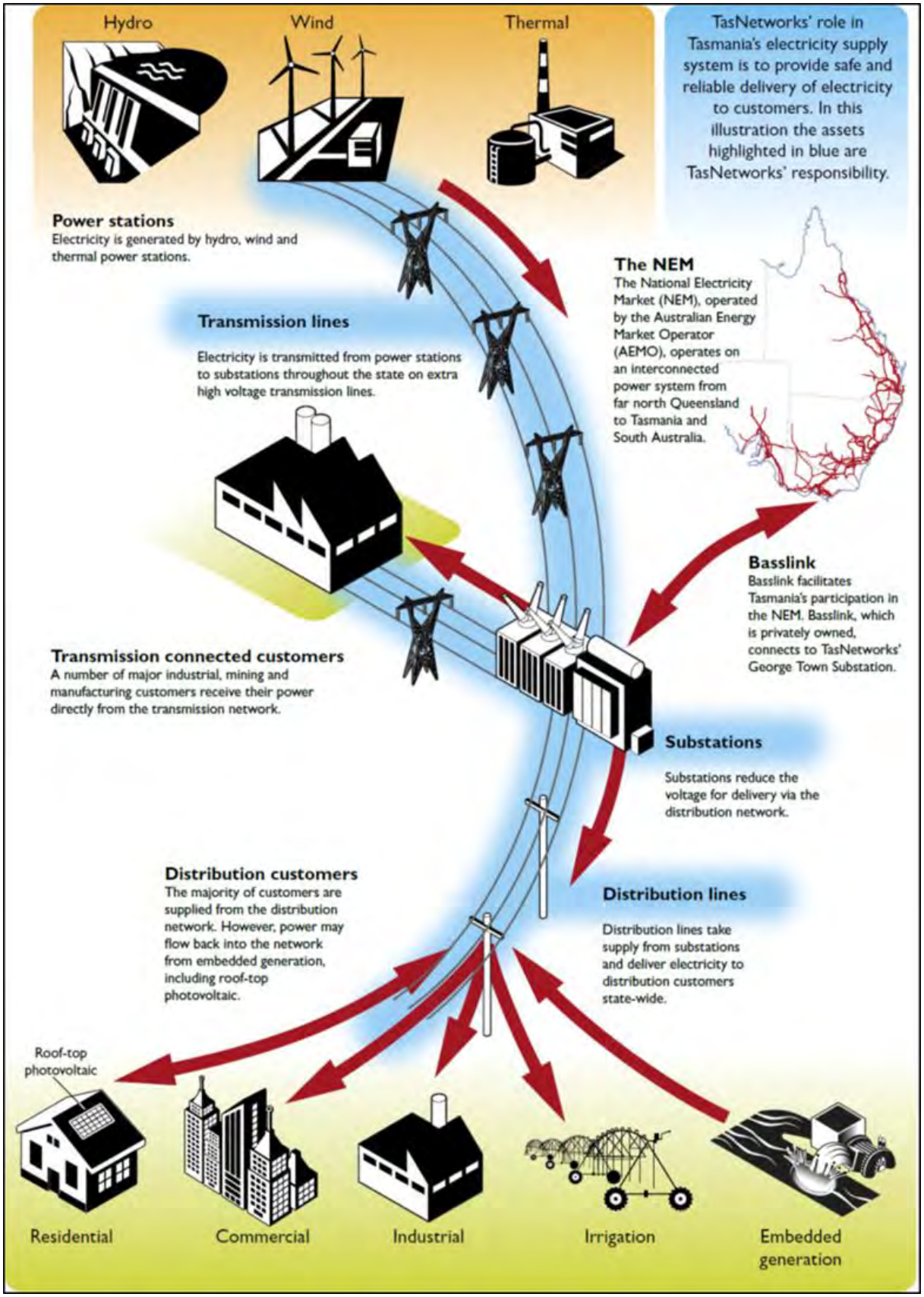


Figure 1 **TasNetworks' role in Tasmania's Electricity Supply System**

2. Executive Summary

TasNetworks, as a referral agency, has been notified of the public exhibition of Break O'Day Council's draft Local Provisions Schedule (LPS) under section 35B of the *Land Use Planning and Approvals Act 1993* (LUPAA). Council has been given direction by the Tasmanian Planning Commission (Commission) to publicly exhibit the draft LPS and invite representations. TasNetworks has undertaken a review of the draft LPS and makes the following representation with a view of seeking a state-wide consistent approach to major electricity infrastructure.

TasNetworks assets within Break O'Day Council's Local Government Area include: one substations, two communication sites and one electricity transmission corridor.

Electricity transmission infrastructure is protected by the Electricity Transmission Infrastructure Protection Code (ETIPC) under the State Planning Provisions (SPP). The ETIPC applies to transmission lines, terminal substations, switching stations and radio transmission communication assets. The purpose of the ETIPC is:

- *To protect use and development against hazards associated with proximity to electricity transmission infrastructure;*
- *To ensure that use and development near existing and future electricity transmission infrastructure does not adversely affect the safe and reliable operation of that infrastructure; and*
- *To maintain future opportunities for electricity transmission infrastructure.*

The draft LPS includes the ETIPC Overlay maps which is based on data provided by TasNetworks. As part of its review, TasNetworks has examined the ETIPC Overlay maps to ensure that it applies to all relevant assets and that the locations of these assets is correct.

The draft LPS also includes the spatial application of zoning and overlays via the mapping. In preparing this representation, TasNetworks has reviewed the draft LPS maps for each of its assets. This representation seeks to ensure:

- Utilities zoning is applied to existing substations and communication facilities;
- Impacts on the strategic benefits and development potential of existing corridors through the application of the Landscape Conservation Zone are mitigated;
- The Natural Asset Code – Priority Vegetation Overlay is not applied to part of a substation or communication site that is cleared of native vegetation; and
- The Scenic Protection Code – Scenic Protection Area has not been applied to substations, communication site or corridors.

The LPS and the potential impact on future development has also been reviewed. These considerations include whether there is a permissible approval pathway for Utilities under the Particular Purpose Zones (PPZ) or Specific Area Plans (SAP); and any Local Area Objectives or Site Specific Qualifications. TasNetworks representation is made having regard to the draft LPS requirements under LUPAA.

These submissions are consistent with those previously made by TasNetworks (formerly Transend) on the Meander Valley, Brighton, Central Coast, Burnie, Glamorgan Spring Bay, Clarence, Circular Head, Devonport, Glenorchy, West Coast, Sorell, Southern Midlands, Launceston and Central Highlands draft LPS's as well as the draft State Planning Provisions and Interim Planning Schemes.

3. Overview

3.1. Glossary

The following table provides the definitions of the terms used throughout this submission.

Table 1 Definitions

Term	Definition
Commission	Tasmanian Planning Commission
Council	Break O'Day Council
ESI exemption	Activities classified as 'work of minor environmental impact' for the purposes of Regulation 8 of the *Electricity Supply Industry Regulations 2008.*
ETC	Electricity Transmission Corridor
ETIPC	Electricity Transmission Infrastructure Protection Code
Guideline	*Guideline No. 1 – Local Provisions Schedule Zone and Code Application* (Tasmanian Planning Commission, 2018)
interim scheme	Break O'Day Interim Planning Scheme 2013
IPA	Inner Protection Area
LGA	Local Government Area
LPS	Break O'Day draft Local Provisions Schedule
LUPAA	*Land Use Planning and Approvals Act 1993*
PPZ	Particular Purpose Zone
SAP	Specific Area Plan
SPP	State Planning Provisions
SSQ	Site Specific Qualification
UWA	Unregistered Wayleave Agreement

3.2. Existing Assets

Break O'Day LGA is located in TasNetworks Eastern planning geographic area. An operationally significant part of the Tasmanian transmission electricity network is contained within the boundaries of the Break O'Day LGA. This includes:

- A radial 110kV transmission line which transfers power to customer load in St Marys from Avoca.
- St Marys Substation is a critical substation feeding the 22kV distribution network in the north east coast of Tasmania. St Marys substation is fed from Poatina substation via Avoca Substation on the 110kV line. St Marys Substation is critical in ensuring stability of the

network on the east coast as it links to the Triabunna substation on the south east coast of Tasmania.

- Communication sites used in operation, metering and control of the transmission electricity network.

The following table provides more detail regarding these assets. Notification and negotiation of work or changes in land use around these assets is critical for the safety and operation of the electricity network, the safety of people working on these assets and the general public whether living near or traversing the transmission network areas.

Table 2 TasNetworks Assets in **Break O'** Day LGA

Asset type	Location
Substation sites	- St Marys Substation
Communication sites	- St Marys Substation Communication Site - South Sister Communication Site
Electricity Transmission Corridors	- Line 457 Avoca – St Marys 110kV

The following figure identifies TasNetworks assets within Break O'Day. The municipal boundary is identified in the black line. The St Marys Substation is identified within the red square, the St Marys Substation and South Sister Communication Sites are identified by the green dots and Line 456 Avoca – St Marys 110kV is identified by the red line.

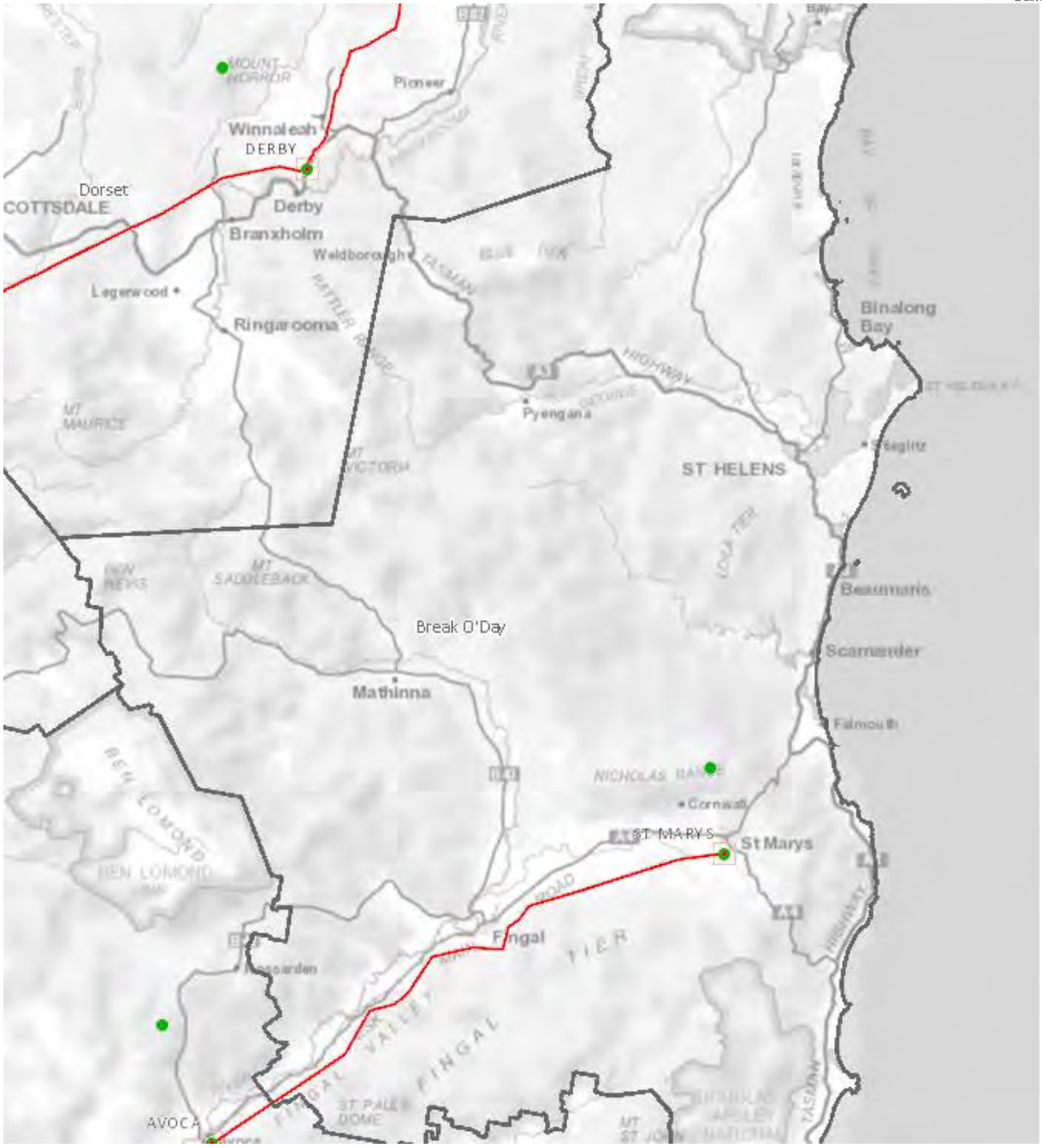


Figure 2 TasNetworks Assets within **Break O'** Day LGA

3.3. Planned Future Development

As Tasmania's transmission and distribution network service provider, TasNetworks has a responsibility to ensure the infrastructure to supply Tasmanians with electricity and to meet customer and network requirements in an optimal and sustainable way. We achieve this through our network planning process to ensure the most economic and technically acceptable solution is pursued.

The need for network changes can arise for a number of factors. Annually, TasNetworks undertakes a planning review that analyses the existing distribution and transmission networks and considers their future requirements to accommodate changes to load and generations, and whether there are any limitations in meeting the required performance standards.

The Break O'Day municipal area is identified as being within the Eastern planning area, as stated in TasNetworks Annual Planning Report 2020. The Eastern planning area is largely rural with low population density, and with the main economic activities being agriculture and tourism along the east coast. The following figure presents a diagram of the Eastern area with substation supply areas. The area is supplied from the main transmission network at 110 kV from Palmerston (near Poatina) and Lindisfarne substations. Sorell Substation is supplied via two circuits, with all other substations radially supplied. The distribution network in the Eastern area is characterised by overhead feeders supplying large areas, with limited interconnection. There is no transmission-connected generation in the area.

Figure 3 TasNetworks Eastern planning area network

4. Submission

4.1. Overview

TasNetworks is seeking state-wide consistency across all LPSs in the treatment of its assets. TasNetworks Policy Position is summarised in Table 3 and is further detailed below. Appendix 1 provides more detailed analysis on an asset by asset basis.

Legend for Table 3:

Consistent with Policy Position, supported	
Inconsistent with Policy Position, amendments are possible to achieve consistency	
Inconsistent with Policy Position, Schedule 6 transition prevents amendments required for consistency	

Table 3 Policy Position – Submission Summary and **Break O'Day** LPS evaluation

LPS Mapping	Policy Position	Rationale	Break O'Day LPS evaluation summary / submission
Zoning	- Substations (terminal and zone) to be zoned Utilities - Communication sites to be zoned Utilities where the communications facility is the primary use of the site.	- Reflects the primary use of the site and the nature of the asset - Reflects the long asset lifespan - Utilities zone allows for the future operation, maintenance modification and development requirements of the asset (this is particularly important for communications sites as these do not enjoy any ESI Act exemptions once established) - Clear message to the community about the existing and long term use of the site.	Amendment sought, inconsistent with Policy Position. - Rezone South Sister Communication Site from the Rural Zone to the Utilities Zone
	No specific zoning is to be applied to ETC	- Allows for other compatible uses to occur in corridor - Corridors are protected by ETIPC	LPS is consistent with this Policy Position, supported.
	Landscape Conservation Zone (through LPS rezoning) is not applied to ETC	- Conflicts with the existing use of the land for electricity transmission - Diminishes strategic benefit of existing corridors making consideration of new corridors more likely - More onerous approvals pathway for augmentation of assets	LPS is consistent with this Policy Position, supported.

LPS Mapping	Policy Position	Rationale	Break O'Day LPS evaluation summary / submission
		- Sends conflicting message to public regarding the ongoing use of the land	
Natural Asset Code – Priority Vegetation Overlay	Not to be applied to - Substations or communication sites where the site is cleared of native vegetation	- Assets are required to be cleared for safety and maintenance - Clearing of vegetation is exempt under ESI Act - Where asset already exists impact on the natural assets have already been assessed / approved and will continue to be impacted for the lifespan of the asset - Supports strategic value of the site - Clear messaging to community regarding the use of the site.	LPS is consistent with Policy Position, supported
Scenic Protection Code Overlay	Not to be applied to - Substations, - Communication sites, or - ETC	- Assets are required to be cleared for safety and maintenance - Where asset already exists impact on scenic quality / natural assets have already been assessed / approved and will continue to be impacted for the lifespan of the asset.	LPS is consistent with Policy Position, supported.
SAPs / PPZs	Not to apply to substations	To ensure that future development on these sites is not unreasonably affected by SAP.	LPS is consistent with Policy Position, supported.

LPS Mapping	Policy Position	Rationale	Break O'Day LPS evaluation summary / submission
Utilities Use Approval Status	In all zones, PPZs and SAPs the Use Class for Utilities and Minor Utilities must be either - No Permit Required, - Permitted or - Discretionary Utilities must not be Prohibited	The ability to consider Utilities Use Class in all zones is a requirement for the effective planning and development of linear utility infrastructure, which is required to be located in a range of areas and will be subject to multiple zonings.	LPS is consistent with Policy Position, supported.
PPZs or SAPs use, development and subdivision standards	Are drafted with at least a discretionary approval pathway. For example: - No absolute height limit - Allow subdivision for utilities	- Consistent with policy in SPPs that enables consideration of Utilities in all zones and no finite quantitative development or subdivision standards.	Inconsistent with Policy Position. Schedule 6 transition prevents amendments required for consistency. - Ansons Bay Particular Purpose Zone subdivision standard prohibits subdivision required for the provision of Utilities, or required for public use by the Crown, a council or State Authority.
ETIPC	Is correctly mapped and applied to relevant transmission infrastructure	Consistent with policy in SPPs	LPS is consistent with Policy Position, supported.
Local Area Objectives	Are drafted in a manner that does not conflict with the ETIPC if they apply over an area within the Code	- Potential impact on future development - Diminishes strategic benefit of existing corridors making consideration of new corridors more likely	LPS is consistent with Policy Position, supported.

LPS Mapping	Policy Position	Rationale	Break O'Day LPS evaluation summary / submission
		- More onerous approvals pathway for augmentation of assets - Sends conflicting message to public regarding the ongoing use of the land	

4.2. SPP Issues

Please note, this aspect of TasNetworks' representation should not be taken as a request to change or amend the SPPs. However, this information is provided to highlight fundamental land use conflict issues that could occur as each LPS implements the SPPs across the State.

4.2.1. Exemptions

In this representation, TasNetworks would like to highlight a failing in the SPPs that causes a fundamental conflict between existing electricity transmission easement rights and SPP Exemptions and will prevent implementation of the purpose of the ETIPC. This failing is resulting from not applying the Code, in particular the Electricity Transmission Corridor (ETC) and Inner Protection Area (IPA), to certain exemptions that would:

- On almost every occasion, conflict with easement rights (and have the potential to impact human safety) and compromise the purpose of the Code; and
- Unless managed appropriately, have the potential to conflict with easement rights (and have the potential to impact human safety) and the Purpose of the Code.

Where the Code does not apply, easement rights still exist but can only be enforced once a breach has occurred or (at best) is imminent. This can result in a costly process of removal or relocation and in the interim, could pose a safety risk. When the Code applies, it provides developers, Councils and TasNetworks an opportunity to avoid or manage this issue early in the application process. Please refer to Appendix 2 for benefits that can be realised by considering electricity transmission assets in the planning process and conflict examples.

4.2.2. Scenic Protection Code

The Scenic Protection Code does not apply to sites in the Utilities Zone. As a result, assuming a Utilities zoning, TasNetworks' substations and communication sites are not subject to the application of this Code, thus supporting the continued and consolidated use and development of these sites for electricity infrastructure.

TasNetworks' recognises that a Council may wish to regulate other activities in the ETC that could impact on scenic values. However, the application of the Scenic Protection Code to new electricity transmission use and development within an existing ETC, has a number of impacts in conflict with the continued use of these corridors including:

- Not recognising the already established vegetation clearance and scenic quality;
- Not recognising the existing and continued use of these corridors, including vegetation clearance, for significant linear infrastructure on a state wide basis;
- Unreasonably diminishes the strategic benefit of the ETC;
- Devalues the substantial investment already made in the establishment of these corridors;
- Unreasonably fetters augmentation of existing corridors by imposing development standards relating to scenic protection to electricity transmission use and development in an existing electricity transmission corridor;
- Conflicts with the purpose of the ETIPC; and

- Supports a misconception in the community that where the Scenic Protection Code (tree preservation) is applied, vegetation clearance will be limited, when in fact vegetation clearance for transmission lines is required and authorised by separate regulatory regimes in these locations.

If the Scenic Protection Code in the SPPs were amended to ensure that, where this Code intersects with an ETC, it does not apply to electricity transmission use and development in that ETC, these impacts could be largely mitigated. This approach recognises the presence of this substantial electricity infrastructure and:

- its place in a broader state-wide network that is essential to the safe and reliable provision of electricity to Tasmania (as recognised in the Regional Land Use Strategy);
- implements the purpose of the ETIPC; and
- facilitates continued use or augmentation of existing corridors and ensures that future development (that is not otherwise exempt) can be efficiently provided.

The purpose of the Scenic Protection Code is to recognise and protect landscapes that are identified as important for their scenic values. In accordance with the Commission's Guidelines: *The scenic protection area overlay and the scenic road corridor overlay should be justified as having significant scenic values requiring protection from inappropriate development that would or may diminish those values*.

The ETIPC Code Purpose is: *To protect use and development against hazards associated with proximity to electricity transmission infrastructure. To ensure that use and development near existing and future electricity transmission infrastructure does not adversely affect the safe and reliable operation of that infrastructure. To maintain future opportunities for electricity transmission infrastructure.*

The application of the Scenic Protection Code to electricity transmission use and development in an ETC is inconsistent with the ETIPC purpose to retain electricity transmission infrastructure in these locations and to maintain future development opportunities.

For works that do not have the benefit of ESI exemptions, it would be difficult to comply with the Scenic Protection Code standards. Further, these assets form part of a wider network that is essential to the safe and reliable provision of electricity to Tasmania which is recognised in the Regional Land Use Strategy.

Please note that these issues have been previously raised and discussed with Meander Valley, Brighton, Central Coast, Glamorgan Spring Bay, Clarence, Circular Head, Devonport, Glenorchy City, West Coast, West Tamar, Sorell, Southern Midlands and Launceston councils as well as the Commissioners throughout the draft LPS assessment process and will continue to be raised as part of this process.

4.2.3. Landscape Conservation Zone

The introduction and subsequent rezoning of land within the ETC to the Landscape Conservation Zone has created a number of unforeseen issues for TasNetworks. Primarily the Landscape Conservation Zone – Zone Purpose is *to provide for the protection, conservation and management of landscape values*. This is considered to potentially conflict with the Purpose of the ETIPC which is *to maintain future opportunities for electricity transmission infrastructure.*

Additionally, development approval for augmentation of an existing corridor under the Landscape Conservation Zone is more onerous than if under the Environmental Living or Rural Resource Zones in the

interim scheme or the Rural Zone under the SPP. For example, the Acceptable Solution building height requirement in the Landscape Conservation Zone is 6m as opposed to 12m under the Rural Zone.

Further, TasNetworks has concern regarding the rezoning of land within an ETC to the Landscape Conservation Zone and the inconsistent messaging it provides to the public. That being that the land is for 'conservation', where in fact clearing of vegetation within the ETC is exempt and augmentation of corridors can occur.

TasNetworks acknowledges that the introduction of the Landscape Conservation Zone is per SPP drafting guidelines however would like to open discussions with Council and relevant stakeholders regarding the impacts that this change in zoning has on the continued operation of electricity transmission infrastructure across the State.

5. Appendix 1 – Detailed Assessment

5.1. Substations

St Marys Substation is the only TasNetworks transmission substation located within the municipality. The following table details TasNetworks planning Policy Position with respect to substations.

Table 4 Substations Policy Position Summary

Zoning	Overlay	SAP / PPZ	ETIPC
Zoned Utilities	- Priority Vegetation not applied where the site is cleared of native vegetation - Scenic Protection not applied	Not applied or - Utilities use is NPR, P or D. - No finite discretionary development standards	Applied

St Marys Substation is zoned Utilities within the draft LPS which is consistent with TasNetworks policy position. Neither the Priority Vegetation nor the Scenic Protection Code has been applied over the site; nor has a PPZ or SAP which is supported. The ETIPC has been applied correctly to the substation. As such, TasNetworks is supportive of how the substation is identified in the draft LPS.

5.2. Communication Sites

There are two communication sites with Break O'Day LGA that are operated by TasNetworks and are required to be protected through the ETIPC Overlay. These are:

- St Marys Substation Communication Site; and
- South Sister Communication Site.

The following table details TasNetworks planning Policy Position with respect to communication sites.

Table 5 Communication Sites Policy Position Summary

Zoning	Overlay	SAP / PPZ	ETIPC
Zoned Utilities	- Priority Vegetation not applied where the site is cleared of native vegetation - Scenic Protection not applied	Not applied or - Utilities use is NPR, P or D. - No finite discretionary development standards	Applied

The St Mary Substation Communication Site is co-located at the St Marys Substation site. As detailed in the previous section of this report, TasNetworks is supportive of how its assets on this site are represented in the draft LPS.

South Sister Communication Site, is located on land identified as PID 3385604. The site is zoned Rural in the draft LPS. As the site is part of a larger title, TasNetworks requests that a 20m radius from the centre of the communication site, within the communication station buffer area, be rezoned to Utilities. The Utilities Zone is considered appropriate for TasNetworks communication infrastructure as it forms a key part of the broader electricity network and is considered as major utilities. This zoning application request is consistent with other communication sites operating under the Tasmania Planning System.

The ETIPC Code has been applied correctly to site; and neither a SAP nor PPZ or the Scenic Protection Code has been applied to the site which is in line with TasNetworks Policy Position.

This submission is consistent with other requests from TasNetworks for previous LPSs.

5.3. Electricity Transmission Corridors

The Line 457 Avoca – St Marys is the only transmission line located within Break O'Day municipality.

The following table details TasNetworks Policy Position regarding the ETC.

Table 6 ETC Policy Position Summary

Zoning	Overlay	ETIPC	SAP / PPZ
- No specific zoning applied to ETC; - Landscape Conservation Zone not applied to ETC	- Scenic Protection Code not applied to ETC	Applied	Not applied or - Utilities use is NPR, P or D. - No finite discretionary development standards

A range of zones have been applied to the land subject to these corridors and as the SPP allows for consideration of Utilities in all zones this is acceptable to TasNetworks.

The Scenic Protection Code has not been applied to the ETIPC which is supported by TasNetworks. Further, the Inner Protection Area (IPA) and Electricity Transmission Corridor (ETC) have been mapped correctly in the draft LPS. Neither a SAP nor PPZ has been applied to the ETIPC which is supported. As such, TasNetworks is supportive of how the Electricity Transmission Corridor is represented in the draft LPS.

5.4. Particular Purpose Zones (PPZ) and Specific Area Plans (SAP)

The following table provides an overview of TasNetworks Policy Position regarding PPZs and SAPs.

Table 7 PPZ and SAP Policy Position Summary

Application	Policy
Use Standards in PPZ or SAP	- Use Class for Utilities or Minor Utilities must be either NPR, P or D. Must not be Prohibited

Development Standards in PPZ or SAP	- Are not drafted without a discretionary approval pathway (e.g not include a finite development standard - an absolute height limit) - Allow subdivision for Utilities use in all zones

It is understood that the draft LPS includes three Particular Purpose Zones (PPZ). The Ansons Bay Small Lot Residential PPZ, Coastal Settlement PPZ and St Helens Coastal Maritime PPZ. TasNetworks is supportive of the drafting of the Coastal Settlement PPZ and the St Helens Coastal Maritime PPZ. However, clause P1.7 Development Standards for Subdivision within the Ansons Bay Small Lot Residential PPZ prohibits subdivision for public use by the Crown, a council or a State authority as well as subdivision required for the provisions of Utilities. Whilst it is understood that this PPZ is transitioning under schedule 6 and amendment cannot be achieved through this process, TasNetworks would like to highlight that the drafting of this provision is inconsistent with the SPPs.

TasNetworks has no objection to the drafting of either the Safeguarding St Helens Aerodrome Specific Area Plan (SAP) or the Stormwater Management SAP.

6. Appendix 2 – SPP Issues

In addition to TasNetworks' request regarding the Scenic Protection Code application, this appendix outlines the benefits of considering electricity transmission assets in the planning process for new development.

The following benefits can be realised if impact on electricity transmission assets are considered in the planning process. (See Table 8 below for the list of relevant exemptions):

- Removes the incorrect perception that buildings and other works exempt under the SPPs can safely occur in a transmission line or underground cable easements without the need to consider asset easement rights or operational requirements.
- Empowers the Planning Authority to request further information, condition or refuse a development that conflict with the Code requirements and purposes.
- Saves developers, Councils, TasNetworks and the community time, cost and distress associated with easement right enforcement after a building, structure or other works have either commenced construction or have been built.
- Reflects the reality with respect to what can and cannot safely occur in an electricity easement.
- Saves developers project delay and cost required as a result of reworking proposals to ensure easement rights are not compromised later in the process.
- Increases the chances of considering the impact of new development on electricity assets early in the planning assessment process, before significant expenditure on project preparation has occurred.
- Prevents land use conflict between existing critical electricity transmission assets and new development.
- Protects human safety.
- Aligns the planning considerations and electricity easement rights.
- Avoids increased acquisition or construction cost for future assets as a result of encroachment (eg: dwelling encroachments within strategically beneficial easements may not cause operational issues for existing assets. However, dwelling acquisition and increased community and social impact of processes required to remove dwellings in the easement if it is required later can be avoided if encroachment is prevented in the first place.
- Supports compliance with AS 7000.
- The strategic benefit of existing electricity easements and the strategic purpose of the Code is preserved.

Conflict Examples

Table 8 presents examples of exempt development where TasNetworks believes conflict with easement rights can occur.

Colour coding indicates the following:

Conflicts with easement rights and may be capable of management to ensure appropriate alignment with easement rights.
Conflicts with easement rights. In almost all cases, this exemption will pose a safety and operational hazard for overhead and underground transmission lines and cables.

Table 8 Exemptions and land use conflict with electricity transmission assets

SPP exemption	Comment
4.3.6 unroofed decks	If not attached to a house and floor level is less than 1m above ground level. **TasNetworks Comment:** A deck of this nature can pose an impediment to safe access and due to other exemptions can be roofed without further assessment which is in conflict with easement rights and could compromise safety. A deck over the operational area required for an underground cable would always be unacceptable.
4.3.7 outbuildings	One shed: up to 18m2, roof span 3m, height 2.4m, fill of up to 0.5m. Up to two shed: 10m2, sides 3.2m, height 2.4m. **TasNetworks Comment:** This type of building almost always poses a safety and operational hazard for transmission lines, cables and human safety. This type of building over the operational area required for an underground cable always poses an unacceptable safety risk.
4.3.8 outbuildings in Rural Living Zone, Rural Zone or Agriculture Zone	4.3.8 Provides for an unlimited number of outbuilding per lot as follows: Floor area 108m2, height 6m, wall height 4m. Already subject to the Local Historic Heritage Code. 4.3.9
4.3.9 agricultural buildings and works	

SPP exemption	Comment
in the Rural Zone or Agriculture Zone	Provides for unlimited number of outbuilding per lot as follows: Must be for agricultural use, floor area 200m2, height 12m. Already subject to the Local Historic Heritage Code and the Scenic Protection Code. **TasNetworks Comment:** These exemptions create a new and potentially more dangerous conflict with electricity transmission lines and cables where a larger and higher building can be constructed in an electricity transmission easement without the need for planning approval. Buildings of this nature can severely impede TasNetworks' ability to safely access, operate and maintain electricity transmission lines. If built, these buildings could also present a threat to human safety. As a result, in almost all cases, if built, buildings covered by these exemptions would necessitate the enforcement of easement rights, either during or after construction and after the planning and building (exemption), process has occurred. This will likely mean relocating the proposal, a further planning assessment and added cost and time to a development. The nature of electricity transmission line assets (ie: running from isolated generation locations into populated areas) means the zones mentioned in this exemption are almost certain to contain (and appropriately so) electricity transmission assets. The cost of removing substantial agricultural buidings from easements required for new assets also adds to future asset construction costs.
4.3.11 garden structures	Unlimited number, 20m^2, 3m height max. Already subject to the Local Historic Heritage Code. **TasNetworks Comment:** If not managed appropriately, this type of structure has the potential to compromise clearances and the safe and reliable operation of transmission lines and underground cables. Depending on location within an easement, could also present a threat to human safety. Cost of removal is limited, however still requires post breach enforcement of easement rights.
4.5.1 ground mounted solar energy installations	Each installation can be 18m^2 area. Already subject to the Local Historic Heritage Code.

SPP exemption	Comment
	TasNetworks Comment: This type of activity has the potential to compromise clearances or adversely impact easement access (especially during emergency repair conditions).
4.5.2 roof mounted solar energy installations	Already subject to the Local Historic Heritage Code. This would likely only apply to existing buildings within easements. **TasNetworks Comment:** Encroachment is likely existing, however, this exemption has the potential to compromise clearances in what may be a compliant situation.
4.6.8 retaining walls 4.6.9 land filling	4.6.8 Allows for retaining 1m difference in ground level. This exemption is already subject to the Local Historic Heritage Code and the Landslip Hazard Code. 4.6.9 Allows for filling of up to 1m above ground level. This exemption is already subject to the Natural Assets Code, Coastal Erosion Hazard Code, Coastal Inundation Hazard Code, Flood-Prone Areas Hazard Code and Landslip Hazard Code. **TasNetworks Comment:** This type of activity has the potential to compromise ground clearances for existing transmission lines and safe operational separation for underground transmission cables. Subject to appropriate management, this type of activity can usually occur within transmission line easements, however, may pose a more challenging risk for underground cables.
4.6.13 rain-water tanks 4.6.14 rain-water tanks in Rural Living Zone, Rural Zone, Agriculture Zone or Landscape Conservation Zone 4.6.15 fuel tanks in the Light Industrial Zone, General Industrial Zone, Rural Zone, Agriculture Zone or	This was one exemption in the draft SPPs and was modified by the Commission into four exemptions. TasNetworks requested the original exemption be subject to the Code. 4.6.13: attached or located to the side or rear of a building and can be on a stand height 1.2m high. Subject to the Local Historic Heritage Code. 4.6.14 attached or located to the side or rear of a building with no height limit. Subject to the Local Historic Heritage Code. 4.6.15 no height limit, no requirement is be located near a building. Limited when storage of hazardous chemicals is of a manifest quantity and Coastal Erosion Hazard Code, Coastal Inundation Hazard Code, Flood-Prone Areas Hazard Code, Bushfire-Prone Areas Code or Landslip Hazard Code, applies and requires a permit for the use or development.

SPP exemption	Comment
Port and Marine Zone 4.6.16 fuel tanks in other zones	4.6.16 must be attached or located to the side or rear of a building, max 1kL capacity, on a stand up to 1.2m high and subject to the Local Historic Heritage Code. **TasNetworks Comment:** These exemptions allow for water tanks on stands and some have no height limit. These developments have the potential to compromise access to the easement, compromise ground clearances for existing transmission lines and safe operational separation for underground transmission cables. Depending on location in the easement, these developments could pose a threat to human safety. Subject to appropriate management, this type of activity may occur within transmission line easements, however, may pose a more challenging risk for underground cables.

Representation 67

From: Taylor, Jason
To: Break O'Day Office Admin
Subject: TasWater Representation - Break O'Day Council Draft Local Provisions Schedule
Date: Monday, 6 December 2021 8:56:05 AM
Attachments: jmaoe001.png
jmaoe003.jpg

CAUTION: Do not click links or attachments unless you recognize the sender and know the content is safe

To Whom It May Concern,

Please consider this email a representation from TasWater regarding the Break O'Day Council Draft Local Provisions Schedule (LPS).

The below table is land containing TasWater infrastructure (specifically a water treatment plants and storages that fit the definition of Utilities) that we consider should be zoned Utilities:

NAME	TYPE	SERVICE	VOLUME	FOLIO	CAD_TYPE2	PROPERTY_ID	PROPERTY_ADDRESS_LINE_1	PROPERTY_ADDRESS_LINE_2
Fingal WTP & Storages	Treatment Plant - Full Treatment	Water	165255	2	TasWater	3229476	Lot 2 LOUISA ST	FINGAL TAS 7214
St Marys WTP & Storages	Treatment Plant - Full Treatment	Water	166345	1	TasWater	3253839	Lot 1 GARDINERS CREEK RD	ST MARYS TAS 7215
Campbell St Scamander Reservoir	Tank	Water		0	DPIPWE (Crown Land Services)	6812114	CAMPBELL ST	SCAMANDER TAS 7215

TasWater are of the opinion that treatment plants for both water and sewer, and water storages should be zoned as Utilities, but pump stations are suited to the underlying/surrounding zoning remaining in place.

TasWater are also of the opinion that Attenuation Area buffers around Sewerage Treatment Plants (STP's) should not be mapped in the LPS's. This aligns with Council's decision to have *"... the draft LPS rely on the attenuation distances detailed in the code ..."* (p79 of Council's Supporting Report). TasWater are undertaking a long term improvement program involving most STP's in the state, which may impact on attenuation distances and accordingly would prefer to rely on the code, rather than mapping buffers in the LPS's which may soon be out of date or incorrect.

Regards

Jason Taylor
Development Assessment Manager

M 0459 167 683
F 1300 862 066
A GPO Box 1393, Hobart TAS 7001
169 Main Road, Moonah, TAS 7009
E jason.taylor@taswater.com.au
W http://www.taswater.com.au/

Have I been helpful? Please provide feedback by clicking here.

Representation 68

From: mail@jenniferbinnsdesign.com.au
To: Break O Day Office Admin
Subject: LPS representation
Date: Tuesday, 23 November 2021 10:44:55 AM
Attachments: image001.jpg
image002.jpg
image003.png
REPRESENTATION.pdf
Letter of Support - Break O" Day Council.pdf

Hi, please find attached a representation for the draft Local Provisions Schedule on behalf of the St Helens Sailing Squadron

Regards,

Jen

St Helens Sailing Squadron
c/- Level 1 - 48 Cecilia Street St Helens TAS 7216

Attn: John Brown
General Manager
Break O' Day Council
PO Box 21 St Helens Tasmania 7216

Date: November 3 2021

Re: Break O' Day Council Draft Local Provisions Schedule (LPS)

REPRESENTATION

That Sports and Recreation be included as a Permitted use class within BRE-P3.4 Use Table

The St Helens Sailing Squadron (SHSS) currently operates from the site known as Pikes Point or the Georges Bay Marina/St Helens Slipway and the use of the site by the SHSS falls under the Sports and Recreation use class. This site has been zoned as BRE-P3.0 St Helens Coastal Maritime in the draft Local Provisions Schedule and the proposed Use Table BRE-P3.4 does not include Sports and Recreation as an allowable use class within the Particular Purpose Zone. The SHSS considers that Sports and Recreation should be included as an allowable use class to facilitate aquatic based recreation activity on the Georges Bay Foreshore.

The SHSS currently leases the site from Parks and Wildlife and has been involved in on-going negotiations with Parks and Wildlife regarding long term lease of the site with possibility for the site to be shared with a commercial operator pending the outcome of a future round of expression of interest flagged by Parks and Wildlife. In addition to youth dinghy sailing, through the SHSS the site is currently used for dragon boating, kayaking and open water swimming. The SHSS hosts sailing regattas with participants from across Tasmania, including King Island, and from interstate. As well as providing activity for local residents and supporting youth development, the SHSS regattas bring visitors to the area. The SHSS previously submitted a proposal to Parks and Wildlife for the site to be a community aquatic recreation precinct and attached to this representation is the letter of support provided by Break O' Day Council. It is anticipated that the SHSS will continue to operate from the site and that the site will continue to support community based aquatic recreational activity.

The use of the site for sport and recreation meets the purposes of the Particular Purpose Zone – St Helens Coastal Maritime.

BRE-P3.1.1 The use of the site for sport and recreation provides for tourist related activity that promotes the St Helens Foreshore as a place to visit.

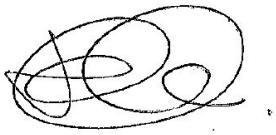
BRE-P3.1.2 The use of the site for sport and recreation provides for recreational boating and related activities in a manner that respects the coastal character of the area and amenity of the surrounding residential area.

BRE-P3.1.3 The use of the site for sport and recreation is a low impact non-residential use that fits within the character of the coastal area.

BRE-P3.1.4 The use of the site for sport and recreation will provide for management of the site to protect the natural values of Georges Bay.

BRE-P3.1.5 The use of the site for sport and recreation facilitates maritime activity.

Best regards,



Jennifer Binns

Treasurer, St Helens Sailing Squadron
0439 765 452
jenniferbinns@bigpond.com

Break O'Day
COUNCIL

ABN 96 017 131 248
32-34 Georges Bay Esplanade
St Helens Tasmania 7216
T: (03) 6376 7900
E: admin@bodc.tas.gov.au
W: www.bodc.tas.gov.au

FROM THE MAYOR

17 April 2020

Ms J Binns
mail@jenniferbinnsdesign.com.au

Dear Ms Binns,

Thank you for providing a copy of the Expression of Interest that the St Helens Sailing Squadron has developed in relation to the St Helens Slipway/Georges Bay Marina. Having now had the opportunity to develop an understanding on the vision of the Squadron in relation to the site, the Break O'Day Council would like to commend you on the quality of the application and the thought which has gone into the overall vision for the future use and development of the site.

Council believes that there is the opportunity for a range of complementary uses which could include community and commercial activity being co-located on this site. As you are aware, Council has previously expressed its support for a slipway facility able to cater to the needs of commercial and pleasure vessels operating from this site. However, we also need to be open to other ideas and there is a lot of merit to the proposal from the Squadron which does recognise that there could be some form of commercial activity at the site. We ask that through this process, the Squadron be open to working with other interested parties should the opportunity arise to enhance the Expression of Interest you have provided.

A particular strength which Council is encouraged by is the involvement of more than one community group in the proposal and the recognition of other users of Georges Bay. We do note that there is an expectation that Council will make some significant financial contributions towards infrastructure as well as accepting ongoing maintenance and operational costs. Whilst we have had some very initial discussions on this matter as part of the EoI process, no commitments have been given. Should you be successful in progressing to the next stage of this process then we will need to discuss the extent of Council involvement.

In relation to the potential ocean pool facility, we are concerned about the lack of detail on how this will operate and the potential expectations that this will create in the community. Our preference that this is only considered as an option and that the future of this part of the site be something for future consideration.

Council wishes you all of the best with the Expression of Interest process.

Yours faithfully,

Mick Tucker
Mayor

Representation 69

From: Branden | Rainforest Rescue
To: Break O Day Office Admin
Cc: John Thompson
Subject: Representation on the Draft Break O"Day Local Provisions Schedule - B. Barber
Date: Monday, 22 November 2021 1:23:53 PM
Attachments: image001[80].jpg

Attention: Break O'Day Planning Authority

I am the CEO of Rainforest Rescue, owners of the conservation property at Forest Lodge Road, Pyengana (PID 6805205, CT 238246/1). In the currently exhibited Break O'Day Draft Local Provisions Schedule this property has been rezoned as Rural.

The property is fully covered by the 80.7 ha Forest Lodge Reserve protected by conservation covenant and has therefore been identified by both the State and Commonwealth Governments for protection and conservation of the biodiversity it contains. As all of the property is private reserve, Guidelines LCZ1 and RZ1 together indicate that the property should be rezoned to Landscape Conservation. The Forest Lodge Reserve is surrounded on three sides by the Mount Victoria Regional Reserve zoned as Environmental Management.

In its representation Conservation Landholders Tasmania has presented a detailed case for rezoning this property. I support their case and agree to this property being rezoned to Landscape Conservation.

Could you please acknowledge receipt of my representation?

Thanks very much and best wishes,

Branden

—

Branden Barber | CEO
m: 0455 255 398
int'l: +61 455 255 398
ofc: 02 6684 4360
PO Box 40, Mullumbimby, NSW, 2482
www.rainforestrescue.org.au

"From Little Things Big Things Grow" - Become a Rainforest Guardian and effortlessly make saving rainforests part of your life.

Rainforest Rescue acknowledges the traditional custodians of the lands on which our organisation is located, where we work and where we live. We respect ancestors and Elders past, present and emerging.

Representation 70

From: John Thompson
To: Break O Day Office Admin
Cc: Gail Dennett; John Dennett
Subject: Representation on Break ODay Draft LPS by Conservation Landholders Tasmania
Date: Monday, 8 November 2021 12:12:51 PM
Attachments: Representation to Break ODay Council re Draft LPS - CLT - 08Nov21.pdf

Attention: John Brown - General Manager

Please find attached the representation on the Break O'Day Draft LPS by Conservation Landholders Tasmania.

Could you please acknowledge receipt of this representation?

Regards

John

--
John Thompson
on behalf of the Board of Trustees - CLT Trust

Phone 0424 055 125

8th November 2021

John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216

Via email: admin@bodc.tas.gov.au

Representation about the Break O'Day Draft LPS – proposal to change the zoning of thirty (30) reserved properties to Landscape Conservation

Summary of Representation

Conservation Landholders Tasmania (CLT) has reviewed the Break O'Day Draft LPS Zone Maps and the Supporting Report and believes that thirty (30) properties containing Private Reserves with land reserved for the protection of biodiversity should be rezoned fully or partly to Landscape Conservation based on Guideline LCZ1, when read together with Guidelines RZ1 and AZ6, subject to landowner agreement.

Reserve Name	***Property Address***	***Property ID***	***Title References***
Ansons River	ANSONS BAY RD ANSONS BAY TAS 7264	7184148	101081/1 101080/1
Hodges Spur - Blue Tier	TASMAN HWY WELDBOROUGH TAS 7264	6807294 6807307 6807286	228407/1 236472/1 236471/1
Blue Tier	201 TERRYS HILL RD GOSHEN TAS 7216	6805379	239331/1 239332/1 239330/1
Forest Lodge	FOREST LODGE RD PYENGANA TAS 7216	6805205	238246/1
West Pyengana	FOREST LODGE RD PYENGANA TAS 7216	6805299	240592/1

ABN 47 746 051 320
website www.clt.asn.au
post 675 Cradle Mountain Road Erriba TAS 7310
email gaildennett@gmail.com

Reserve Name	***Property Address***	***Property ID***	***Title References***
Ben Nevis North	SCHULHOFS RD UPPER BLESSINGTON TAS 7212	6417093	169864/1
Ben Nevis South	SCHULHOFS RD UPPER BLESSINGTON TAS 7212	6417085	169864/2
Catos Creek	'CATOS HOMESTEAD' - 433 CATOS RD UPPER SCAMANDER TAS 7215	3336765	242163/1
Seaview Farm	686 GERMAN TOWN RD ST MARYS TAS 7215	3450015	168012/2 209977/1
Seaview Farm	GERMAN TOWN RD ST MARYS TAS 7215	3314080	179552/1
Denneys Road	22 DENNEYS RD ST MARYS TAS 7215	2593962	121906/1 121906/2
Lower German Town Road St Marys #1	203 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2966706	157275/1
Lower German Town Road St Marys #2	225 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563878	142906/2
Lower German Town Road St Marys #3	Lot 3 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563886	142906/3
Lower German Town Road St Marys #4	224 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563894	142906/4
Lower German Town Road St Marys #5	Lot 5 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563907	142906/5
Newmans Creek	158 GERMAN TOWN RD ST MARYS TAS 7215	7627105	210430/1
Whites Gully	180 GILLIES RD ST MARYS TAS 7215	2623893	120054/1 206762/1 218714/1 120232/1
Mount Elephant	730 IRISH TOWN RD ST MARYS TAS 7215	9566280	112196/1 245582/1
Curtis Road St Marys	130 CURTIS RD ST MARYS TAS 7215	7378807	121098/1
Elephant Farm Elephant Pass	300 MOUNT ELEPHANT RD GRAY TAS 7215	7298794	200851/1
Wardlaws Creek	31 DALMAYNE RD GRAY TAS 7215	7720238	51295/1
Gray #2	822 ELEPHANT PASS RD GRAY TAS 7215	7320912	250636/1
Calders Gully	CALDERS GULLY RD MANGANA TAS 7214	6416832	146101/1
Tullochgorum	4529 ESK MAIN RD FINGAL TAS 7214	9211677	174308/1 181574/2 121908/1 121908/2

Reserve Name	*Property Address*	*Property ID*	*Title References*
Fingal #1 and #2	ESK MAIN RD FINGAL TAS 7214	6413287 2867767	224858/1 211222/1 211225/1 211226/1 211223/1 102678/2 171558/1 152147/1 121797/1
Fingal #1 and #2	3837 ESK MAIN RD FINGAL TAS 7214	3478595	152324/1 229987/1

The natural values within these Reserves have already been identified for protection and conservation by the Minister for Environment and Landscape Conservation Zone should be applied during the current Draft Local Provisions Schedule assessment process given that Landscape Conservation zone was inadvertently not applied when drafting the LPS.

Background

Conservation Landholders Tasmania (CLT) is an educational trust. Conservation landholders including those with land reserved by conservation covenant are the beneficiaries of the Trust. In Tasmania there are currently about 900 reserves under conservation covenant totaling 111,000 ha, or 4.2% of the private property in the state. The Trustees organise field days and forums on topics of relevance and interest to these conservation landholders. CLT has been supported by the three NRMs and the Tasmanian Land Conservancy for over 9 years.

In late 2019 CLT became aware that private properties with land reserved for their significant natural values are routinely being rezoned from Rural Resource to Rural or Agriculture by local planning authorities in their Draft LPS. CLT considers that some of this reserved land is more appropriately zoned as Landscape Conservation.

The application of Landscape Conservation Zone in the Break O'Day Draft LPS

In the Draft Zone Maps the Landscape Conservation Zone has only been used to replace the retired Environmental Living Zone despite the following statement on page 8 of the Supporting Report:

> *The LPS provides adequate protection of natural and physical resources through:*
> *…*
> *- Applying the Landscape Conservation Zone where land was located in the Environmental Living Zone and the natural and landscape values support this and <u>where otherwise justified</u>;*

It follows that the Planning Authority did not consider that Landscape Conservation Zone was justified for any other land despite Guideline LCZ1 requiring that:

> *The Landscape Conservation Zone should be applied to land with landscape values that are identified for protection and conservation …*

where landscape values means either natural or scenic values.

As discussed later, private reserved land protected by conservation covenant has been identified for protection and conservation of natural values and therefore should be zoned Landscape Conservation. In the Break O'Day draft Zone Maps only the 17 properties containing Private Reserves that were zoned Environmental Living have been rezoned as Landscape Conservation.

Of the other 54 properties containing Private Reserves only one appears to have been considered for rezoning to protect the private reserved land, namely 'Rainbow Retreat' at 182 Gillies Road, St Marys (PID 1793495, Title Ref 127101/1) that contains the 14.6 ha St Patricks Head Private Nature Reserve.

The lack of consideration of Landscape Conservation zone for the other 53 properties containing reserved land protected by conservation covenant is even more surprising given the Tasmanian Planning Commission guidance on the Planners Portal dated 22 April 2021 on this matter (included in Appendix A of this representation) that states:

> *Guideline No.1 for both the Landscape Conservation Zone (LCZ) and Environmental Management Zone (EMZ) indicate that land which contains a conservation covenant will invariably have values that can result in the land being suitable for zoning in either the EMZ or LCZ.*

The Home Page of the Planners Portal states:

> *The Planners Portal acts as a central resource to obtain clarification and information leading up to exhibition of a draft LPS.*

The Planning Authority's non-consideration of the rest of the private reserves within the municipality for rezoning to Landscape Conservation or Environmental Management is an unfortunate oversight that can be remedied in its Section 35F Report.

Private land in Break O'Day municipality reserved for the protection and conservation of biodiversity

In the Break O'Day planning area there are 71 properties containing 6,281 ha of private reserved land protected by conservation covenant distributed across 105 titles. This represents 1.8 % of the land in the municipality.

All of this land is included in the Tasmanian Reserve Estate which is land reserved to be managed for biodiversity conservation under Tasmania's Regional Forest Agreement. All of this land is also part of Australia's National Reserve System thereby contributing to the fulfilment of Australia's

obligations under the international *Convention on Biological Diversity 1993*. All of the reserves are listed in the latest version of the Collaborative Australian Protected Area Database (CAPAD 2020) available at https://www.environment.gov.au/land/nrs/science/capad.

The landscape values within these Reserves have already been identified for protection and conservation by both the State and Federal Ministers for the Environment. Details of the natural values are contained in the Nature Conservation Plans which are held by the Private Land Conservation Program in DPIPWE. These natural values were 'ground-truthed' by DPIPWE or Tasmanian Land Conservancy ecologists when the Reserves were established.

Case for rezoning many of these properties to Landscape Conservation

Of the 71 properties with Private Reserves mentioned CLT considers that 30 of the 53 properties currently zoned Rural or Agriculture in the Draft Zone Maps, should have Landscape Conservation Zone applied to all or part of them. The other 23 properties were not considered because significant areas within titles on those properties are also used for agriculture.

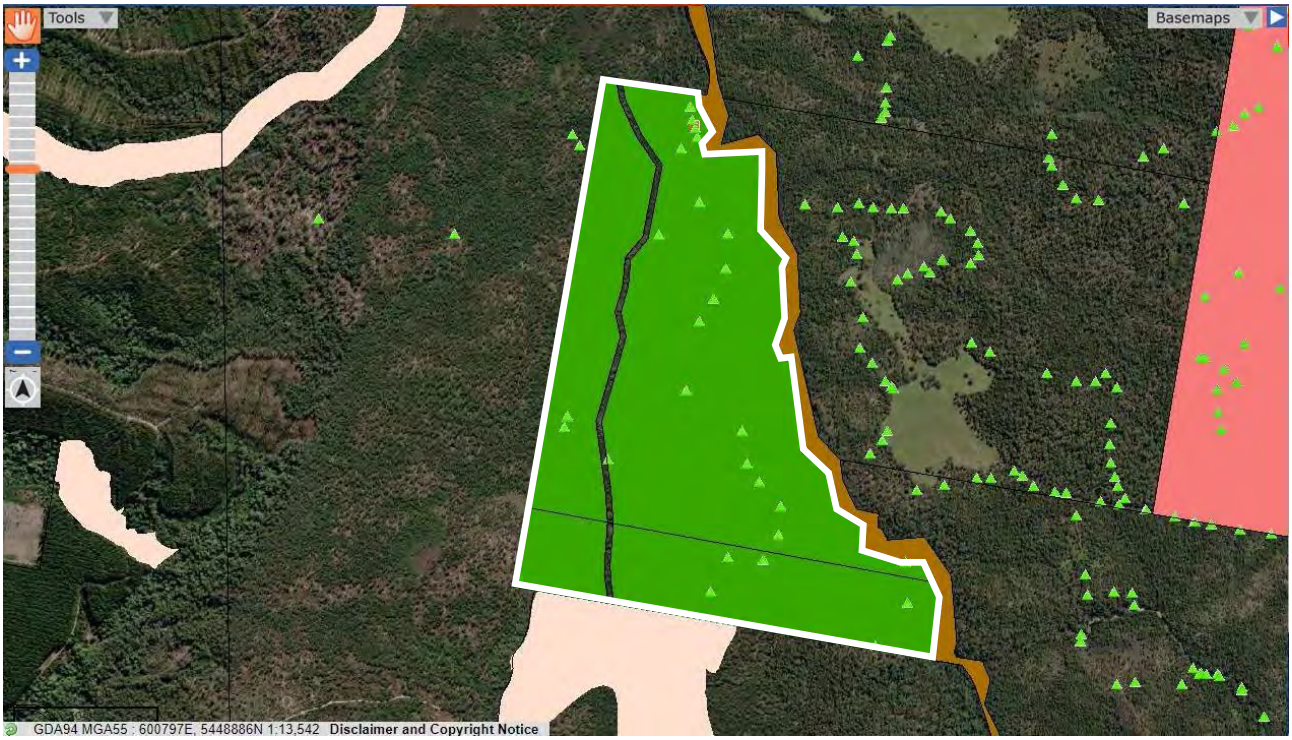
Guideline LCZ1, when read together with Guideline RZ1, requires that 'Landscape Conservation Zone should be applied' to titles containing land within the Tasmanian Reserve Estate as they contain natural values 'that are identified for protection and conservation' (see Appendix A for the relevant extracts from Guideline No. 1).

Titles that are fully reserved as well as titles that are partly reserved, where the non-reserved part is unsuitable for agriculture, should therefore be zoned as Landscape Conservation, as indicated by the Commission's 22 April 2021 Q&A on the Planners Portal.

Details of the 26 Reserves across the 30 properties are provided below including ListMap screenshots of the Tasmanian Reserve Estate (green areas), Threatened Flora Points (light green triangles), Threatened Fauna Points (red squares) and Threatened Native Vegetation Communities (numbered areas with 'T' pattern) layers. Where there are adjoining Private Reserves these have been discussed together.

Ansons River Reserve (CAPAD 2020 Row Nos 1131-1132)

Address ANSONS BAY ROAD ANSONS BAY TAS 7264
PID 7184148
Title Refs 101081/1, 101080/1



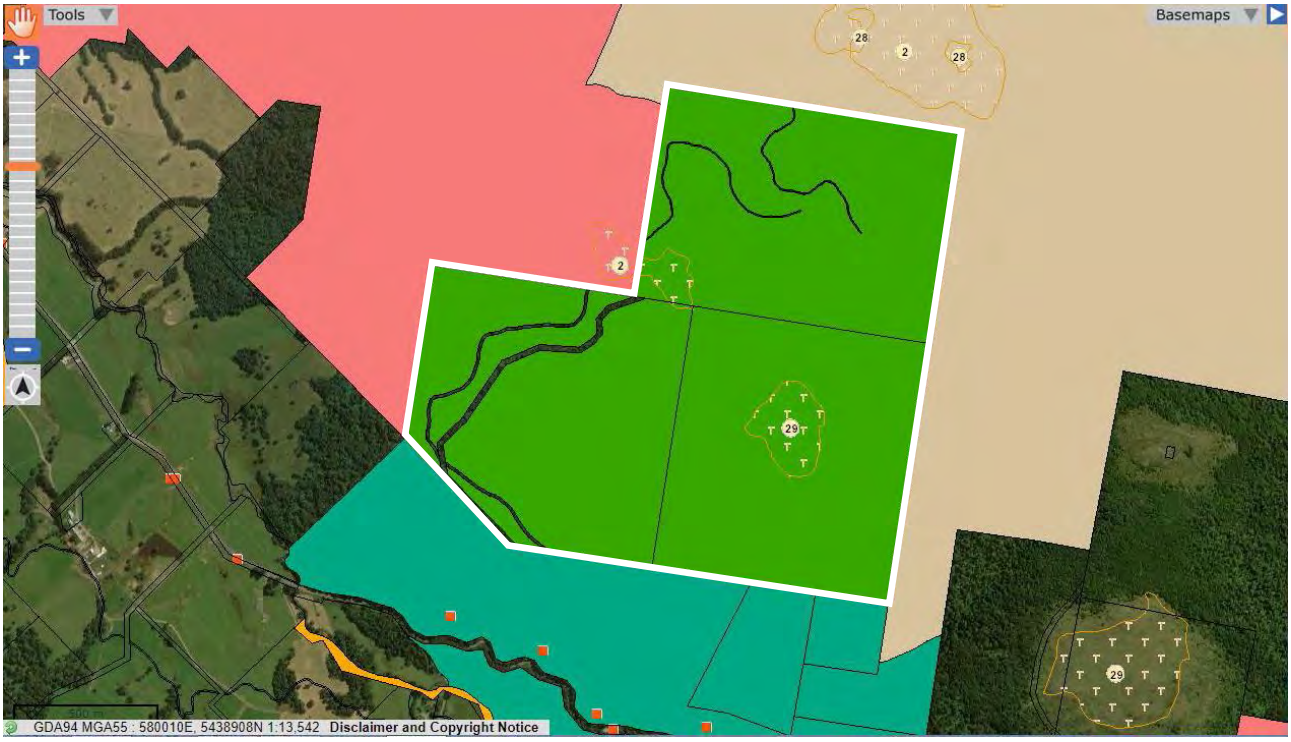
The 163.3 ha Ansons River Reserve covers 100% of Title Refs. 101081/1 and 101080/1. A reserved road runs from north to south through the Reserve. Ansons River Reserve adjoins the Ansons River Conservation Area (brown area) to its east and a Sustainable Timbers Tasmania (STT) Informal Reserve to its south.

It is proposed that all of both titles and the reserved road (solid white border) are rezoned to Landscape Conservation given the significant size of the Reserve and because it adjoins the Ansons River Conservation Area zoned Environmental Management and the STT Informal Reserve.

The Reserve contains the vulnerable *Pomaderris elachophylla* (small-leaf dogwood) and the endangered *Barbarea australis* (Riverbed wintercress) listed in Schedules 4 and 3, respectively, of the *Threatened Species Protection Act 1995*, and also contains and provides habitat for the Endangered *Aquila audax subsp. Fleayi* (Tasmanian wedge-tailed eagle) listed in Schedule 3 of the same Act. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Hodges Spur Blue Tier Reserve (CAPAD 2020 Row Nos 1720-1722)

Addresses	PIDs	Title Refs	Percent reserved
TASMAN HWY WELDBOROUGH TAS 7264	6807294	228407/1	100%
TASMAN HWY WELDBOROUGH TAS 7264	6807307	236472/1	100%
TASMAN HWY WELDBOROUGH TAS 7264	6807286	236471/1	100%



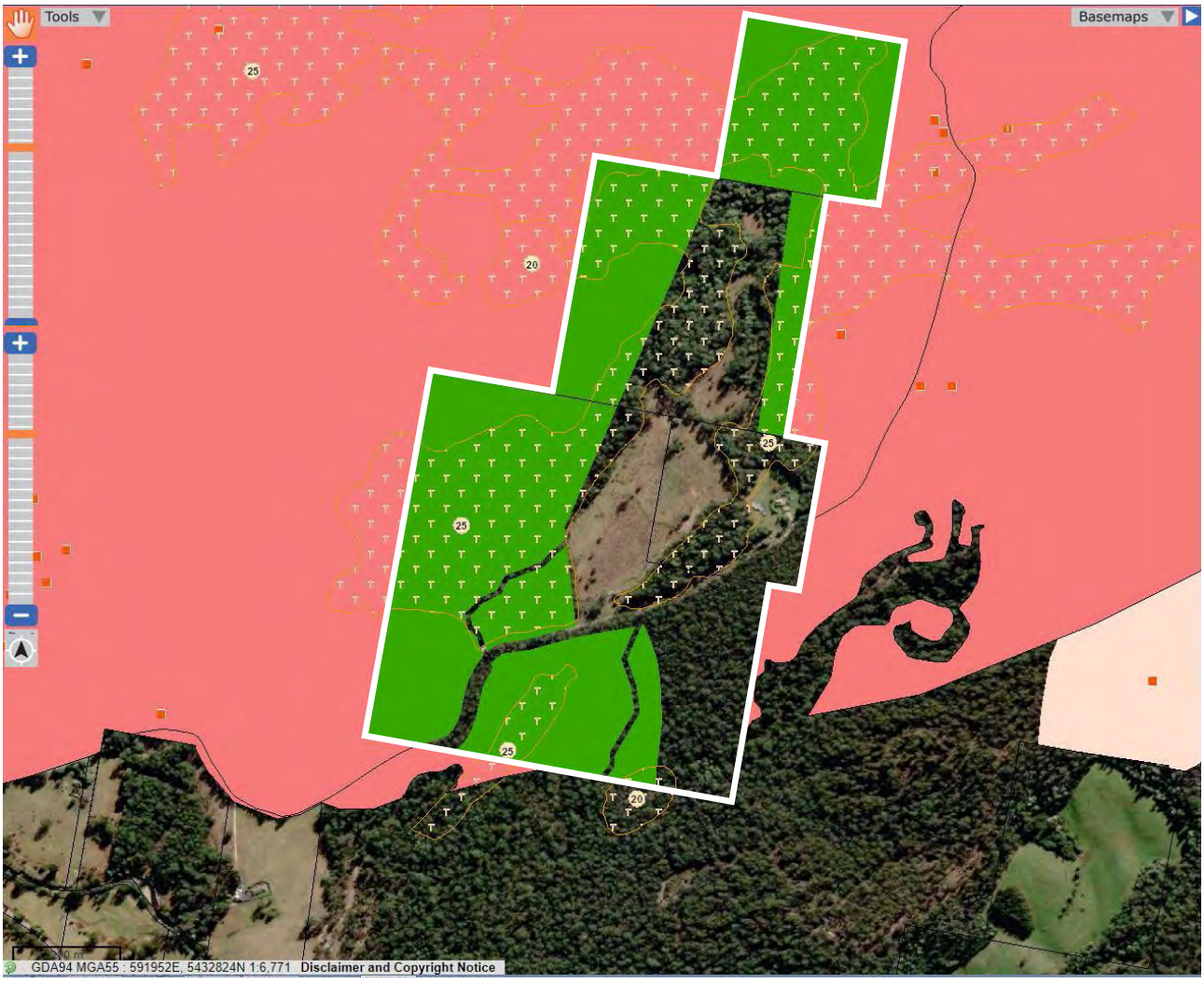
Hodges Spur Blue Tier Reserve has a combined area of 234 ha and covers 100% of each of the three titles (Title Refs 228407/1, 236472/1 and 236471/1) each with separate PIDs. The Reserve adjoins the Blue Tier Regional Reserve to its north and east and the Weldborough Pass State Reserve to its south.

It is proposed that all of the three adjoining Title Refs. 228407/1, 236472/1 and 236471/1 and the reserved roads within (solid white border) are rezoned to Landscape Conservation.

The combined Hodges Spur Blue Tier Reserve contains areas of the threatened vegetation communities No 2 *Allocasuarina littoralis* forest and No 29 Highland *Poa* grassland as listed in Schedule 3A of the *Nature Conservation Act 2002*. Further details of the natural values protected by these Reserves are in the Nature Conservation Plans held by DPIPWE.

Blue Tier Reserve (CAPAD 2020 Row Nos 1216-1220)

Address 201 TERRYS HILL RD GOSHEN TAS 7216
PID 6805379
Title Refs 239330/1, 239331/1, 239332/1



The 47.9 ha Blue Tier Reserve is contained within three of the four titles on this property. It covers 100% of the 12.3 ha Title Ref 239331/1, 11.0 ha (54%) of the 20.5 ha Title Ref 239332/1 and 27.6 ha (64%) of the 43.0 ha Title Ref 239330/1. A residential dwelling is located within the 8.2 ha Title Ref 239329/1. The Reserve is surrounded on three sides by Future Potential Production Forest.

It is proposed that all four titles within the property (solid white border) are rezoned to Landscape Conservation as the non-reserved land appears unsuitable and not used for agriculture.

The Reserve contains the threatened vegetation communities No 20 *Eucalyptus ovata* forest and woodland and No 25 *Eucalyptus viminalis* wet forest as listed in Schedule 3A of the *Nature Conservation Act 2002*. Further details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Forest Lodge Reserve (CAPAD 2020 Row No 1577)
West Pyengana Reserve (CAPAD 2020 Row No 2635)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
FOREST LODGE RD PYENGANA TAS 7216	6805205	238246/1	80.7	80.7	100%
FOREST LODGE RD PYENGANA TAS 7216	6805299	240592/1	99.7	93.5	94%

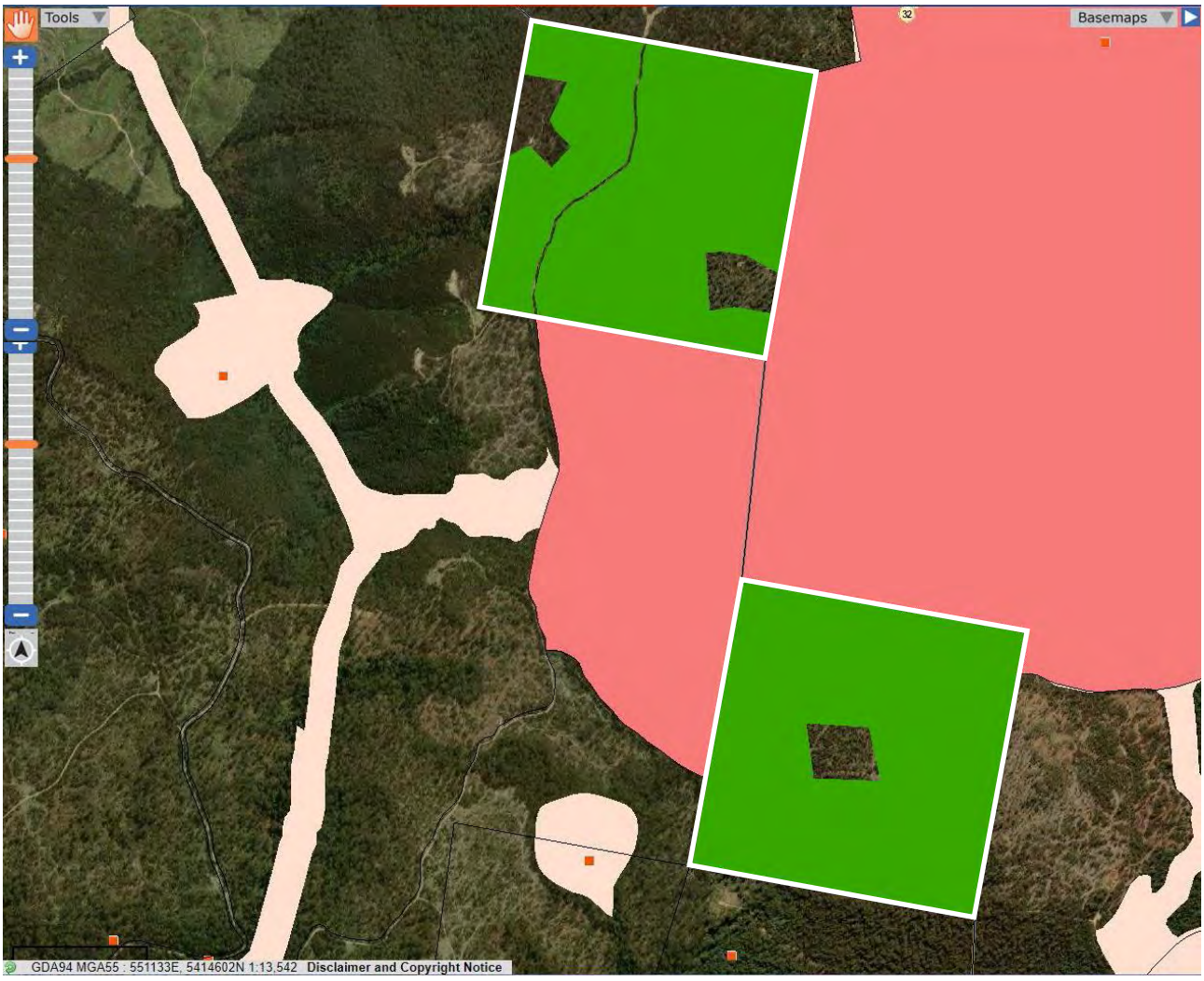
The Forest Lodge Reserve to the north covers 100% of the 80.7 ha Title Ref 238246/1 and the West Pyengana Reserve to the south covers 93.5 ha (94%) of the 99.7 ha Title Ref 240592/1. The Forest Lodge Reserve adjoins the Mount Victoria Regional Reserve (beige area) on three sides and the West Pyengana Reserve is surrounded by the same Regional Reserve.

It is proposed that all of both titles (solid white borders) are rezoned to Landscape Conservation zone as Title Ref 238246/1 is fully reserved and the small non-reserved part of 240592/1 is unsuitable and not used for agriculture.

The details of the natural values protected by these Reserves are in the Nature Conservation Plans held by DPIPWE.

Ben Nevis North Reserve (CAPAD 2020 Row Nos 1189-1190)
Ben Nevis South Reserve (CAPAD 2020 Row No 1191)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
SCHULHOFS RD UPPER BLESSINGTON TAS 7212	6417093	169864/1	120.0	108.8	91%
SCHULHOFS RD UPPER BLESSINGTON TAS 7212	6417085	169864/2	120.0	115.1	96%



The Ben Nevis North Reserve covers 108.8 ha (91%) of the 120.0 ha Title Ref 169864/1 and the Ben Nevis South Reserve covers 115.1 ha (96%) of the 99.7 ha Title Ref 169864/2. Both titles adjoin a large area of Future Potential Production Forest and contain a small area of non-reserved land for current or future residential use.

It is proposed that all of both titles (solid white borders) are rezoned to Landscape Conservation zone as the non-reserved land is unsuitable and not used for agriculture.
The details of the natural values protected by these Reserves are in the Nature Conservation Plans held by DPIPWE.

Catos Creek Reserve (CAPAD 2020 Row Nos 1316-1317)

Address 'CATOS HOMESTEAD' - 433 CATOS RD UPPER SCAMANDER TAS 7215
PID 3336765
Title Ref 242163/1

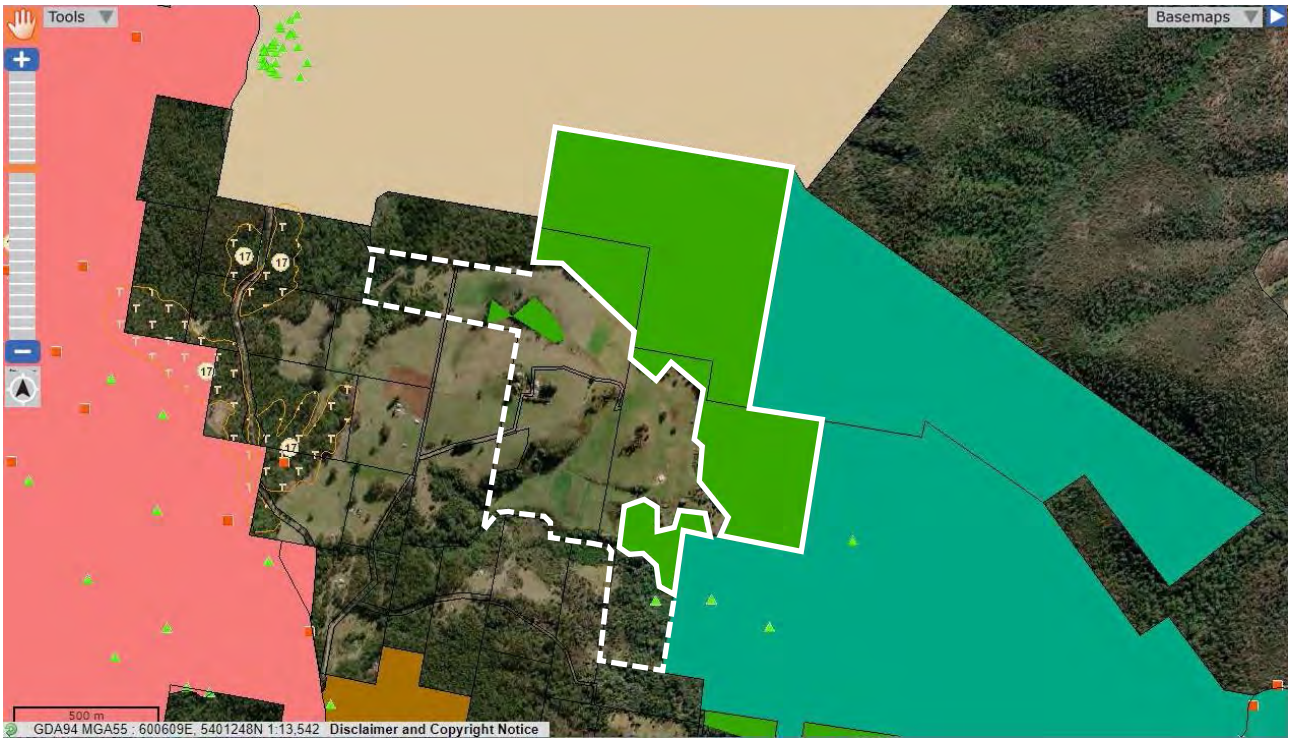
The 77.2 ha Catos Creek Reserve covers 96% of the 80.7 ha Title Ref 242163/1. There is a small area of non-reserved land in the north east set aside for a future residential dwelling and a Reserved Road runs from north to south through the title. Catos Creek Reserve adjoins the Avenue River Regional Reserve (beige area) to its southwest and an STT Informal Reserve to its east.

It is proposed that all of Title Ref 242163/1 and the Reserved Road (solid white border) is rezoned to Landscape Conservation given that the non-reserved land is unsuitable and not used for agriculture, the significant size of the Reserve and because it adjoins the Avenue River Regional Reserve zoned Environmental Management and the STT Informal Reserve.

The Reserve contains the rare *Tasmanipatus barretti* (Giant velvet worm) listed in Schedule 5 of the *Threatened Species Protection Act 1995*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Seaview Farm Reserve (CAPAD 2020 Row Nos 2301-2304)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
686 GERMAN TOWN RD ST MARYS TAS 7215	3450015	168012/2 209977/1	49.7 48.3	8.5 48.3	17% 100%
GERMAN TOWN RD ST MARYS TAS 7215	3314080	179552/1	49.0	24.3	50%



The 81.1 ha Seaview Farm Reserve covers parts of two properties and links the 935 ha German Town Regional Reserve to its north and the 361 ha St Marys Pass State Reserve to its east and south. Seaview Farm Reserve covers all of Title Ref 209977/1 and part of Title Refs 168012/2 and 179552/1. The balance of the partly reserved titles is used for agriculture.

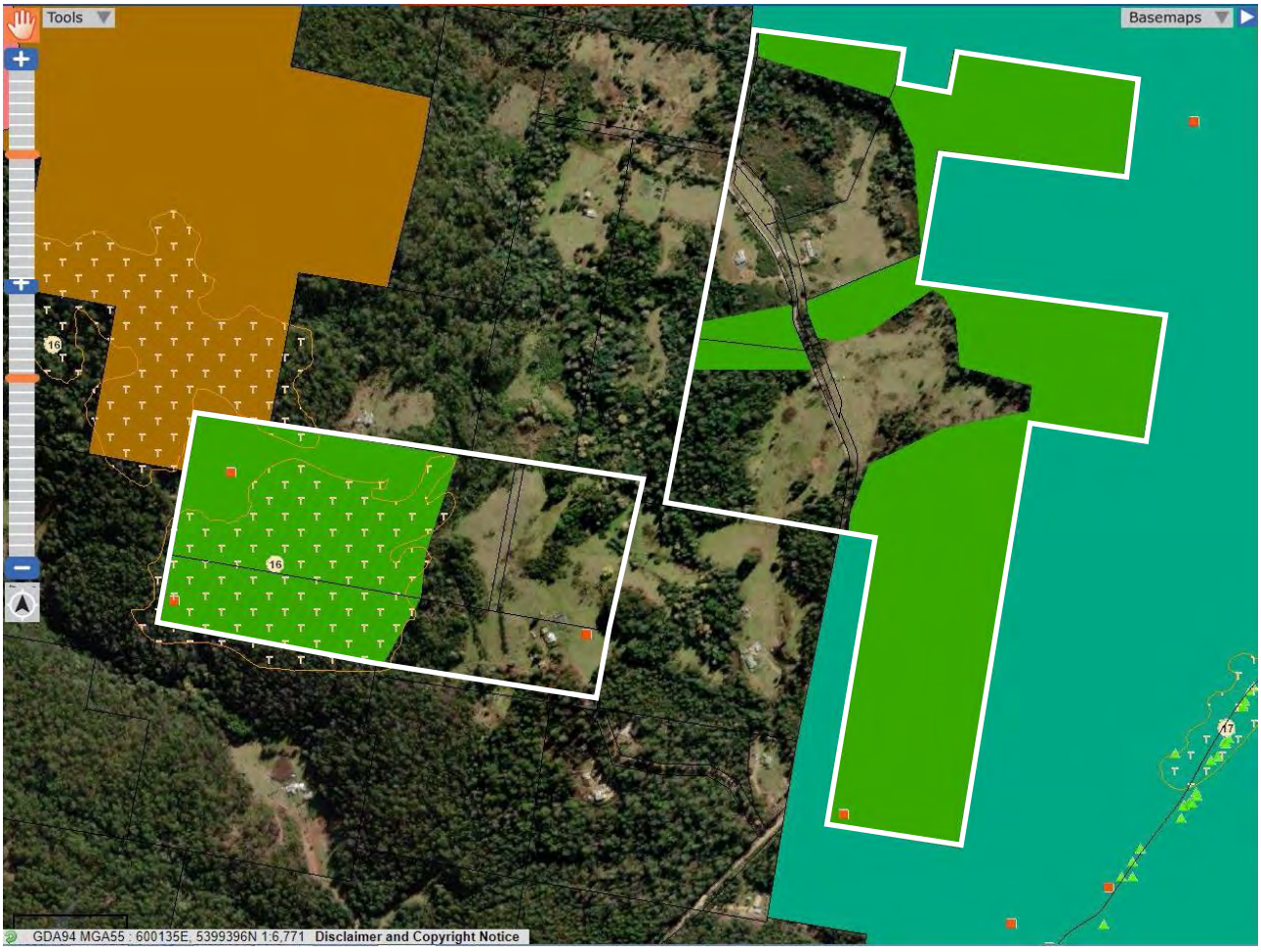
It is proposed that all of Title Ref 209977/1, the reserved part of Title Ref 168012/2 adjoining Title Ref 209977/1 and both reserved parts of Title Ref 179552/1 (solid white borders) are rezoned to Landscape Conservation zone with the balance of Title Refs 168012/2 and 179552/1 remaining in the Rural Zone (dashed white line). 79.7 ha of the 81.1 ha Seaview Farm Reserve would be included in the Landscape Conservation Zone. The remaining 1.4 ha would not be included to avoid small spot zones.

Split zoning of the two titles is justified given the significant size of the Seaview Farm Reserve and its connectivity with the two Public Reserves zoned Environmental Management.

The details of the natural values protected by this Reserve on the two adjoining properties are in the Nature Conservation Plans held by DPIPWE.

Denneys Road Reserve (CAPAD 2020 Row No 1403)
Lower German Town Road St Marys Reserve #1, #2, #3, #4, #5 (CAPAD 2020 Row Nos 1898-1902)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
22 DENNEYS RD ST MARYS TAS 7215	2593962	121906/1 121906/2	21.1 10.3	12.1 5.6	57% 54%
203 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2966706	157275/1	8.9	0.9	10%
225 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563878	142906/2	3.2	1.0	31%
Lot 3 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563886	142906/3	7.2	1.8	25%
224 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563894	142906/4	11.8	7.4	63%
Lot 5 LOWER GERMAN TOWN RD ST MARYS TAS 7215	2563907	142906/5	34.4	27.8	81%



The 17.7 ha Denneys Road Reserve covers 12.1 ha (57%) of Title Ref 121906/1 and 5.6 ha (54%) of Title Ref 121906/2. It adjoins the 46.5 ha Cheeseberry Hill Conservation Area (brown area) to its northwest. The non-reserved land contains a residential dwelling.

The combined Lower German Town Road St Marys Reserves have an area of 38.9 ha and cover 59% of the combined 65.5 ha of the five titles. Reserve #3, #4 and #5 adjoin the 361 ha St Marys Pass State Reserve. Some of the titles have residential dwellings in the non-reserved areas.

It is proposed that all of the two titles containing the Denneys Road Reserve and all of the five titles containing the Lower German Town Road St Marys Reserves are rezoned to Landscape Conservation given their connectivity with the Public Reserves zoned Environmental Management, their combined sizes and their similarity to the non-reserved titles zoned Landscape Conservation to the east and southeast of St Marys. The non-reserved land on the five titles containing Lower German Town Road St Marys Reserves appears unsuitable and not used for agriculture, and the non-reserved land on the two titles containing the Denneys Road Reserve does not appear to be a commercial farm.

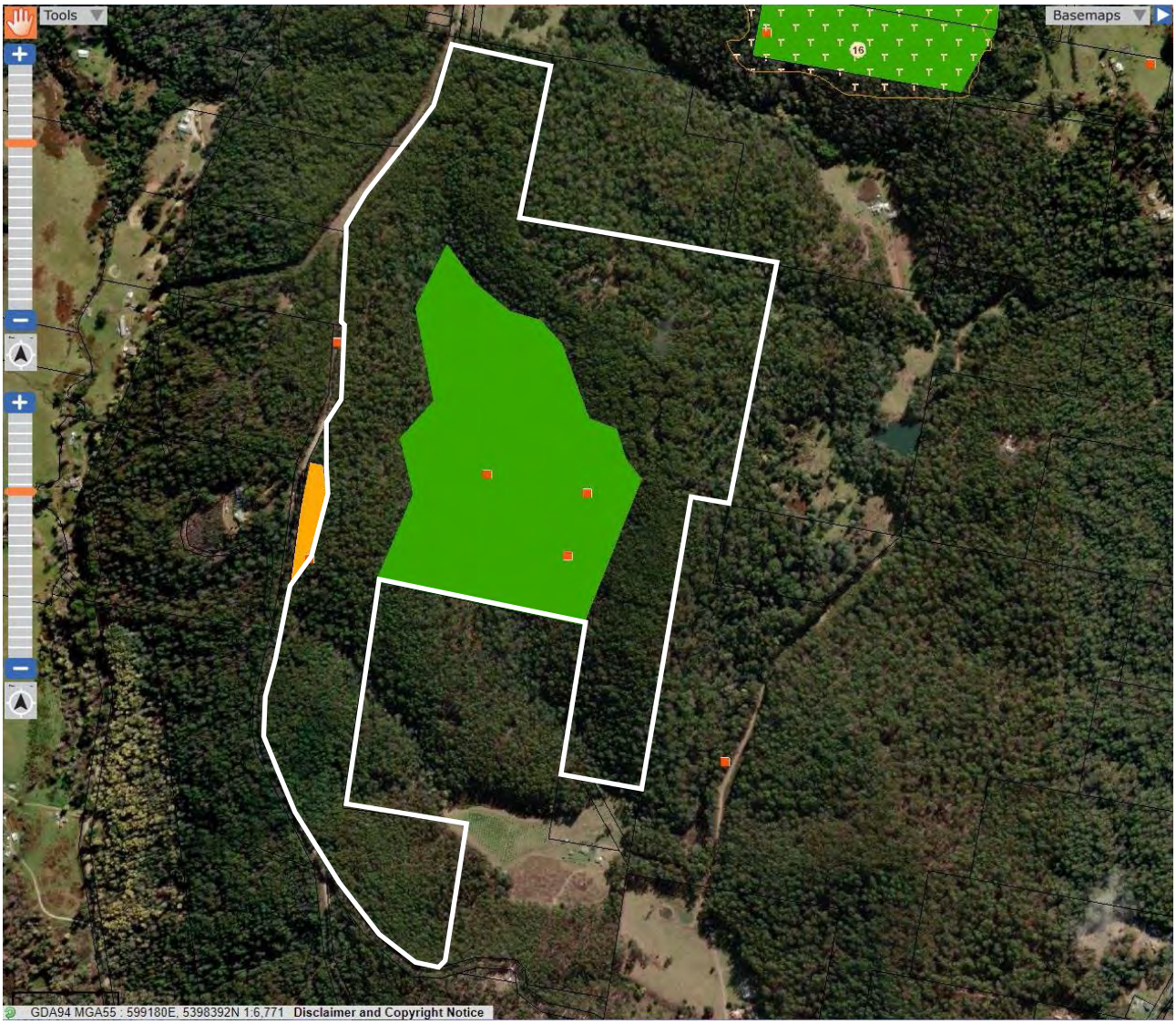
The Denneys Road Reserve contains the threatened vegetation communities No 16 *Eucalyptus brookeriana* wet forest listed in Schedule 3A of the *Nature Conservation Act 2002* and also contains and provides habitat for the endangered *Aquila audax subsp. Fleayi* (Tasmanian wedge-tailed eagle) and the endangered *Sarcophilus harrisii* (Tasmanian devil) both listed in Schedule 3 of the *Threatened Species Protection Act 1995.*

The Lower German Town Road St Marys Reserve #5 contains and provides habitat for the rare *Tasmanipatus barretti* (Giant velvet worm) listed in Schedule 5 of the *Threatened Species Protection Act 1995.*

Further details of the natural values protected by these Reserves are in the Nature Conservation Plans held by DPIPWE.

Newmans Creek Reserve (CAPAD 2020 Row No 2099)

Address 158 GERMAN TOWN RD ST MARYS TAS 7215
PID 7627105
Title Ref 210430/1



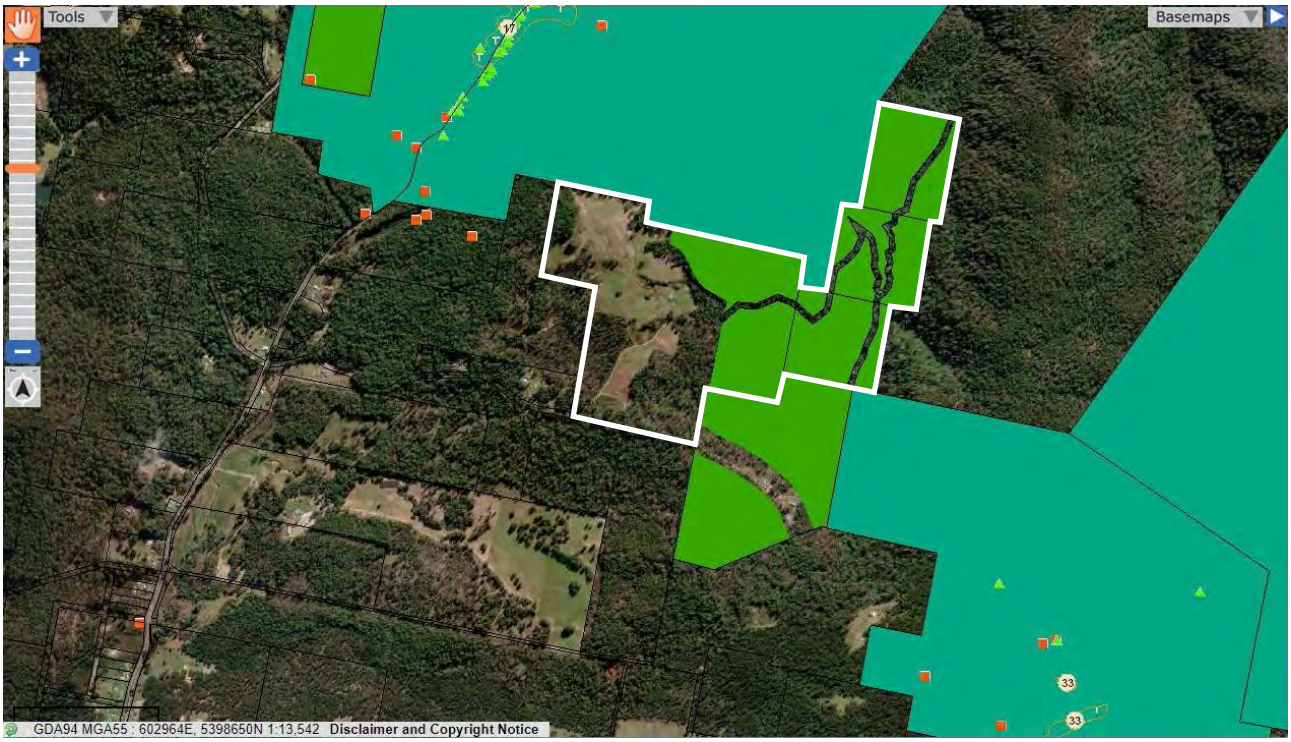
The 22.0 ha Newmans Creek Reserve covers 27% of the 82.2 ha Title Ref 210430/1. The majority of the land is not reserved but is covered by native vegetation and contains a small residential dwelling in the north of the title. A 0.8 ha Public Reserve (gold area) is located to the west.

It is proposed that all of Title Ref 210430/1 (white border) is rezoned to Landscape Conservation as the non-reserved land is unsuitable and not used for agriculture.

The Reserve contains and provides habitat for the endangered *Aquila audax subsp. Fleayi* (Tasmanian wedge-tailed eagle) and the endangered *Leucopatus anophthalmus* (Blind velvet worm) both listed in Schedule 3 of the *Threatened Species Protection Act 1995*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Whites Gully Reserve (CAPAD 2020 Row Nos 2646-2648)

Address 180 GILLIES RD ST MARYS TAS 7215
PID 2623893
Title Refs 120054/1, 206762/1, 120232/1, 218714/1



The 43.0 ha Whites Gully Reserve covers 100% of the Title Refs 120054/1 (10.0 ha), 206762/1 (8.5 ha) and 120232/1 (9.2 ha) and 29% (15.3 ha) of the 42.9 ha Title Ref 218714/1. There is a residential dwelling and some small paddocks in the non-reserved part of Title Ref 218714/1.

The Whites Gully Reserve connects two arms of the 1169 ha St Patricks Head State Reserve (blue-green area) and also adjoins the St Patrick Head Private Nature Reserve to its south, both of which are zoned Environmental Management in the Draft Zone Map.

It is proposed that all of the four titles containing the Whites Gully Reserve (white border) are rezoned to Landscape Conservation but the landowner may prefer to have the title containing the residence and small paddocks split zoned with the zone boundary aligning with the covenant boundary.

Details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Mount Elephant Reserve (CAPAD 2020 Row No 2059)

Address 730 IRISH TOWN RD ST MARYS TAS 7215
PID 9566280
Title Refs 112196/1, 245582/1

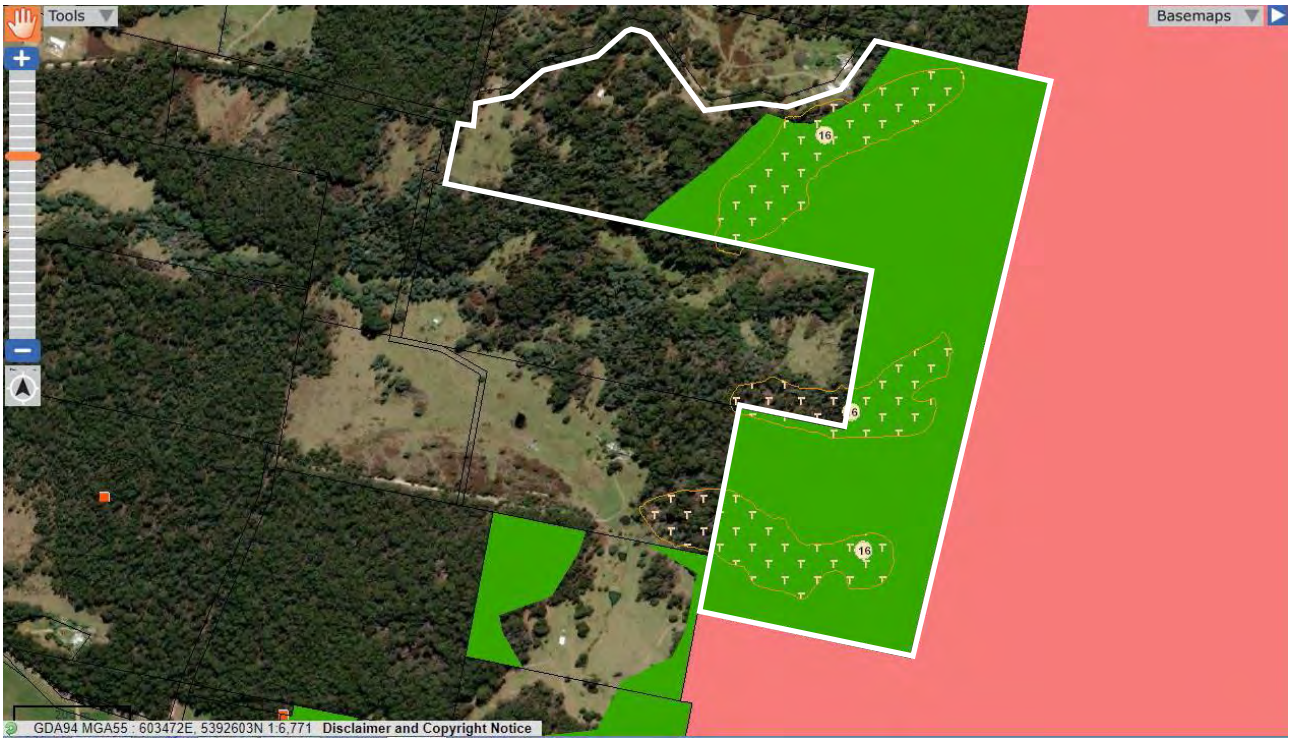
The 22.1 ha Mount Elephant Reserve covers 10.1 ha (52%) of the 19.4 ha Title Ref 112196/1 and 12.0 ha (69%) of the 17.5 ha Title Ref 245582/1. The non-reserved part of Title Ref 112196/1 is covered by native vegetation and the non-reserved part of Title Ref 245582/1 includes an open area containing a residential dwelling. The Reserve adjoins an area of Future Potential Production Forest.

It is proposed that all of both titles (solid white border) with a combined area of 36.9 ha are rezoned to Landscape Conservation as the non-reserved land on both titles is unsuitable and not used for agriculture.

The Mount Elephant Reserve contains the threatened vegetation community No 33 Rainforest fernland listed in Schedule 3A of the *Nature Conservation Act 2002*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Curtis Road St Marys Reserve (CAPAD 2020 Row No 1387)

Address 130 CURTIS RD ST MARYS TAS 7215
PID 7378807
Title Ref 121098/1



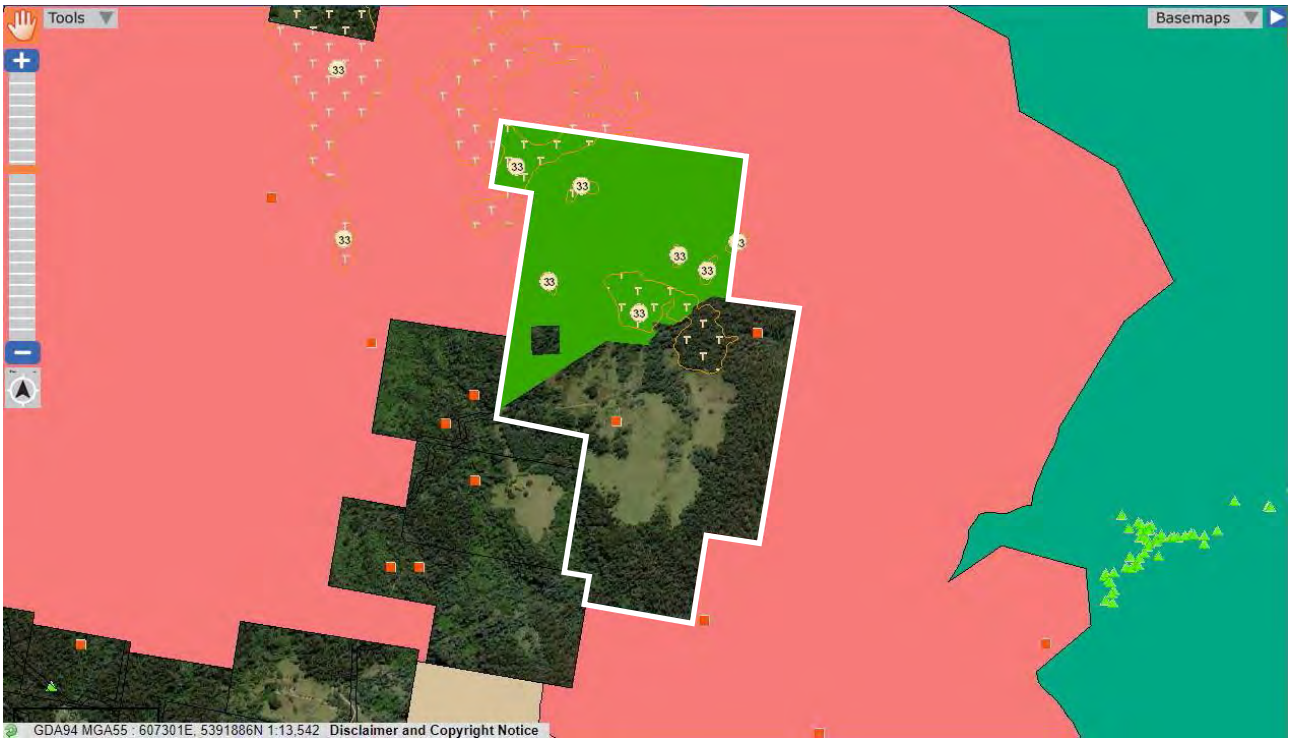
The 38.6 ha Curtis Road St Marys Reserve covers 77% of the 50.0 ha Title Ref 121098/1. The non-reserved area of this title is mostly covered with native vegetation. The Reserve adjoins a large area of Future Potential Production Forest to its east.

It is proposed that all of Title Ref 121098/1 (solid white border) is rezoned to Landscape Conservation given that the non-reserved land appears unsuitable and not used for agriculture. The property has a residential dwelling and other structures located on Title Ref 53239/1 which should remain as Rural Zone.

The Reserve contains the threatened vegetation community *Eucalyptus brookeriana* wet forest listed in Schedule 3A of the *Nature Conservation Act 2002*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Elephant Farm Elephant Pass Reserve (CAPAD 2020 Row No 1443)

Address 300 MOUNT ELEPHANT RD GRAY TAS 7215
PID 7298794
Title Ref 200851/1



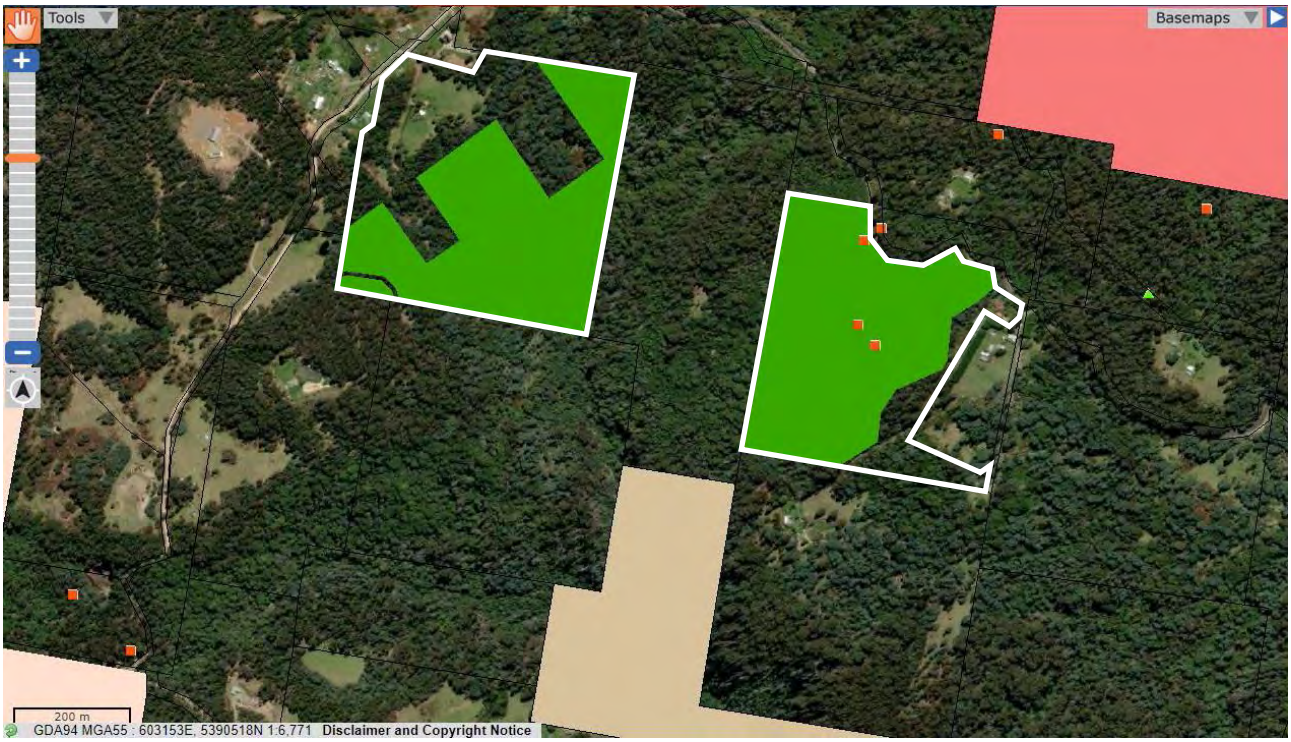
The 56.1 ha Elephant Farm Elephant Pass Reserve covers 44% of the 126.5 ha Title Ref 200851/1. The non-reserved area of this title is partly covered with native vegetation but also contains a residential dwelling and an open area that does not appear to be farmed. The Reserve is mostly surrounded by Future Potential Production Forest but is also within 1 km of the 937 ha Little Beach State Reserve (blue-green area) and the 1092 ha Lower Marsh Creek Regional Reserve (beige area).

It is proposed that all of Title Ref 200851/1 (solid white border) is rezoned to Landscape Conservation given that the non-reserved land appears unsuitable and not used for agriculture.

The Reserve contains the threatened vegetation community No 33 Rainforest fernland listed in Schedule 3A of the *Nature Conservation Act 2002*. The same threatened vegetation community extends into the surrounding Future Potential Production Forest. The Reserve also contains and provides habitat for the vulnerable *Dasyurus maculatus subsp. Maculatus* (Spotted tail quoll) and the endangered *Leucopatus anophthalmus* (Blind velvet worm) listed in Schedules 4 and 3, respectively, of the *Threatened Species Protection Act 1995*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Wardlaws Creek Reserve (CAPAD 2020 Row Nos 2611-2612)
Gray #2 Reserve (CAPAD 2020 Row No 1673)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
31 DALMAYNE RD GRAY TAS 7215	7720238	51295/1	19.7	11.9	60%
822 ELEPHANT PASS RD GRAY TAS 7215	7320912	250636/1	15.1	12.3	81%



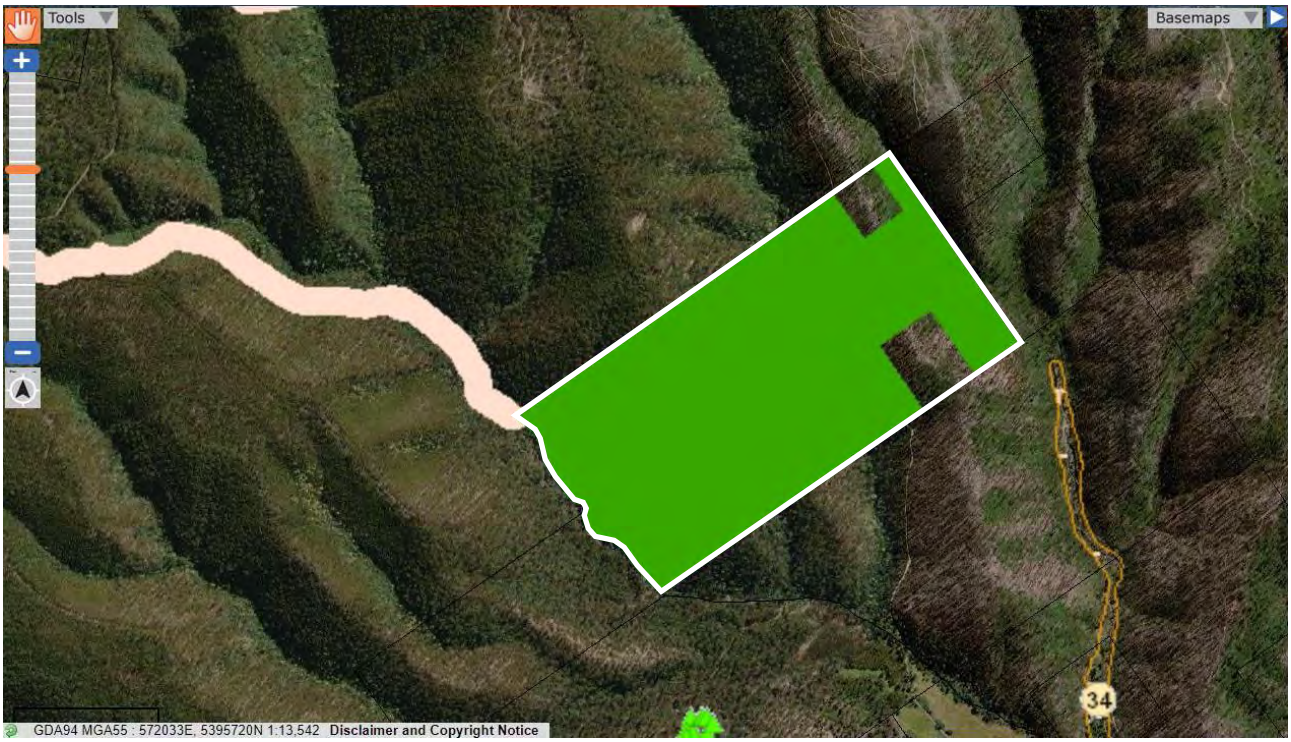
The 11.9 ha Wardlaws Creek Reserve covers 60% of the 19.7 ha Title Ref 51295/1. The 12.3 ha Gray #2 Reserve covers 81% of the 15.1 ha Title Ref 250636/1. Both titles contain residential dwellings on the non-reserved land and Title Ref 51295/1 also includes some small paddocks around the dwelling. Both titles are close to the 1092 ha Lower Marsh Creek Regional Reserve (beige area).

It is proposed that all of both titles (solid white borders) are rezoned to Landscape Conservation zone as the non-reserved parts appear unsuitable and not used for commercial agriculture and the existing Residential Use is Permitted under the General Provisions.

Gray #2 Reserve contains and provides habitat for the endangered *Dasyurus viverrinus* (Eastern quoll) and the Endangered *Leucopatus anophthalmus* (Blind velvet worm) both listed in Schedule 3 of the *Threatened Species Protection Act 1995*. Full details of the natural values protected by these two Reserves are in the Nature Conservation Plans held by DPIPWE.

Calders Gully Reserve (CAPAD 2020 Row No 1301)

Address	CALDERS GULLY RD MANGANA TAS 7214
PID	6416832
Title Ref	146101/1



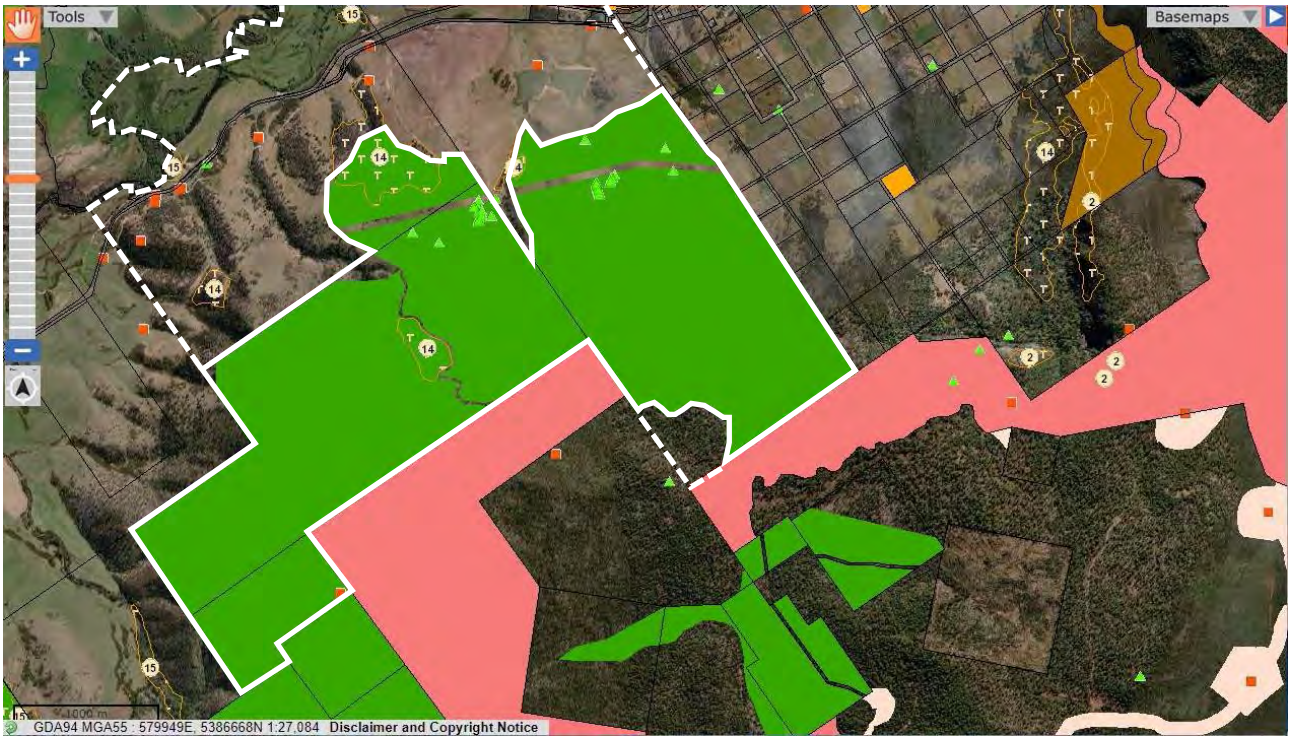
The 119.1 ha Calders Gully Reserve covers 93% of the 128.6 ha Title Ref 146101/1. The non-reserved areas of this title are covered with native vegetation. The eastern corner of the Reserve adjoins a Sustainable Timbers Tasmania Informal Reserve along Richardsons Creek.

It is proposed that all of Title Ref 146101/1 (white border) is rezoned to Landscape Conservation given the significant size of the title and that the non-reserved land appears unsuitable and not used for agriculture.

Details of the natural values protected by this Reserve are in the Nature Conservation Plan held by DPIPWE.

Tullochgorum Reserve (CAPAD 2020 Row Nos 2539-2553)

Address	PID	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
4529 ESK MAIN RD FINGAL TAS 7214	9211677	174308/1	614	325.9	53%
		181574/2	418	49.0	12%
		121908/1	400	386.4	97%
		121908/2	58.6	58.6	100%



The 1539 ha Tullochgorum Reserve covers 13 titles on two properties and the various parts of the Reserve are not contiguous. Many of the titles are mixed use with areas used for farming or forestry.

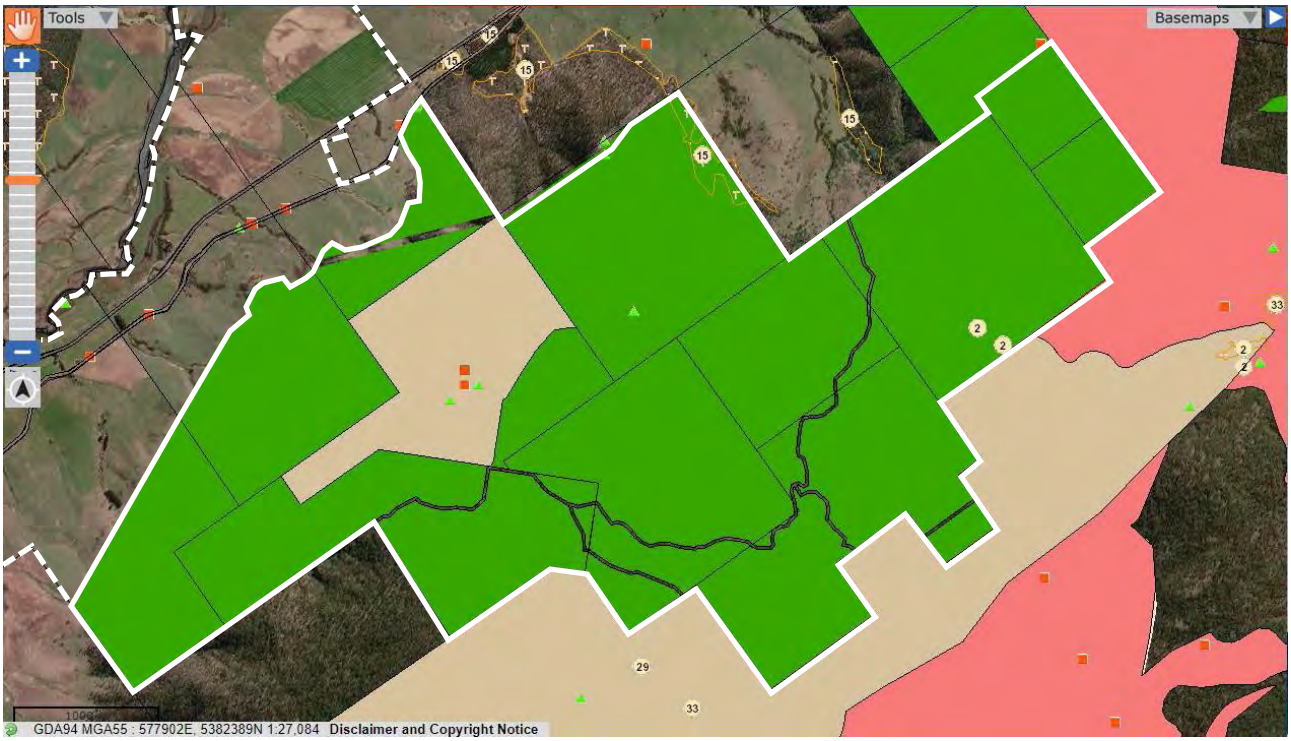
It is proposed that the 820 ha of reserved land on the four titles listed above, which are contiguous, should be considered for rezoning to Landscape Conservation as it represents 53% of the Tullochgorum Reserve and adjoins the 1589 ha Fingal #1 and #2 Reserves to its southwest which are also proposed for rezoning to Landscape Conservation. It is proposed that all of Title Refs 121908/1 and 121908/2 are rezoned but only the reserved land on the mixed use Title Refs 174308/1 and 181574/2 is rezoned (solid white border). The balance of the latter two titles would remain as Agriculture Zone (dashed white lines).

The parts of the Tullochgorum Reserve proposed for rezoning contain the threatened vegetation community No 14 *Eucalyptus amygdalina* forest and woodland on sandstone listed in Schedule 3A of the *Nature Conservation Act 2002*. They also contain the endangered *Desmodium varians*

(Slender ticktrefoil), the vulnerable *Scleranthus fasciculatus* (Spreading Knawel), and the rare *Haloragis heterophylla* (Variable raspwort) as listed in Schedules 3, 4 and 5, respectively, of the *Threatened Species Protection Act 1995*. Full details of the natural values protected by this Reserve are in the Nature Conservation Plans held by DPIPWE.

Fingal #1 and #2 Reserves (CAPAD 2020 Row Nos 1499-1516)

Addresses	PIDs	Title Refs	Title Area (ha)	Reserve Area (ha)	Percent reserved
ESK MAIN RD FINGAL TAS 7214	6413287	224858/1	216.6	216.6	100%
	2867767	211222/1	41.6	41.6	100%
		211225/1	42.0	42.0	100%
		211226/1	210.8	210.8	100%
		211223/1	118.3	118.3	100%
		102678/2	215.1	210.6	98%
		171558/1	277.2	61.3	22%
		152147/1	291.2	137.3	47%
		121797/1	197.0	197.0	100%
3837 ESK MAIN RD FINGAL TAS 7214	3478595	152324/1	435.1	108.9	25%
		229987/1	244.7	244.7	100%



The combined Fingal #1 and Fingal #2 Reserves have an area of 1589 ha across three properties and 11 titles as listed above. The Reserves enclose the 171 ha Barway Spur Regional Reserve and adjoin the 4402 ha St Pauls Regional Reserve to their south. They also adjoin 820 ha of the Tullochgorum Reserve protected by conservation covenant.

It is proposed that all of the reserved land on the 11 titles listed above, which are contiguous, should be considered for rezoning to Landscape Conservation with those titles with mixed use split zoned to align with the covenant boundaries. The balance of the land on the split zoned titles would remain as either Rural or Agriculture Zone (dashed white line) as per the exhibited zoning for those titles.

The Fingal #1 and #2 Reserves contain areas of the threatened vegetation communities No 2 *Allocasuarina littoralis* forest and No 15 *Eucalyptus amygdalina* inland forest and woodland on cainozoic deposits as listed in Schedule 3A of the *Nature Conservation Act 2002*. They contain the vulnerable *Scleranthus fasciculatus* (Spreading knawel and the rare *Bossiaea tasmanica* (Spiny bossia) as listed in Schedules 4 and 5, respectively, of the *Threatened Species Protection Act 1995*. They also contain and provide habitat for the endangered *Sarcophilus harrisii* (Tasmanian devil) and endangered *Aquila audax subsp. Fleayi* (Tasmanian wedge-tailed eagle) as listed in Schedule 3 of the same *Act*. Full details of the natural values protected by these Reserves are in the Nature Conservation Plans held by DPIPWE.

Yours sincerely

John Thompson
On behalf of the Board of Trustees, CLT Trust

Phone 0424 055 125
Email thompsonjohng@gmail.com

Appendix A

The relevant Guidelines

The following are extracts *from Section 8A Guideline No. 1 - Local Provisions Schedule (LPS): zone and code application (version 2.0), June 2018* for 22.0 Landscape Conservation Zone and 20.0 Rural Zone with key words and phrases underlined.

LCZ 1 *The Landscape Conservation Zone should be applied to land with landscape values that are identified for protection and conservation, such as bushland areas, large areas of native vegetation, or areas of important scenic values, where some small scale use or development may be appropriate.*

RZ 1 *The Rural Zone should be applied to land … which is not more appropriately included within the Landscape Conservation Zone or Environmental Management Zone for the protection of specific values.*

AZ 6 *Land identified in the 'Land Potentially Suitable for Agriculture Zone' layer may be considered for alternate zoning if:*

(c) for the identification and protection of significant natural values, such as priority vegetation areas as defined in the Natural Assets Code, which require an alternate zoning, such as the Landscape Conservation Zone or Environmental Management Zone;

(e) it can be demonstrated that:

(i) the land has limited or no potential for agricultural use and is not integral to the management of a larger farm holding that will be within the Agriculture Zone;

(ii) there are significant constraints to agricultural use occurring on the land; or

(iii) the Agriculture Zone is otherwise not appropriate for the land.

The relevant Q & A from the Planners Portal

Extract from the 'Questions and Answers Zones – Other' with key phrases underlined.

22/4/2021

Question *What is the most appropriate zone for land with a conservation covenant?*

Answer *Guideline No.1 for both the Landscape Conservation Zone (LCZ) and Environmental Management Zone (EMZ) indicate that land which contains a conservation covenant will invariably have values that can result in the land being suitable for zoning in either the EMZ or LCZ.*

But that land may also be suitable for inclusion in the Rural or Agriculture Zone (and potentially others such as Rural Living). The values that are identified in the conservation covenant are managed or protected by the terms of the covenant and that management or protection is not dependent on the zoning of the land for land use

planning purposes. Determining the zone to apply to land with a conservation covenant needs to be balanced with application of zones based on sound planning principles, such as, minimising spot zoning and applying the zoning that satisfies the Guideline No. 1 and the regional strategy.

The application of zoning, as the primary method of the control of use and development, should firstly be undertaken irrespective of whether a covenant applies, with weight given to the existence and content of a covenant when multiple zoning options may be available.

Therefore, the LCZ should not simply be applied on the basis that a conservation covenant is in place. However, areas that have extensive conservation covenants (such as, a cluster of many, a large area, or both, or connectivity with other land zoned for similar values) may demonstrate good strategic planning merit for applying this zone.

Where a conservation covenant applies to a small portion of a large landholding that is appropriately zoned Rural or Agriculture or another relevant zone, it may not be appropriate or necessary to apply the LCZ to the area covered by the covenant as the values will be protected by the terms of the covenant, and at the same time be compatible with the wider use of that land.

Representation 71

From: Smith, Hilary
To: Break O Day Office Admin
Subject: RE: Tasmanian Heritage Register - Notification of THC Decision - Permanent entry of THR 12017 St Peter"s Anglican Church and Rectory
Date: Monday, 1 November 2021 3:31:53 PM
Attachments: THR12017 - Permanent entry BreakODayCouncil.pdf

CAUTION: Do not click links or attachments unless you recognize the sender and know the content is safe

Attention: The General Manager, Break O' Day Council

Good afternoon Mr Brown,
Please find our letter notification from the Tasmanian Heritage Council attached for your referral, for the Permanent entry of THR 12017, St Peter's Anglican Church and Rectory, in the Tasmanian Heritage Register, along with copies of its datasheet, and CPR.
Kind regards,

Hilary Smith | Administration Officer | Heritage Tasmania

Department of Primary Industries, Parks, Water and The Environment
| GPO Box 618 Hobart TAS 7001
Phone: 03 6165 3700 | 1300 850 332 (local call cost) |
Email: Hilary.Smith@heritage.tas.gov.au

Tasmanian Heritage Council
GPO Box 618 Hobart Tasmania 7000
Tel: 1300 850 332
enquiries@heritage.tas.gov.au
www.heritage.tas.gov.au

1 November 2021

Mr John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216
(Via email: admin@bodc.tas.gov.au)

THR 12017

Dear Mr Brown

PERMANENT ENTRY OF A PLACE OR PLACES IN THE TASMANIAN HERITAGE REGISTER

Further to our correspondence of 27 July 2021, the Tasmanian Heritage Council has finalised the new entry for the following place or places and resolved to permanently register it in the Tasmanian Heritage Register, under the provisions in section 21(1)(a) and 26(a) of the *Historic Cultural Heritage Act 1995* ("the Act"):

THR 12017, St Peter's Anglican Church and Rectory, 2 Talbot Street, Fingal

Enclosed is formal notification of the new permanent registration, as required under section 26(a) of the *Historic Cultural Heritage Act 1995*, along with the boundary plan and datasheet outlining the particulars of the place and its boundary in the Heritage Register.

If you have any questions or concerns, please contact Heritage Tasmania on 1300 850 332 (for the cost of a local call) or 6165 3700 or via email to: enquiries@heritage.tas.gov.au.

Yours sincerely

Ms Brett Torossi
Chair
Tasmanian Heritage Council

(Encl.)

Tasmanian Heritage Council
GPO Box 618 Hobart Tasmania 7000
Tel: 1300 850 332
enquiries@heritage.tas.gov.au
www.heritage.tas.gov.au

1 November 2021

NOTICE OF THE PERMANENT ENTRY OF AN ENTRY OR ENTRIES IN THE TASMANIAN HERITAGE REGISTER

To:
Mr John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216
(Via email: admin@bodc.tas.gov.au)

In accordance with section 26 (a) of the *Historic Cultural Heritage Act 1995* ("the Act"), and having considered:

- the objections made under section 19 of the Act; and
- the submissions made under section 20 of the Act –

in relation to the Tasmanian Heritage Council's intention to enter a place in the Heritage Register on a permanent basis, the Tasmanian Heritage Council gives notices that it will permanently enter the following entry or entries in the Tasmanian Heritage Register:

Place(s):
THR 12017, St Peter's Anglican Church and Rectory, 2 Talbot Street, Fingal

Any person who lodged an objection under section 19 of the Act or a submission under section 20 of the Act, may appeal this decision to the Resource Management and Planning Appeal Tribunal under section 27 of the Act. An appeal must be made in writing and lodged with the Tribunal (GPO Box 2036, Hobart 7001) within 30 days of the publication of this notice.

Ms Brett Torossi

Chair
Tasmanian Heritage Council
1 November 2021

Tasmanian Heritage Register Datasheet

Tasmanian Heritage Council

134 Macquarie Street (GPO Box 618)
Hobart Tasmania 7001
Phone: 1300 850 332 (local call cost)
Email: enquiries@heritage.tas.gov.au
Web: www.heritage.tas.gov.au

Name: St Peter's Anglican Church and Rectory
Status: Permanently Registered
Tier: State
Boundary: 11057

THR ID Number: 12017
Municipality: Break O'Day Council
Date Listed: Not applicable

Location Addresses	Title References	Property Id
2 TALBOT ST, , FINGAL 7214 TAS	125334/1	1837101

St Peter's Anglican Church (l) and Rectory (r)
Roberts Real Estate, 2019

St Peter's, interior

Roberts Real Estate, 2019

Altar and reredos, carved by Hugh Cunningham
RVIA Journal, July 1913, State Library of Victoria

St Peter's Church, 1907
Weekly Courier, 13 July 1913

Setting: St Peter's Anglican Church and Rectory are situated in the northern eastern Tasmanian village of Fingal , on Talbot Street, the main thoroughfare through the town. They are located on a small rise in the centre of Fingal, and overlook the historic council chambers, railway station and post office.

Description: St Peter's Anglican Church and Rectory comprises two main buildings – the c.1869 stone church, and the c.1900 timber rectory. A collection of associated items provenanced to the main church building also forms part of this registration.

c.1869 St Peter's Anglican Church: This is a stone Gothic Revival church with elements including a including steeply pitched gabled slate roof, prominent parapeted gables, buttresses, lancet windows and front entry porch. The exterior comprises contrasting sandstone rubble walls with dressed sandstone quoins. The roof gables have stone ridge capping supported by scroll brackets. A belfry is located on the peak of the western elevation, although its cast iron bell is stored inside the building. The church interior is largely original with exposed sandstone rubble walls under a timber scissor truss roof. Stained glass windows are a contrast to the rubble walls, set in lancet recesses. The windows commemorate local residents who made a contribution to the church, including three windows (c.1902) over the main altar executed by Melbourne artist William Montgomery.

c.1900 St Peter's Rectory: This is a timber Federation-era residence on sandstone foundations, approximately 20m south-west of the church. It has a hipped and gabled corrugated iron roof with front verandah and timber windows throughout. Original interior detailing, including doors, fireplaces and skirting boards contribute to the representative character of the building. There is a finial at the peak of the gable and original decorative timberwork below. A small timber shed (c.1940) stands to the north-east of the residence.

Associated items: A number of items provenanced to the main church building are considered of heritage significance, providing an understanding of the evolution of worship in a rural community, and the meaning of such places to the region. Of particular significance are the following items:

(i) Carved wooden reredos, designed by architect Alexander North and executed by woodcarver Hugh Cunningham c.1910;
(ii) Carved wooden altar, also designed by Alexander North and executed by Hugh Cunningham c.1910 (*Daily Telegraph*, 12 May 1919 p.6);
(iii) Wooden Bishop's Chair;
(iv) Carved wooden prayer desk;
(v) Wooden pulpit;
(vi) Wooden pews;
(vii) Stone font;
(viii) Organ;
(ix) Cast iron bell;
(x) Wooden donation box;
(xi) Metal safe;
(xii) Lord Milo Talbot of Malahide (1912-1973) memorial;
(xiii) Madeline Mary Moore, nee Nisbet (1873-1965) memorial;
(xiv) Gertrude Jane Wright, nee Pillgrem (1870-1939) memorial;
(xv) Richard Gilbert Talbot of Malahide (1856-1900) memorial;
(xvi) Altar rails.

Landscape setting: The parkland setting of both the church and rectory include several mature macrocapra trees including on the eastern boundary of the Church parcel, adjacent to the c.1928 entrance gates of which only the pillars survive. The plantings are elements that contribute to the historic cultural heritage significance of the place.

History: The Fingal Valley was home to the First Tasmanians for thousands of years. The land was occupied and traversed by the Oyster Bay, Northern Midlands, Ben Lomond and North Eastern tribes; only possible due to a system of reciprocal rights and social obligation, which had existed for centuries (Scripps, 1999 p.5). Prior to European occupation, the region had been managed by the Tasmanian Aborigines using traditional land management practices, including low density burning. Europeans in the early colonial era viewed the resulting landscapes as well suited to stock raising and cropping.

The 1820s saw an increase in European settlement in the valley, including the Talbot family at Malahide (THR#558); Fingal's main street takes its name from the family. Inadequate roads were considered a major limitation to the expansion of the region. Convict labor created thoroughfares throughout the valley and a convict probation station was erected in Fingal c.1841. The discovery of gold in the 1850s increased the population and led to the establishment of a public school, local council and railway line (Harman, 2005 p.135). Many ex-convicts and their families settled in the area, contending with the occupational risks such as mining, bushfires and flooding.

Church of England services were initially held in a building at the former probation station, however the premises proved inadequate. Plans were made to erect a permanent church in the town, with architect Henry Hunter (1832-1892) calling for tenders (*Launceston Examiner*, 14 October 1865 p.6). Hunter was a prolific colonial architect and is renowned for his Gothic revival churches in Hobart and rural Tasmania. Progress appears to have been slow. The foundation stone was not laid until the autumn of 1867 and the building not open for worship until 18 months later (*Launceston Examiner*, 16 March 1867 p.5; 2 September 1869 p.3). It would be almost another decade before the building was consecrated (*Launceston Examiner*, 29 May 1877 p.1). A separate cemetery was established approximately 1.2kms to the south, at what is now 104 Legge Street, Fingal.

The land on which the church was constructed remained largely undeveloped until the construction of a rectory for the minister, c.1900. It became a separate, private residence for the church minister, on call to the local community 24 hours a day. In the twentieth century, the rectory also provided a location for wedding by special licence, when circumstances necessitated fast-tracked nuptials.

Around this time, the Talbot family of Malahide commissioned Melbourne stained glass artist William Montgomery (1850-1927) to execute the window above the altar of St Peter's (*Argus*, 26 February 1902). Montgomery's career flourished in Britain, before he immigrated to Australia. His work can be found in churches across the country (www.williammongomeryartist.com). Fellow artist Hugh Cunningham (c.1858-1945) woodcarver and teacher at Launceston Technical College (THR#11008) executed the altar and reredos. These were designed by Launceston-based architect Alexander North (1858-1945), who was renowned for his designs for ecclesiastical buildings and furniture. As was often the case, the architect was frequently given more credit for the design and execution of the work, rather than the actual woodcarver himself (Cumming, pers. comm., 2019). Hugh Cunningham's works are also extant in Launceston's Holy Trinity (THR#3924), St John's Church (THR#4612) and Longford's Christ Church (THR#5174). A Victorian architect on a study tour of Tasmania in 1913 visited St Peter's, describing 'genius' Cunningham's work as 'a triumph of the woodworker's art'. His paper included an illustration of the altar and reredos in the church (Little, 1913 p.115).

In 1928 the shingle roof of St Peter's was removed and replaced with slate, and new entrance gates with concrete posts were erected on Gleadow Street (*Mercury*, 18 April 1928 p.7). Being on higher ground, the church and rectory survived the 1929 floods that devastated much of the Fingal Valley. The event created enormous hardship: crops were washed out, valuable topsoil eroded, livestock drowned and housing was lost. A harvest festival at St Peter's just over a week later raised money for victims (*Examiner*, 24 April 1929 p.7).

At the heart of St Peter's was its congregation. A Ladies' Guild played an active role in the operation of the church in the twentieth century. The Guild met in residences around the Valley once a month and each year held a fundraising fete. Monies raised were used for new hymn books, Sunday School prizes and building repairs. The women were renowned for their home-cooked cakes, sweets and slices. A happy stomach proved a necessity, especially in winter: stone rubble walls meant the congregation could see its collective breath (Rees, pers. comm., 2019). In 1967 centenary celebrations were held, including a ball at which debutantes were presented to former Fingal Valley resident, Premier Eric Reece (*Examiner,* 4 March 1967 p.29).

Due to a decline in parishioners, the last service was held at St Peter's Church in November 2017, ending almost 150 years worship in the historic building. Although no longer used as a church and rectory, the buildings, collection and grounds of St Peter's remain an important reminder of the Christian faith in Tasmania, and a visual marker on the main ingress/egress to the east coast of the state.

References:

www.abs.gov.au

Argus, 26 February 1902.

Cumming, H. 2019 personal communication.

Examiner, 24 April 1929; 4 March 1967.

Harman, M. 2005 'Fingal' in Alexander, A. (ed.) *The Companion to Tasmanian History*, University of Tasmania.

Launceston Examiner, 14 October 1865; 16 March 1867; 2 September 1869; 29 May 1877.

Little, J. 1913 'The wood borer and my recent visit to Tasmania in connection therewith' *The Royal Victorian Institute of Architects: Journal of Proceedings*, July 1913.

Marwood, J. 1984 *Valley People*, Kangaroo Press.
Mercury, 18 April 1928.
Rees, H. 2019 personal communication.
Scripps, L. 1999 *The Fingal Valley: Historical Study* Foot & Playsted.
www.williammontgomeryartist.com

Statement of Significance: *(non-statutory summary)*

St Peter's Anglican Church, Rectory and associated items are of historic cultural heritage significance as they demonstrate the pattern of settlement in the Fingal Valley, and the role of established religion in developing social and spiritual connections across Tasmania. The c.1869 church is demonstrative of a rural sandstone religious building with Gothic Revival stylistic elements, harking back to the use of stone as a building material in the European development of the Fingal Valley. The suite of associated items contained within St Peter's is representative of ecclesiastical furniture contained within rural Tasmanian churches, while the timber Federation-era rectory similarly reflects the need for the ministry to be in a central location in the township and near the church. The main church building has a special association with architects Henry Hunter and Alexander North; and artisans William Montgomery and Hugh Cunningham.

Significance:

The Heritage Council may enter a place in the Heritage Register if it meets one or more of the following criteria from the Historic Cultural Heritage Act 1995:

a) The place is important to the course or pattern of Tasmania's history.

St Peter's Anglican Church, Rectory and associated collection, Fingal are an important element in demonstrating the evolutionary pattern of the Fingal Valley. They reflect the role of worship and in particular, the role of established religion in developing social and spiritual connections in regional settlements across Tasmania. Erected in the 1860s, the Anglican Church's presence on the site is an historic record of Fingal's religious life, demonstrating aspects of the community's development and growth.

b) The place possesses uncommon or rare aspects of Tasmania's history.

No Data Recorded

c) The place has the potential to yield information that will contribute to an understanding of Tasmania's history.

No Data Recorded

d) The place is important in demonstrating the principal characteristics of a class of place in Tasmania's history.

St Peter's Anglican Church, Fingal is a fine, highly intact example of a colonial-era Gothic Revival church. The church has a highly intact exterior with Gothic Revival stylistic elements, a steeply pitched roof, belfry and stained glass windows. St Peter's is a fine example of the tradition of siting ecclesiastical buildings in prominent, often elevated positions. The interior is highly intact and notable due to its exposed sandstone rubble walls, carved timber altar and reredos, stained glass windows and unassuming aesthetic. The suite of associated items contained within St Peter's is representative of ecclesiastical furniture contained within rural Tasmanian churches, while the adjacent Federation-era rectory reflects a utilitarian style residence for the local minister in a central location in the township.

e) The place is important in demonstrating a high degree of creative or technical achievement.

No Data Recorded

f) The place has a strong or special association with a particular community or cultural group for social or spiritual reasons.

No Data Recorded

g) The place has a special association with the life or works of a person, or group of persons, of importance in Tasmania's history.

St Peter's Anglican Church, Fingal has a special association with architects Henry Hunter (1832-1892) and Alexander North (1858-1945) both of whom have had a significant impact on the built heritage of Tasmania. It also has a special association with stained glass artist William Montgomery (1850-1927) and woodcarver Hugh Cunningham (c.1858-1945) whose work can be found in churches across Tasmania and the mainland.

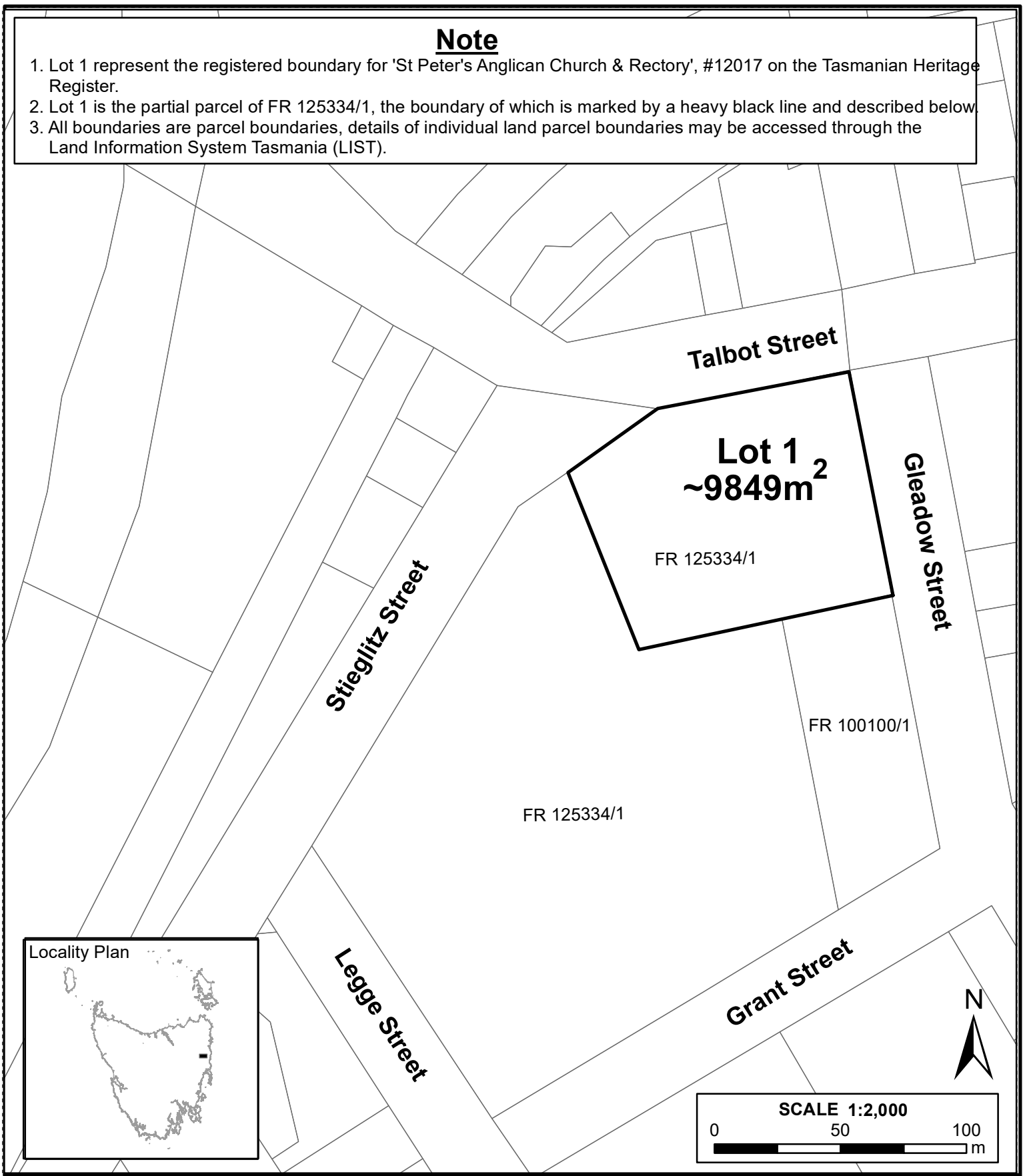
h) The place is important in exhibiting particular aesthetic characteristics.

St Peter's Anglican Church, Fingal, overlooking the Esk Highway, the main thoroughfare to the east coast of Tasmania, is considered a landmark in the area, perched on a prominent hill at the entrance to the town.

PLEASE NOTE This data sheet is intended to provide sufficient information and justification for listing the place on the Heritage Register. Under the legislation, only one of the criteria needs to be met. The data sheet is not intended to be a comprehensive inventory of the heritage values of the place, there may be other heritage values of interest to the Heritage Council not currently acknowledged.

Note

1. Lot 1 represent the registered boundary for 'St Peter's Anglican Church & Rectory', #12017 on the Tasmanian Heritage Register.
2. Lot 1 is the partial parcel of FR 125334/1, the boundary of which is marked by a heavy black line and described below.
3. All boundaries are parcel boundaries, details of individual land parcel boundaries may be accessed through the Land Information System Tasmania (LIST).



TASMAP:	FINGAL - 5838	GRID:	MGA94 / ZONE 55	DATUM:	AHD	CONTOUR INTERVAL:	N/A

No.	PRODUCTION / AMENDMENT	AUTHORITY	REFERENCE	DRAWN	APPROVED	DATE
1	Production	THC	12017	AW	A.ROBERTS	30.6.21

Tasmania

St Peter's Anglican Church & Rectory

2 Talbot Street, Fingal

PREPARED BY
HERITAGE TASMANIA

Tasmanian Heritage Council

GDA

CENTRAL PLAN REGISTER

p.p. Surveyor General: _____

Date Registered: 5.7.21

CPR 11057

Representation 72

From: James Stewart
To: Break O Day Office Admin
Cc: Michelle Schleiger; Brett Woolcott
Subject: Break O"Day LPS Representation - General Submission - Woolcott Surveys
Date: Monday, 13 December 2021 10:17:45 AM
Attachments: image001.jpg
image002.jpg
General Representation - BODC LPS.pdf

Good Morning

Please find attached representation to the Break O'Day Council Draft Local Provisions Schedule (LPS).

The representation relates to a range of general matters under the LPS.

If you have any questions or require further information, please don't hesitate to let me know.

Kind regards

James Stewart
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WOOLCOTT SURVEYS

EAST COAST SURVEYING

13/12/2021

Planning Department
Break O'Day Council

Via Email: admin@bodc.tas.gov.au

RE: BREAK O'DAY LOCAL PROVISON SCHEDULE - REPRESENTATION

To The General Manager

We wish to provide this submission in relation to the Break O'Day Local Provision Schedule (LPS), which is currently on public exhibition until the 13th December 20201.

East Coast Surveying (established in 1987), is located within the St Helens Township, and has provided subdivision and Town Planning services to the Break O'Day community for over 30 years. In preparing this submission, we believe we are well placed in our understanding of the municipality given our work in the area over many years.

Our representation has sought to raise general issues, which warrant further examination given the potential ramifications that future use and development will experience.

In making this representation, we wish to congratulate Council on the LPS work to date, and acknowledge the challenges faced in transitioning from the existing *Break O'Day Interim Planning Scheme 2013.*

Section 32 (2) of the *Land Use Planning and Approvals Act 1993* (the Act) requires that a Council apply an LPS to a municipal area, which includes zoning and code overlays. To assist Council in preparing the LPS through the application of zone and code overlays, the Minister has issued guidelines under section 8a of the Act. These guidelines are regularly referred to throughout this submission.

Application of the Landscape Conservation Zone (LCZ)
The LCZ is a new zone which has been introduced under the Tasmanian Planning Scheme (TPS). It does not exist under the existing Interim Planning Scheme. In applying the LCZ, Council has stated that:

"The LPS provides adequate protection of natural and physical resources through, applying the Landscape Conservation Zone where land was located in the Environmental Living Zone and the natural and landscape values support this and where otherwise justified" – page 8.

"All allotments, unless detailed otherwise or included in a particular purpose zone, within the ELZ in the Interim Planning Scheme have translated to the LCZ in the draft LPS" – page 67.

Based on the comments of page 67 in the supporting report, Council has generally rolled over all land currently within an ELZ into the LCZ as part of the draft LPS.

In relation to the LCZ, the 8A guidelines provide the following statements to provide direction for Council in appropriately applying the zone:

LCZ 1 *The Landscape Conservation Zone should be applied to land with landscape values that are identified for protection and conservation, such as bushland areas, large areas of native vegetation, or areas of important scenic values, where some small-scale use or development may be appropriate.*

LCZ 2 *The Landscape Conservation Zone may be applied to:*

a) *large areas of bushland or large areas of native vegetation which are not otherwise reserved, but contains threatened native vegetation communities, threatened species or other areas of locally or regionally important native vegetation;*

b) *land that has significant constraints on development through the application of the Natural Assets Code or Scenic Protection Code; or*

c) *land within an interim planning scheme Environmental Living Zone and the primary intention is for the protection and conservation of landscape values.*

LCZ 3 *The Landscape Conservation Zone may be applied to a group of titles with landscape values that are less than the allowable minimum lot size for the zone.*

LCZ 4 *The Landscape Conservation Zone should not be applied to:*

a) *land where the priority is for residential use and development (see Rural Living Zone); or*
b) *State-reserved land (see Environmental Management Zone).*

The 8A guidelines further state:

The Landscape Conservation Zone is not a replacement zone for the Environmental Living Zone in interim planning schemes. There are key policy differences between the two zones. The Landscape Conservation Zone is not a large lot residential zone, in areas characterised by native vegetation cover and other landscape values. Instead, the Landscape Conservation Zone provides a clear priority for the protection of landscape values and for complementary use or development, with residential use largely being discretionary.

One of our primary concerns is that Council appears to have applied the LCZ to the majority of residential lots which are currently within the ÉLZ under the Interim Scheme. While we note some existing ELZ areas are shown as going into a PPZ or LDRZ, there is no doubt that the majority of existing ELZ areas, are not proposed for residential zoning under the LPS.

In so doing, Council is clearly prioritizing the protection of landscape values over the existing and established residential uses that many of these lots provide for. In our opinion, the LCZ should be applied to large privately owned natural areas which are generally undeveloped, and demonstrate there are natural or landscape values which require protection.

Large ELZ lots which contain existing residential development, whilst also retaining native vegetation, should not automatically be assigned to the LCZ, regardless of whether they are in a coastal location.

Transitioning residential properties into a non-residential zone, primarily based on location and existing zoning, will diminish and water down land owners existing residential rights. Residential use within the LCZ will be discretionary. While a permitted pathway is provided for those lots which provide an existing building area as shown on a sealed plan, very few applications will meet this permitted status. Subsequently, any residential development not meeting the requirements of clause 7.2.1 of the scheme, will undergo public exhibition and can be refused at the discretion of Council.

The correct application of the natural assets and scenic codes within particular areas provides sufficient protection of such values without the need to apply a non-residential zone. To assist in illustrating this point, the following areas have been highlighted as examples where we believe the LCZ should not be applied:

The Gardens Road, Binalong Bay/ The Gardens
Land to the north of Binalong Bay Road, within the area along Gardens Road, is currently within the ELZ under the Interim Scheme. The majority of lots within this area, which provide access onto Gardens Road, contain established residential single dwellings. Only a very small percentage of these developed lots are included within the current Priority Habitat overlay under the Interim Scheme.

The owners of these areas have chosen a residential lifestyle within a natural setting. The primary intent and use of the land remains for residential purposes. Many of the lots are significantly cleared with hazard management areas around existing buildings. Protection of any values can be provided by the application of the Natural Assets code, or via the Scenic Management Tourist Road Corridor provisions which currently apply to Gardens Road. The underlying zoning for these developed lots should be residential, with many of the lots having a size of around 1 - 2ha. These are lifestyle properties within natural areas. Appropriate retention of native vegetation within the Rural Living Zone (RLZ) and ELZ was one of the recommendations put forward by the St Helens Structure Plan (page 44). Retaining vegetation did not remove their residential intent.

By means of illustration, I have provided a basic interpretation of how we believe the LPZ zoning should be applied. Those lots which contain established residential uses should be placed in the RLZ, as priority should be given to the existing use and development which has been approved on the land. We agree that it would be appropriate for the larger lots (i.e. 10ha+) on the periphery of this area to have the LCZ applied.

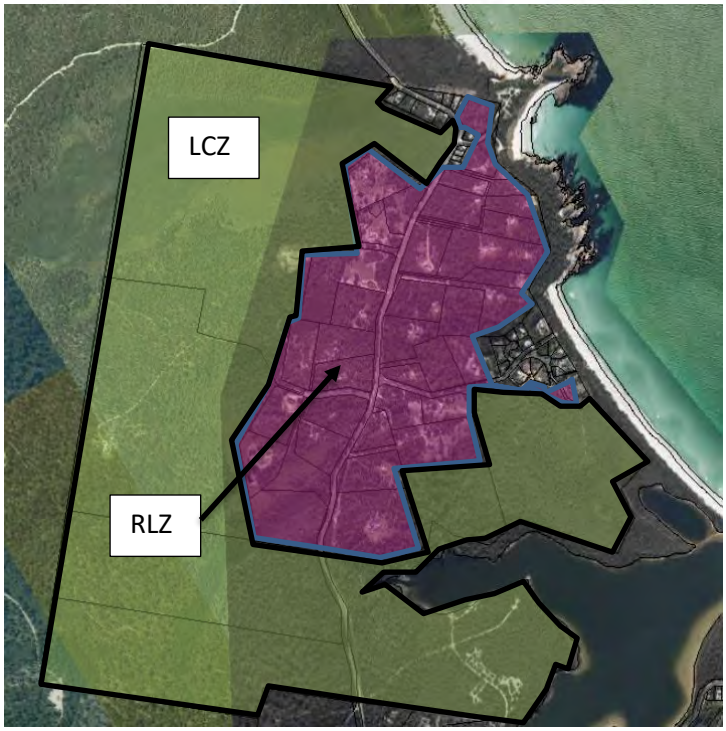

Figure 1 - Aerial view of a portion of the 'Gardens' with our opinion on future LPS zonings.

Application of the RLZ to this area would be consistent with RLZ 2, which states:

RLZ 2: *The Rural Living Zone should not be applied to land that is not currently within an interim planning scheme Rural Living zone unless:*

b) The land is within the Environmental Living Zone in an interim planning scheme and the strategic intention is for residential use and development within a rural setting, and a similar minimum allowable lot size is being applied, such as applying to Rural Living Zone D where the minimum lot size is 10ha or greater.

The lots are within a residential area, characterised by single dwellings in a natural environment. Recognition of this use and development is appropriate by application of the RL zone.

Sunshine Court – St Helens

The draft LPS shows that Sunshine Court, located off Binalong Bay Rd, within St Helens, will also be transitioned to the LCZ. This is a residential area, characterised by single dwellings on large clear lots within a coastal location adjoining Moulting Bay. Access to the lots is via a sealed cul-de-sac road which has constructed kerb and channel. This development was approved as a residential subdivision and contains lots in the region of 5000m^2 - 7000m^2.

While it is acknowledged the natural assets code applies to these lots, the land itself is typical of the character associated with lifestyle lots and as such, more aligns with a rural residential landscape. It is noted the existing priority habitat overly under the interim scheme does not apply to this area.

It is our view that the priority for this area should be residential use and development, as this aligns with the original and existing intent of the land. The code criteria provides a mechanism

for Council to maintain control of inappropriate development which impacts on native vegetation (noting that none currently remains), and scenic areas (most development is already well setback from Binalong Bay). To argue that landscape values of a cleared and largely developed area are to be prioritised appears unreasonable, and against the original intent of this area.

The guidelines relating to the RLZ indicate the purpose of the zone is still to retain existing natural and landscape values, however gives priority to residential amenity in the first instance.

Figure 2 - Aerial view of lots within Sunshine Court.

Figure 3 - typical character of Sunshine Court, sealed road with Kerb and Channel and large cleared lots.

Figure 4 - Existing single dwelling at the end of Sunshine Court cul-de-sac.

In providing guidance on RLZ and ELZ areas, the St Helens Structure Plan noted that:

"titles with open characteristics are included within the Rural Living zone, while those titles with the presence of natural values are include within the Environmental Living zone" – page 44.

We maintain that these areas are open, clear of native vegetation, and contain developed and established residential uses. Lots that are vacant within this subdivision, should not have to have a future residential dwelling classified as a discretionary use, when it is entirely consistent with the development and character of adjoining lots.

Subsequently, the lots are consistent with RLZ 1, which states:

a) *Residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), by priority is given to the protection of residential amenity.*

As per RLZ4, b), the values of these sites can be appropriately managed through the application and operation of the relevant codes.

Heritage Road/Land South of Golden Fleece Rivulet – St Helens
Land on the Southern side of the Golden Fleece Rivulet, and generally around Heritage Road, within St Helens, has been shown to transition to LCZ under the draft LPS.

The area is similar in character to Sunshine Court (discussed above), and in our view is typical of residential lifestyle choices on land which would normally be within the RLZ. The land has been transitioned into the LCZ on the basis that the site is currently within the ELZ under the Interim Planning Scheme.

Many of the lots, particularly along Heritage Road, are not impacted by the natural assets code, nor are there any scenic management overlays which impact the area. The lots are generally clear of native vegetation and contain established residential uses in the form of single dwellings. The area is identical in character to existing and proposed RLZ land on the northern side of Golden Fleece Rivulet.

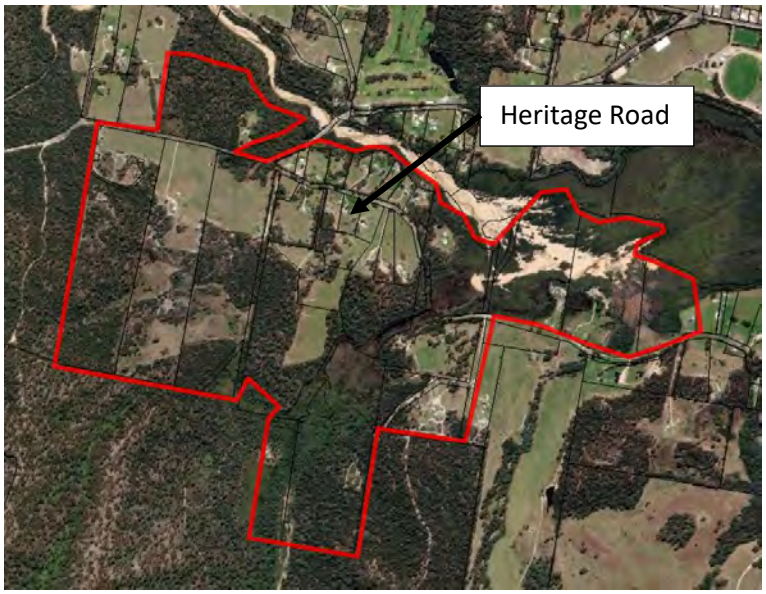

Figure 5 - Aerial view of Heritage Road and proposed LCZ zoned areas.

Once again, the application of the Rural Living zone to many of these areas would be consistent with RLZ 1 of the guidelines, which states:

The Rural Living Zone should be applied to:

a) *residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), but priority is given to the protection of residential amenity;*

The fact that these areas are classified as lifestyle lots suitable for the RLZ, is further emphasised within the St Helens Structure Plan.

The Structure Plan, which was endorsed by Council March 2013, indicates many of these lots should be removed from the ELZ, and replaced with the RLZ.

Page 30 the Structure Plan, provides an ultimate planning zone map and draws attention to proposed changes recommended in this area.

An extract of the plan is shown below (figure 6), with Heritage Road and land south of the Golden Fleece Rivulet highlighted as appropriate for RLZ. The Structure Plan further indicates on page 43 that lots of 2ha or less should be placed into the RLZ, The Structure plan provides recommended actions, stating that the RLZ should be applied to lifestyle land within an open rural setting. This has not happened under the draft LPS.

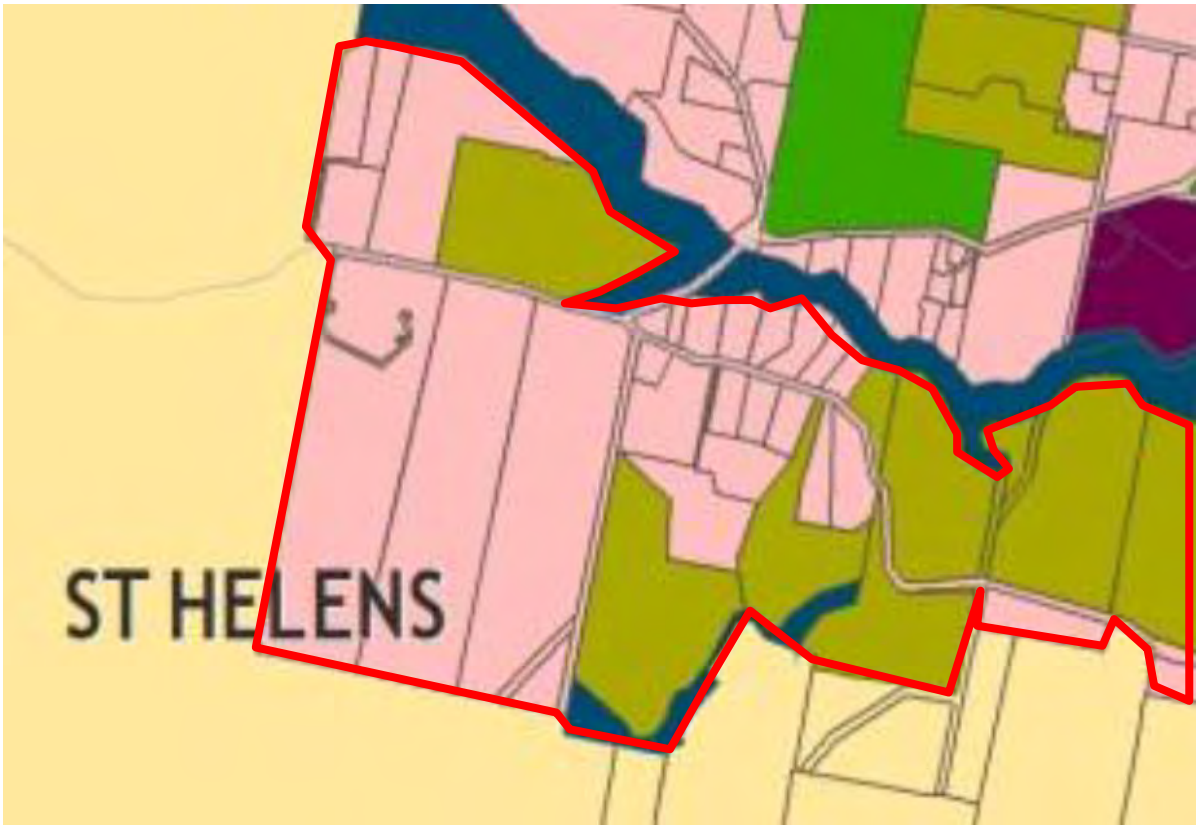

Figure 6 - Extract from St Helens Structure Plan - Ultimate Planning Zones - Page 30. Recommended areas to change to Rural Living shown in Pink.

Figure 7 - Looking west on Heritage Road, St Helens. Land is clear and typical of Rural Living areas.

Figure 8 - Looking south over cleared lifestyle lots along Heritage Road, St Helens.

Many of the lots in this area utilise the large cleared portions of land for low order agricultural activities (i.e. grazing), which is noted as a discretionary use under the proposed LCZ.

Riverview Road/Tasman Highway – Scamander

Land around Riverview Road and Tasman Highway in Scamander, has been identified on the draft LPS as being zoned LCZ. These areas are within the existing ELZ under the Interim Scheme. These areas are characterised by single dwellings on large bush blocks, a combination of which are cleared, and others that contain native vegetation.

In our opinion, the application of the Rural Living zone is appropriate under RLZ 1 a),

The Rural Living Zone should be applied to:

a) *residential areas with larger lots, where existing and intended use is a mix between residential and lower order rural activities (e.g. hobby farming), but priority is given to the protection of residential amenity;*

We note some of these areas have been identified under the Break O'Day Land Use Strategy as going to General Residential. While that particular zoning (GRZ) is questioned, it indicates that there is a clear intent for residential development in these areas. The lots in question are in close proximity to the Scamander township and General Residential areas. Nearly all the lots are developed for residential purposes.

The priority vegetation assets overlay applies to part of this land, however has pockets within the area that are not included within the overlay. The land is not subject to any scenic management overlay or is within a tourist road corridor.

An aerial view of the areas which are currently marked as going to LCZ is provided below. There are a number of small residential lots within the below map which contain single dwellings, on lots around 900m^2 – 2000m^2. Those lots have also been proposed for the LCZ, while it is our opinion that Council should consider the Low-Density Residential Zone (LDRZ) as appropriate for that section.

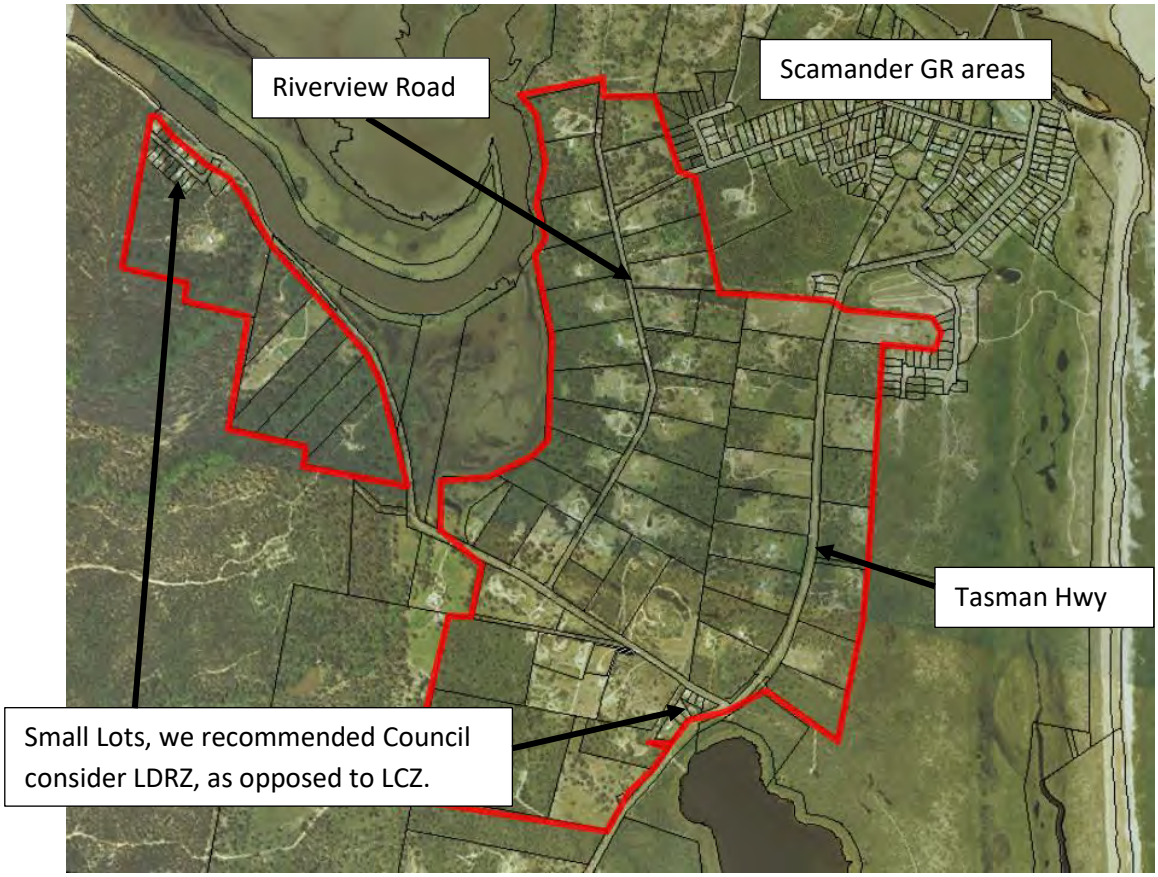

Figure 9 - Aerial view of LCZ proposed areas in Scamander. Recommend RLZ be applied to these areas.

Figure 10 - Lifestyle lot located on Riverview Road.

Figure 11 - Residential development typical on Riverview Road/Tasman Highway.

Seabreeze Court – Beaumaris

Figure 12 - aerial view of lots on Seabreeze Court.

Seabreeze Court in Beaumaris is another area which has transitioned into Landscape Conservation. The lots are within a residential environment. The land should be transitioned either into RL zone, or LDRZ, consistent with how the land is currently used. The sites are clear of vegetation and generally contain established single dwellings. The lots are serviced via a sealed cul-de-sac road. The subdivision has been undertaken for residential purposes. To argue this is not a residential area and should have environmental zoning applied to it, would be a stretch.

Application of the Rural Living Zone

The main areas of Rural Living (RL) within the St Helens township, appear to have been applied to the north and west of the existing industrial areas, around the areas of Baillieu Street, Tasman Highway, and Walker Street/Argonaut Road.

We are concerned that Council has determined 'Rural Living C' as the appropriate density for these areas.

'Rural Living C' provides for a minimum lot size of 5ha, with performance criteria allowing a minimum lot size of 4ha, which can be approved at the discretion of Council.

The current Interim Planning scheme Rural Living zone, provides an acceptable solution lot size of 3ha, and a performance criteria minimum lot size of 1ha. An extract from the existing interim planning scheme is provided below:

Acceptable Solutions	Performance Criteria
A1.1 Each lot must: a) have a minimum area of at least 3ha; or b) be required for public use by the Crown, an agency, or a corporation all the shares of which are held by Councils or a municipality; or c) for the provision of utilities; or d) for the consolidation of a lot with another lot with no additional titles created; or e) to align existing titles with zone boundaries and no additional lots are created. A1.2 Each lot must have new boundaries aligned from buildings that satisfy the relevant acceptable solutions for setbacks.	P1 Each lot must: a) be to facilitate protection of a place of Aboriginal, natural or cultural heritage; or b) provide for each lot, sufficient useable area and dimensions to allow for: i) a dwelling to be erected in a convenient, appropriate and hazard free location; and ii) appropriate disposal of wastewater and stormwater; and iii) on-site parking and manoeuvrability; and iv) adequate private open space; and v) vehicular access from the carriageway of the road to a building area on the lot, if any; or c) be consistent with the local area having regard to: i) the topographical or natural features of the site; and ii) the ability of vegetation to provide buffering; and iii) any features of natural or cultural significance; and iv) the presence of any natural hazards; and v) local area objectives, if any; and d) subdivision must not create lots less than 1.0ha; and e) any lot created by subdivision must not provide for development which will in any way restrain or hinder the use of land for lawful purposes on adjoining lots.

Figure 13 - Extract from Rural Living Zone, subdivision criteria of Break O'Day Interim Planning Scheme 2013.

Under the proposed changes, land owners will lose a subdivision right which they currently enjoy under the Interim Scheme. We are now in a position where we are seeing property owners rush to get permits under the interim scheme, as there will be no potential for further development under the LPS.

Under the proposed draft LPS, subdivision potential within the Rural Living Areas around St Helens would see indicatively less than 5 new lots created. This is on the basis that Rural Living lots would require a minimum size of 8ha to start with (to meet performance criteria.)

Under the current Interim Scheme, the subdivision potential could result in a possible yield of 40+ Rural Living lots. It is not clear to me from the supporting report why Council is seeking to remove nearly all of the existing subdivision potential from the Rural Living areas.

Page 48 of the supporting report states:

"The draft LPS mapping has applied these zone classifications based on allotment sizes with the intention to not grant or revoke existing development rights"

While the above sentence is somewhat confusing, it is clear that this process will remove existing subdivision rights currently available to land owners under the interim scheme.

In my opinion, application of the 'RLZ A or B' to existing Rural Living areas would be more consistent with the existing Rural Living provisions which currently apply.

The RLZ A or B would also be consistent with RLZ 3, which states:

> ***RLZ 3*** *The differentiation between Rural Living Zone A, Rural Living Zone B, Rural Living Zone C or Rural Living Zone D should be based on:*
>
> *a) a reflection of the existing pattern and density of development within the rural living area; or*
>
> *b) further strategic justification to support the chosen minimum lot sizes consistent with the relevant regional land use strategy, or supported by more detailed local strategic analysis consistent with the relevant regional land use strategy and endorsed by the relevant council.*

In relation to part a) of the above criteria, the St Helens Structure Plan states on page 42, that the average allotment size in proposed Rural Living areas is 2.5ha. Application of RLZ B, is therefore consistent with the reflection of the existing pattern and density of development within these areas.

In support of the chosen minimum lot sizes for Rural Living areas, the Structure Plan further states that:

"a minimum subdivision size of 2ha is recommended" – page 42

The St Helens Structure Plan provides further strategic justification which supports a minimum lot size of 2ha. This is consistent with RLZ 3 b) of the guidelines which allows a rural living density to be applied as per a detailed local strategy.

In relation to the current Rural Living areas under the interim planning scheme, the *Break O'Day Land Use Strategy 2015* states on page 68:

> *"……this Strategy recommends the rezoning of a conservative amount of additional residential and Rural Living zoned land to address potential delays or constraints in subdividing existing zoned land, to provide greater choice in housing location and to encourage opportunities for rural living and coastal living lifestyle choices"*

The strategy recommended, in addition to subdivision potential currently available under the interim scheme, that ***more*** rural living and lifestyle lots were provided to address existing constraints. The current draft LPS goes in the opposite direction to this advice, restricting existing subdivision capability and providing no new rural living areas.

The Break O'Day Land Use Strategy further states on page 68:

Further, it is recommended that the minimum lots size of Rural Living zoned land also be reduced to a minimum of 1 hectare under the Acceptable Solution where such land is sited in proximity to existing settlements.

All of the strategic documentation (both the St Helens Structure Plan and BODC Land Use Strategy) indicates that Rural Living areas should not exceed 2ha (BODC Land Use Strategy recommends 1ha). Once again, the draft LPS appears to have gone contrary to this advice, making subdivision harder, and reducing residential opportunities around St Helens by increasing the minimum lot size to 4ha.

The proposed lot size of 4ha under performance criteria, has never been supported or proposed in any local strategic planning.

There are numerous other references within the Break O'Day Land Use Strategy 2015, and the St Helens Structure Plan which make recommendations relating to Rural Living land around St Helens.

It is noted that the areas to the east of St Helens, around Reservoir Rd and Tasman Highway have been identified as potential Rural Living under the Break O'Day Strategy, and St Helens Structure Plan. In particular the Structure Plan clearly identifies these areas on page 30 as going to the RLZ.

Most of these lots (especially along Cleland Drive) contain established single dwellings. The area is residential. It does not contain primary industry, and as such should have provisions applied which provide a degree of protection for residential amenity.

These areas are shown below, in an extract from the St Helens Structure Plan.

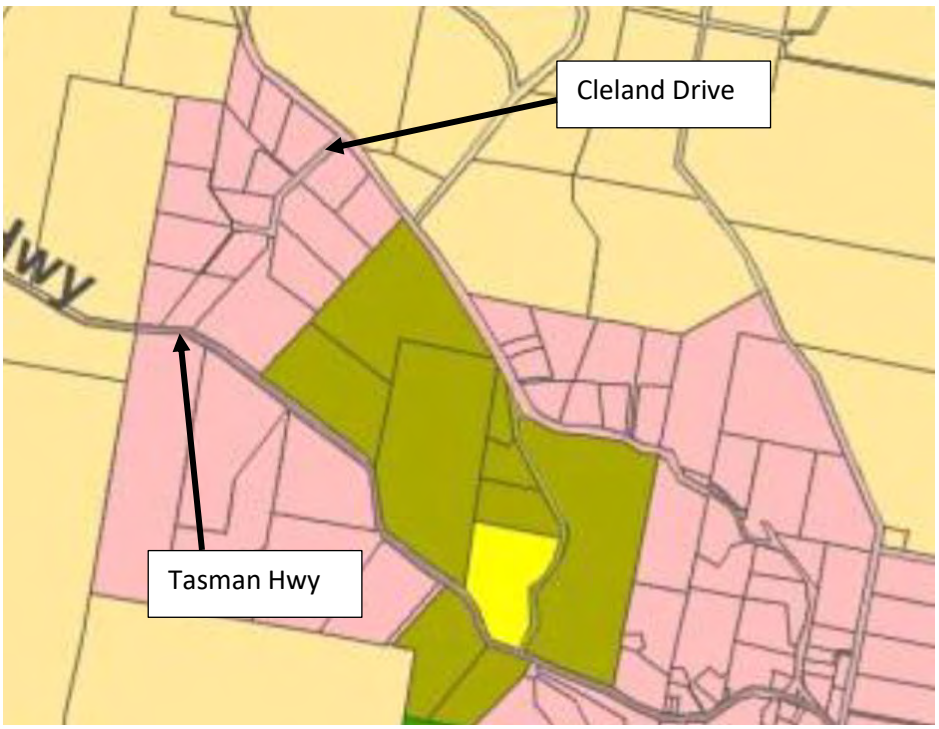

Figure 14 - Area to the north west of St Helens. Ultimate zoning plan. Source: St Helens Structure Plan.

While I note the draft LPS has recommended Rural for these areas to the north west of St Helens, there is in my opinion opportunity to rezone the titles RLZ, in accordance with the 8A Guidelines and consistent with strategic documentation.

RLZ 4 c) states that the RLZ can be applied to land, where it can be justified by a relevant regional land use strategy, or within a detailed local land use strategy which has been endorsed. The St Helens Structure Plan is this strategy, and as such, the RL zone can be applied to these titles.

The Regional Land Use Strategy (RLUS) provides guidelines under section D2.2.2 Rural Residential Areas. It states that the Rural Living Zone (or other appropriate zone), should be applied to areas which contains established rural residential land use patterns, or additional areas identified within a local strategy (page 19 - RLUS).

The areas identified above provide limited potential for efficient or practical agriculture and are located in an area where the land use pattern is predominantly residential in nature. While it is beyond us to commission agricultural reports for these general areas, should Council commission such a report it would certainly show these areas as being appropriate for residential development, consistent with what is presently developed on ground.

Application of BRE-P2.0 Coastal Settlement PPZ

The PPZ for coastal settlements is a new zoning proposed under the draft LPS. The provisions do not exist under the current interim planning scheme.

A PPZ can only be applied should it meet the requirements of section 32(4) of the Act, as shown below:

> *(4) An LPS may only include a provision referred to in subsection (3) in relation to an area of land if –*
>
> *(a) a use or development to which the provision relates is of significant social, economic or environmental benefit to the State, a region or a municipal area; or*
>
> *(b) the area of land has particular environmental, economic, social or spatial qualities that require provisions, that are unique to the area of land, to apply to the land in substitution for, or in addition to, or modification of, the provisions of the SPPs.*

Our primary concern is whether the areas proposed as Coastal Settlement PPZ , meet the above criteria and warrant inclusion of a PPZ. The legislation has purposefully provided an onerous test, by requiring PPZ's to meet section 32 (4)(b) of the Act. The intention of the TPS was to provide 80% consistency within planning schemes across the 29 local Councils. Creating PPZ's should be a last resort, and only undertaken on the basis that no existing zone meets the needs of a particular area.

In this instance, we question whether the Low Density Residential Zone (LDRZ) would be appropriate to apply to these sites. The lots are relativity small residential lots that face constraints in the form of servicing and/or location. This is reflected in the zone purpose for the LDRZ, which states that the intent is to:

"Provide for residential use and development in residential areas where there are infrastructure or environmental constraints that limit the density, location or form of development"

The 8A guidelines provides an indication on the types of environmental constraints being referred to, with land hazards, topography, or slope being referenced.

The 8A guidelines further go on to state under LDZR 1 (b), *The LDRZ should be applied to residential areas where one of the following conditions exist……small residential settlements without the full range of infrastructure services, or constrained by the capacity of existing or planned infrastructure services*"

All of the areas identified within the coastal settlements identified within the PPZ meet the above criteria.

The draft criteria of the PPZ requires a 10m setback. This is seen as excessive for the zone. All of the proposed PPZ lots along Binalong Bay Road (opposite Moulting Bay) only have a width of 20m, rendering any development of these lots as automatically discretionary. The same could be said for PPZ areas in Jeanerette Beach Rd, Gardens Road (near Margery's Corner), Four Mile Creek, and North of this area near the Gulch.

In regards to clause BRE-P2.6.6 Stormwater control, this is seen as unnecessary and a duplication of assessment for something which is required to occur under the Building Act. This issue will be more generally discussed later in this representation.

In relation to the use table, it is our opinion that Visitor Accommodation be listed as a discretionary use with no qualification. Land owners currently have the option to build a visitor accommodation unit or cabin, subject to meeting requirements of the zone. This right will be taken away under the proposed PPZ.

Our overall position in relation to this PPZ, is that many of the characteristics of the land are the same as those which are seen in an area such as Beaumaris (LDRZ) and Falmouth (LDRZ). We believe that the underlying zone of ELZ (Interim Scheme) was clearly incorrect for these areas, however the need to create a whole new PPZ and suite of provisions is questioned in relation to section 32 of the Act.

In closing comments, we note land in Simeon Place is currently zoned ELZ. This land has (in our view correctly) been recommended for the LDRZ. How this land can have the LDRZ applied but not the other areas is unclear. Both areas contain small residential clusters, are in a coastal locations, and are constrained by services and environmental factors.

Figure 15 - Aerial view of Simeon Place - residential cluster correctly proposed for LDRZ.

Application of BRE – P3.0 PPZ – St Helens Coastal Marine

We wish to state our support for the coastal marine PPZ zone under the draft LPS. The current Port and Marine Zone under the Interim Scheme does not capture the intent or flavour of some of these local areas. It is questioned whether the use class of Visitor Accommodation could be inserted as a discretionary use into this PPZ, noting that the desirable coastal location and unique site characteristics could have some potential to provide a suitable visitor accommodation development at Councils discretion.

A future visitor accommodation development of these areas would not create a conflict with the PPZ purpose statement.

Application of the Major Tourism Zone

It is noted that Major Tourism Zone has been proposed for the property at White Sands in Four Mile Creek. We agree that this is an appropriate zone for this regionally significant site on the East Coast of Tasmania. The current Rural Resource Zone was never an appropriate zone for this site. The proposed Major Tourism Zone now ensures appropriate use and development standards can be applied to the site. The application of the zone is supported my MTZ 1 and MTZ 2b), noting that support for the zoning is provided under the Break O'Day Land Use Strategy 2015.

Application of BRE-2.0 Stormwater Management Specific Area Plan
Council has sought to apply a Stormwater Management SAP to large parts of the municipality. This SAP applies in addition to standards found in the underlying zone criteria.

The Tasmanian Planning Scheme SPP's do not include provisions relating to stormwater, outside of those criteria relating to subdivisions, or where there is a potential impact on the natural environment (i.e. stormwater is addressed when development is within a future coastal refugia area).

The LPS supporting report refers to clause 6.11.2 of the SPP's which relates to conditions which a Council can impose. Reference is made to stormwater under clause g) of those criteria. The supporting report goes on to state that:

"……it is considered that the SPPs do not provide the same consideration regarding stormwater infrastructure that the current scheme provides".

This is true. Many of the current zones under the Break O'Day Interim Planning Scheme include a local provision which requires all development (buildings) to consider stormwater management as part of a planning application. The report notes that without proper consideration of stormwater infrastructure, external costs could be borne by ratepayers due to development exceeding capacity of existing infrastructure.

<u>Council does not need to assess stormwater (outside of subdivision) as part of a planning application.</u>

Assessment of stormwater is done as part of a plumbing permit and required under the *Building Act 2016*.

Section 9 (2) of the *Building Act 2016* states that the assessment of technical requirements relating to a plumbing work (i.e., assessment of stormwater) can only be approved under planning if The Minister has expressly provided so. In section 9 (4), the act goes on to state that:

(4) A condition that relates to the technical requirements of the design or construction of a building, building work or plumbing work that –

> *(a) is imposed on a permit issued under the Land Use Planning and Approvals Act 1993; and*
>
> *(b) has not been approved under subsection (3) as required before it was imposed on the permit –*

is of no effect unless the condition has been retrospectively approved by the Minister.

Stormwater, and all of the issues and concerns relating to stormwater, are assessed under separate legislation to the *Land Use Planning and Approvals Act*. These are issues that relate to technical requirements. To assess these matters as part of a planning application, is an unnecessary duplication which adds another potential discretion to what may be a straightforward application.

All of the concerns which Council have noted in the supporting report, can still be addressed as part of a building application and do not need to be considered at planning.

The same could be said for onsite wastewater. Council hasn't chosen to roll over the existing onsite wastewater code, presumably on the basis that these are technical matters which are assessed as part of a building application. The same logic and reasoning applies for management of stormwater. Assessment and regulation of stormwater and stormwater quality is limited in the TPS to the Part 6 assessment provisions of the SPP's as to what a Council can and cannot assess.

The current SAP criteria requires all development to connect to an existing reticulated storm water system. Where the development does not, or cannot, connect to a reticulated system, the performance criteria must be relied upon. Where Council does not have a reticulated stormwater system, an application for development will automatically be discretionary.

On the above note, I would like to draw Councils attention to the SAP boundaries at Mathinna as an example. The SAP has followed the LDRZ boundaries. Any development within that area will be discretionary unless they can connect to reticulated stormwater. While I do not have access to the Council stormwater assets maps, I could confidently guess that the large paddocks within the overlay do not contain a reticulated stormwater network. This will render all development in that area discretionary, on a matter which can be dealt with at the building approval stage.

In my experience of working with these provisions, it is unreasonable that a small extension or development which would otherwise be a 'NPR' development, get called in for advertising on the basis that the existing development is not connected to reticulated stormwater.

It is an added cost for applicants and makes an otherwise straightforward development more complicated. The performance criteria require the Planning Authority to have regard to advice from a suitably qualified person. This clause likely means that expert advice will be requested on simple applications. Once again, we have concerns that this has the potential to blow out costs and make a simple exercise unreasonable.

Our view is that Council can deal with stormwater management at the building stage. All of the concerns from Council can still be addressed. It is not a planning issue, and in my opinion goes against the explicit intent of section 9 of the *Building Act 2016*.

I understand there are Councils across Tasmania which have not rolled over their current stormwater provisions on this basis.

I understand there are Councils across Tasmania which have not rolled over their current stormwater provisions on this basis.

BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area Plan
Council has proposed the above SAP. The SAP applies to two sites, one of which is privately owned. The owners of CT179341/1 have expressed a concern that the SAP incorporates their land, and that no one from Council has discussed this with them. The owners are concerned that any development of their land will automatically be discretionary under the SAP.

The purpose of the SAP is to:

Ensure that future development of the runway is not compromised by development that could obstruct safe air navigation of aircraft approaching and departing the Airport.

The *Airstrip Feasibility Study 2013* prepared by Aurecon, for Break O'Day Council, provides three stages of expansion relating to the existing runway. Stage 1 looks at upgrades to the existing runway. Stage 2 looks at minor expansion of 130m to the east, and stage 3 looks at a new runway running in more of a north/south direction. There doesn't appear to be any indication that land to the east would ever compromise the expansion of the runway or future operational airspace.

Based on the strategic documentation, we question whether the SAP is required to be included over the private land to the east? This will have ramifications from a development perspective, and doesn't appear to align with the Councils vision for any future runway expansions. We note that C16.0 Safeguarding of Airports Code, would still apply to this property.

We don't disagree with the content or intent of the SAP, but question whether it would be more appropriate to have it solely applied to CT223471/1 and CT214209/1.

Flood Prone Areas
Council has proposed a flood prone hazard overlay. This appears to have been rolled over from what was the existing overlay under the Interim Planning Scheme. We understand Council has inhouse flood mapping, which maps a far larger area then the current scheme overlay shows.

This additional mapping (which is not publicly available unless requested), has resulted in confusion and delays when dealing with development applications. Council often needs to be contacted prior to lodging a development application, and asked to determine whether an area is classified as flood prone at a 1:100 year flood event, at which point Council will provide a copy of the internal mapping for that site.

From a customer service point of view, we request that if Council is going to apply the flood prone areas code based on this internal mapping, that Council consider updating the overlay to include this more recent information. It would assist all ratepayers, as well as anyone looking to prepare and lodge a planning application (i.e. Designers, Planners, Engineers etc).

Conclusion

In closing, we trust this submission will be taken as it is intended, with good planning outcomes and appropriate application of zones and codes as our primary aim.

We appreciate the amount of work that Councillors and staff have put into this project. This submission seeks in no way to ignore or diminish the challenges which are associated with this planning reform.

We thank Council for the opportunity to comment and look forward to discussing these issues in more detail.

If you have any questions regarding the contents of this submission, please don't hesitate to contact us on the numbers provided.

Kind regards
Woolcott Surveys

James Stewart
Senior Town Planner

Kind regards
Woolcott Surveys

Brett Woolcott
Managing Director & Registered Land Surveyor

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Representation 73

From: Graeme Wathen
To: Break O Day Office Admin
Subject: submission on Draft BODC LPS
Date: Monday, 13 December 2021 2:04:08 PM
Attachments: FotEC submission to BODC on Draft LPS 13 Dec 2021.pdf

Please find attached submission on Draft BODC LPS

Protecting the unique environment of the East Coast from inappropriate development

www.friendsoftheeastcoast.org

13 December 2021

The General Manager,
Break O'Day Council
32-34 Georges Bay Esplanade,
St Helens TAS, 7216

Dear Sir

Submission on BODC Draft Local Provisions Schedule

This submission on the BODC Draft *Local Provisions Schedule*, (hereafter the *LPS*), has been prepared by the **Friends of the East Coast Inc**.

Our submission covers some of the issues we feel are important and relevant to planning matters on the East Coast of Tasmania, particularly within the coastal areas of Break O'Day municipality.

Our summarised recommendations:

- **FotEC** recommends additional settlements, such as Falmouth, should be included in the proposed **Particular Purpose Zone – Coastal Settlement.**
- **FotEC** has little confidence that BODC will protect **Landscape Conservation** lots from future subdivision or over development considering how BODC has responded to these matters for **Environmental Living** lots in the past, hence:

- **FotEC** recommends a **Subdivision Specific Area Plan** should be applied to coastal areas within 1 km of High Water for **Landscape Conservation** and **Rural** zones to prohibit any further subdivision.
- **FotEC** notes restrictions on sub-division in the **Agriculture** zone appears a planning benefit, particularly preventing future sub-division.
- **FotEC** recommends the solar access requirements should be uniform in **all zones**, and should be strengthened. Solar energy installations should be further protected in **all zones**.

Please find attached a submission from **Friends of the East Coast Inc.** concerning BODC Draft Local Provisions Schedule which we hope the Council gives due consideration.

Faithfully

Graeme Wathen
Secretary

Kris McQuade
President

Protecting the unique environment of the East Coast from inappropriate development

www.friendsoftheeastcoast.org

Submission on
BODC Draft Local Provisions Schedule
13 December 2021

Contents

1. Analysis of the justification for the selective creation of Particular Purpose Zones

In the BODC *Draft LPS Supporting Report*, in the section **5.1 Particular Purpose Zone – Coastal Settlement**, 154 titles are proposed to be zoned **Coastal Settlement**.

The 154 titles are in the following locations:

The Gardens
Seaton Cove
Jeanneret Beach
Bayview
Dianas Basin
Four Mile Creek.

Reasons are given for this specific BODC zoning in the *BODC Draft LPS Supporting Repor*t. However, it is instructive to apply that reasoning to other coastal settlement, such as, for example, Falmouth. Falmouth is unique in that it is off highway, with no through road, without prospect of enlargement. It is similar to many of the above settlements.

Reasons given for creation of Particular Purpose Zone – Coastal Settlement	**Features of the coastal settlement, Falmouth**
water and sewer infrastructure are not provided in these locations	water and sewer infrastructure not provided
the lots are generally small clusters of lots, with an area less than 4,000 m^2, supporting existing residential uses	lots are generally small, areas between 520m^2 and 3,500 m^2, supporting residential uses only a few larger lots remain
located in areas with scenic and natural value.	located with surrounding scenic areas
are isolated from settled areas and land within other residential zones	isolated from other residential areas
are located in unique areas that offer no further development in the future	located on a peninsula with adjacent land zoned Agriculture which cannot be sub-divided, so no further development
are primarily in coastal locations	in a coastal location
surrounded by land within the Environmental Management Zone or Environmental Living Zone with large lots sizes (that have transitioned to the Landscape Conservation Zone)	surrounded by land previously Environmental Living or Rural Resource with large lots (that have transitioned to Landscape Conservation and Agriculture Zones)
most houses that have been established are of long standing and created at a time when planning controls were not as comprehensive as existing and prior to introduction of the State Coastal Policy.	most houses are of long standing, many created when planning controls were less comprehensive than at present, many well before the State Coastal Policy (1996)

The above table shows there is very little difference between the characteristics of the selected Coastal Settlements chosen for the Particular Purpose Zone and the characteristics of Falmouth.

This obviously begs the question why not apply this zone to Falmouth and other similar settlements?

FotEC comment:

Some of the changes to Falmouth if included in the Particular Purpose zone would include:

- visitor accommodation would be **Discretionary** rather than **Permitted**
- building height would be limited to 7m rather than 8.5m
- boundary setbacks would increase
- overshadowing restrictions and sunlight requirements would be improved
- subdivisions would be virtually prohibited
- multiple dwellings would not be allowed

FotEC believes the above changes would benefit Falmouth from increased density and potential over development, particularly by densification.

2. An example of Environmental Living Zone development: a harbinger for Landscape Conservation Zones?

It is interesting to trace the history of development of valuable coastal land along the coast in Break O'Day.

In the BODC Interim Planning Scheme, **Environmental Living Zone** is applicable to lots where the **Purpose** is "to provide for residential use or development in areas where existing natural and landscape values are to be retained". **Permitted** uses include a single dwelling and for holiday letting of an existing dwelling. Other visitor accommodation is a **Discretionary** use. Only a maximum of 4 ha is to be used for any developments. Sub-division lots are to have a minimum area of 20 ha.

An example of interest is the parcel of land at 36 Franks St, Falmouth, known as Saltwater Sunrise. The land has an area of 10.33 ha and currently zoned **Environmental Living**. It is proposed to be re-zoned **Landscape Conservation**.

In times past, there was a proposal to sub-divide this parcel of land into 64 lots. However, this did not eventuate. Some years ago it is understood the then owners were successful in obtaining approval for a herb farm development including a number of accommodation units for the farm workers. These units were eventually upgraded to luxury accommodation units.

During the recent tourist boom the property comprised four luxury units, a large shed converted to a manager's residence and a recreation centre.

In August 2019, the current owners submitted a development application to BODC seeking approval for an additional 15 accommodation units. Together with converting existing structures, this would bring the total up to 21 accommodation units on the property. The floor area would total approximately 2,740 m^2.

Being zoned **Environmental Living**, visiting accommodation of this scale is a **Discretionary** use and the combined floor area is limited 200 m^2.

There was considerable opposition from the Falmouth community for this proposal, but the BODC in its wisdom granted approval for the development.

At the time, FotEC submitted the development was essentially a re-zoning application. We predicted the property could be further developed by conversion to strata titles: "It is not inconceivable the whole development could be split by strata title and the individual units sold sometime in the future." And that is what happened.

In June 2020 stage 1 of strata titled blocks were offered for sale. Further blocks are to be offered later. Infrastructure for the strata titles has been installed.

Then in August 2021 the owners applied to BODC to have changes made to the floor plans of various units, increasing the number of bedrooms in some cases and reducing in others. Cleverly, the total number of bedrooms on paper remained the same as approved in 2019. This meant the traffic impacts were not revised. Again the BODC approved the application.

This is an example of how development of **Environmental Living** titles has been managed by BODC.

At the time the BODC had a policy to prohibit sub-division of **Environmental Living** properties within 1 km of the High-Water Mark. Over development of this particular lot combined with strata titling of the lot, is essentially sub-division by stealth.

Now it is proposed to re-zone the Saltwater Sunrise property as **Landscape Conservation Zone**. The **Guideline No.1 Local Provisions Schedule (LPS): Zone and Code application** claims "*the Landscape Conservation Zone provides a clear priority for the protection of landscape values and for complementary use or development, with residential use largely being discretionary."*

The **Purpose** of the **Landscape Conservation Zone** is "to provide for the protection, conservation and management of landscape values, and to provide for compatible use or development that does not adversely impact on the protection, conservation and management of the landscape values."

Visitor accommodation is **Discretionary** where guests are to be accommodated in existing buildings; and has a gross floor area of no more than 300 m^2. Sub-division is limited to a minimum lots size of 50 ha.

FotEC comment:

If the above example of how an **Environmental Living** lot can be developed withing Break O'Day, it does not give confidence that **Landscape Conservation** lots will be treated any different in the future. A good prediction of future behaviour is past behaviour.

Break O'Day Council (particularly the planning department) and Councillors have shown little concern to protect over development of the coast.

3. Analysis of the justification for the removal of prohibition of sub-divisions within 1 km of coast

In a letter to residents in May 2016, the BODC Mayor stated:

> "In regard to the maintenance of the 1km prohibition zone; The prohibition of a subdivision within 1km of the high tide mark is currently only in place in our region and has been part of the BODC Planning Scheme since 1996 when it was adopted by Council voluntarily. This clause was based on the recommendations of the Tasmanian State Coastal Policy, 1996. This policy is currently under review. Since then BODC has fought to keep this requirement in place, including strongly advocating for the retention of this control in our submission to the draft State-wide Planning Scheme. This is evidenced in the April, 2016 Council Meeting Agenda, referenced below. . . .
>
> *"Currently the BOD Scheme limits the potential of coastal strip development by prohibiting subdivision in the ELZ of new lots within 1km of the High Water Mark in accordance with the State Coastal Policy 1996. If the minimum lot size were to be reduced under a Local Planning Provision then this restriction would need inclusion to complement this allowance."*
>
> Council will always be bound by State Legislation **and will fight to have the views and interests of our community considered** but once the Government signs off on the new planning scheme we will have to work within this framework whether we are in agreement or not. (**Emphasis** added)

It seems the fight for the 1 km zone and the **State Coastal Policy** has now been abandoned by BODC, despite the promises made in May 2016. If the 1 km zone was to be protected, surely it could have a **Specific Area Plan** overlay.

In the BODC *Draft LPS Supporting Report*, in making comment on the deletion of the 1 km prohibition in the LPS, it states:

> "This particular provision is unique to Break O'Day and has not been included in the Tasmania Planning Scheme. The LCZ subdivision standards along with other code requirements is considered to adequately protect coastal areas from unsuitable subdivision."

So BODC now says the **Landscape Conservation** sub-division requirements are "adequate" protection from unsuitable sub-division. But when one looks at the actual sub-division requirements, there is little to be confident about considering:

> The **Acceptable Solution** for sub-division in **Landscape Conservation** requires a minimum lot size of 50 ha. However, the **Performance Criteria** specifies the lot size can be reduced to 20 ha.
> Further, the frontage of lots must be not less than 40 m for an **Acceptable Solution**, but this can be reduced to 3.6 m for the **Performance Criteria**.

FotEC comment:
So here we have the great flexibility enabled in the Tasmanian Planning Scheme. **Performance Criteria**, coupled with **Discretionary** decision making by Councillors, are the "let-out-of-gaol" card for developers. Together with the high cost of undertaking an appeal against a council decision, (and the Government's mooted intention to restrict appeals), community ability to oppose over development is increasingly fraught with failure.

BODC has proposed that a **Stormwater Management Specific Area Plan** be applied to certain areas and titles where it is likely that the installed drainage infrastructure may be insufficient to handle future stormwater loads. In a similar way, a **Subdivision Specific Area Plan** should be applied to coastal areas within 1 km of High Water for **Landscape Conservation** and **Rural** zones to prohibit any further subdivision.

4. Review of the change from Rural Resource to Agriculture Zones

A major change proposed in the LPS is the re-zoning of **Rural Resource** zone into either of two zones: **Rural** zone or **Agriculture** zone.

In the current **Rural Resource** zone sub-divisions are limited to 100 ha. Visitor accommodation is a **Permitted** use as long as the curtilage (essentially the home paddock) does not increase by 30%.

In the new **Rural** zone, the sub-division is limited to a minimum of 40 ha (with minimum frontage of 25 m). Visitor accommodation is **Permitted** for guests in existing dwellings. However, other visitor accommodation and tourist operations are **Discretionary** uses.

In the new **Agriculture** zone sub-division is virtually eliminated by allowing essentially only consolidation of lots. Visitor accommodation and tourist operations are **Discretionary** uses.

So vast areas of rural land will now be available for sub-division into smaller lots, like the old Environmental Living sized lots. Residential, Visitor Accommodation and Tourist Operations will all be **Discretionary** in **Rural** zones.

FotEC comment:
Of interest to FotEC is the agricultural land along the east coast. The **Agriculture** zoned land will be essentially protected from further sub-division. That is a welcomed development.

Particularly of interest to the Falmouth community, the surrounding Glencoe-Enstone Park farm will not be further sub-divided.

It is interesting to note that the farmland immediately to the south of the Falmouth Township, once ear-market for further expansion of the township, will be zoned **Agriculture** and therefore unable to be sub-divided.

Back in February 2015, BODC appointed consultants to review its *Land Use and Development Strategy*. Their draft report recommended for Falmouth:

- "Rezone land identified in the Strategy directly south of the Village currently zoned Environmental Living and already subdivided into allotments generally of 1500-1800m² to reflect their current and future use."
- "Land to the south of the Village should not be sterilised for potential future long term urban development and subdivision should be limited until such times as the future of the village is determined. The future long term urban growth area boundary as provided by the Strategy should be identified which includes the land directly to the south of the Village bounded by Falmouth Road and the Tasman Highway. When population demand necessitates undertake detailed investigation of land within the Environmental Living zone to determine land capability and suitability for rezoning."

After strong community opposition to these proposals, the consultants amended their report as follows:

> "The lack of servicing of the Falmouth township was previously noted in the draft Strategy as a major constraint to future development and it was specified that any future development would need to ensure services are available to the site before any development can be considered, in order to ensure minimal environmental impact.
>
> Concerns about existing take up rates on previously subdivided land to the south of Falmouth are noted, and based on community input, the historic and anticipated growth rates in this location and the cost of servicing upgrades it is recommended that the southern future investigation area in Falmouth be removed from the strategy **at this time**." (**Emphasis** added)

Some of this land was sub-divided into housing lots (south side of Franks St in 2005), and these lots are now to be zoned **Low Density Residential**, as for the rest of the township. But the remaining farmland now seem protected against further sub-division, at least for the time being.

5. Solar Access and Promotion of Passive Design of Dwellings

The matter of providing and protecting solar access to buildings is of increasing importance both for occupant comfort and for reducing energy consumption and its contribution to reducing carbon emissions to mitigate global warming.

The State Planning Provisions give some attention to solar access but leaves the matter of energy efficiency of buildings themselves to the requirements of building codes and associated energy rating schemes. The National Building Code is regularly upgraded to require increasing energy performance (Star Ratings) of dwellings. In Tasmania with a cooler climate than most other regions of Australia, the use of solar energy via passive solar design is important to achieve occupant comfort and lower energy cost. The provision of adequate solar access is critical to achieve higher energy performance.

While the new Tasmanian Planning Scheme has been in production since 2016, the energy ratings requirements have been upgraded. It is important that the State Planning Provisions should recognize the need for dwellings to be able to achieve sufficient solar access to enable passive solar design benefits.

We compare below the requirements in the current **BODC Interim Scheme** and the proposed requirements in the BODC LPS for **Low Density Residential** and the **Particular Purpose – Coastal Settlement** zones in addressing this matter.

FotEC comments:

In general the new planning scheme requirements, whether for **General Residential, Low Density Residential** or the **Particular Purpose – Coastal Settlement Zone**, provide limited requirements for solar access to habitable rooms or private open spaces.

Surprisingly, only the **Particular Purpose – Coastal Settlement Zone** has a specific requirement (3 hours minimum of direct sun access on 21st June), whereas other zones have the subjective performance requirement ("not cause unreasonable loss of amenity") which is of dubious value regarding effectiveness and consistency. FotEC believes subjective decisions for performance requirements on this matter are not good enough.

The obvious questions then are: Why should the **Low Density Residential Zone** have less effective solar access requirements than the **Particular Purpose – Coastal Settlement Zone**? Should not the requirements for solar access be uniform in all zones where feasible? Solar access is a universal parameter and should only be differentiated where it is constrained by other factors such as might occur in highly dense settlements. There is no in principle reason why solar access should be dependent on the zone type.

In the **General Residential Zone** there are some protections specified for solar energy installations. But there are no such requirements in the **Low Density Residential Zone**, nor in the **Particular Purpose – Coastal Settlement Zone.** This is an obvious anomaly.
Why should solar energy installations have some protection for solar access some zones but not in others? These inconsistencies are unacceptable. All zones should offer the same protections for solar energy installations where feasible.

On a less important point, there is non-uniform wording of requirements for these zones which leads to subtle but significant differences. For example, sometimes the wording is "sunlight to habitable rooms and private open space of dwellings", whereas in others it becomes "sunlight to private open space and windows of habitable rooms", or "sunlight to the north and east-facing windows". Small but significant differences add to confusion and becomes relevant to people wishing to undertake renovations to improve passive solar heating.

BODC Interim Planning Scheme, Low Density Residential Zone	**Tasmanian Planning Scheme, State Planning Provisions, Low Density Residential Zone**	**BODC-P2.0 Particular Purpose Zone – Coastal Settlement**
currently in these locations**:** Beaumaris Falmouth Binalong Bay Ansons Bay and other areas	proposed for these locations: Beaumaris Falmouth Binalong Bay Ansons Bay and other areas	proposed for these locations: The Gardens Seaton Cove Jeanneret Beach Bayview Dianas Basin Four Mile Creek
12.4.1.3 Building Height A1 Dwelling height must not exceed 8 m.	**10.4.2 Building Height** A1 Dwellings must have a maximum height of 8 m. P1 Height must not cause an unreasonable loss of amenity to adjoining properties having regard to sunlight to habitable rooms and private open space of dwellings, and any overshadowing of adjoining properties.	**BRE-P2.6.1 Building height** A1 A dwelling must have a building height not more than 7m. P1 The height of dwellings must be compatible with the streetscape and not cause an unreasonable loss of amenity to adjoining properties having regard to: • sunlight to habitable rooms and private open space of dwellings; and • any overshadowing of adjoining properties. **FotEC comment:** Note building height is limited to 7 m compared to 8 m in Low Density Residential Zone.

BODC Interim Planning Scheme, Low Density Residential Zone	Tasmanian Planning Scheme, State Planning Provisions, Low Density Residential Zone	BODC-P2.0 Particular Purpose Zone – Coastal Settlement
12.4.1.5 Rear and Side Setbacks A1 Rear boundary setback 5 m, side setback 3 m. P1 Building setback must be appropriate having regard to impact on solar access of habitable room windows and private open space of adjoining dwellings **FotEC comment:** The above requirements are minimal, simple and apply only to impacts on adjoining buildings or properties. There is no requirement that dwellings and associated open spaces must be designed to provide solar access for passive solar purposes.	**10.4.3 Setback** A2 Dwellings, excluding outbuildings less than 2.4 m high, must have a setback from side and rear boundaries of not less than 5 m. P2 The siting of a dwelling must not cause an unreasonable loss of amenity having regard to sunlight to private open space and windows of habitable rooms on adjoining properties. **FotEC comment:** Here the requirements are simple restrictions on height and setbacks, hence potential overshadowing. But again, are requirements on impacts on windows and open spaces of adjoining properties. Again, as for the Interim Planning Scheme, there is no requirement that dwellings and associated open spaces themselves must be designed to provide solar access for passive solar purposes. Note the side setbacks are increased from 3 m to 5 m, but that the height of non-dwelling buildings is 8.5 m whereas dwellings are limited to 8 m.	**BRE-P2.6.2 Setback** A2 Dwellings, excluding outbuildings with a building height of not more than 2.4m and protrusions that extend not more than 0.9m horizontally from the building, must have a setback from side and rear boundaries of not less than 10m. P2 The siting of a dwelling must not cause an unreasonable loss of amenity to adjoining properties, having regard to: • sunlight to private open space and windows of habitable rooms on adjoining properties **FotEC comment:** Note setbacks are double those for the Low Density Residential Zone

BODC Interim Planning Scheme, Low Density Residential Zone	Tasmanian Planning Scheme, State Planning Provisions, Low Density Residential Zone	BODC-P2.0 Particular Purpose Zone – Coastal Settlement
12.4.1.7 Outbuildings and Ancillary Structures A1 Maximum building height is 5 m. P1 Outbuildings must be designed and located having regard to overshadow adjoining properties.	**10.5.1 Non-dwelling development** A1 Non-dwelling buildings must have a height not more than 8.5 m. P1 The height of a non-dwelling building must not cause an unreasonable loss of amenity to adjoining properties having regard to sunlight to habitable rooms and private open space. A2 Setbacks must be not less than 5 m from side and rear boundaries. P1 The siting of a non-dwelling building must not cause unreasonable loss of amenity of adjoining properties having regard to sunlight to private open space and windows of habitable rooms on adjoining properties.	**BRE-P2.7.1 Non-dwelling development** A1 A building that is not a dwelling must have a building height not more than 7m. P1 The height of a building that is not a dwelling must be compatible with the streetscape and not cause an unreasonable loss of amenity to adjoining properties, having regard to: • sunlight to habitable rooms of dwellings and private open space; and • any overshadowing of adjoining properties. A3 A building that is not a dwelling excluding outbuildings with a building height of not more than 2.4m and protrusions that extend not more than 0.9m horizontally from the building, must have a setback from side and rear boundaries of not less than 10m. P3 The siting of a building that is not a dwelling, must not cause unreasonable loss of amenity to adjoining properties, having regard to: • sunlight to private open space and windows of habitable rooms on adjoining properties; **FotEC comment:** In summary, the requirements for solar access in the Particular Purpose Zone – Coastal Settlement, are more specific and considerably better that the solar access requirements for the Low Density Residential Zone in either the new planning scheme or the current interim scheme.

BODC Interim Planning Scheme, Low Density Residential Zone	Tasmanian Planning Scheme, State Planning Provisions, Low Density Residential Zone	BODC-P2.0 Particular Purpose Zone – Coastal Settlement
		BRE-P2.6.5 Sunlight to dwellings and private open space That all dwellings have adequate access to sunlight. A1 Dwellings must not cause overshadowing and reduction of sunlight to habitable rooms and private open space to less than 3 hours between 9.00am and 5.00pm on 21st June. P1 Dwellings must not result in unreasonable loss of amenity by overshadowing and reduction of sunlight to habitable rooms and private open space of adjoining dwellings, having regard to: • sunlight to private open space and windows of habitable rooms on adjoining properties; A2 Outbuildings must be sited so as not to obstruct sunlight to the north and east-facing windows of an existing dwelling on the same site. **FotEC comment:** Note the requirement "That all dwellings have adequate access to sunlight" and the specific requirement for solar access for a minimum of 3 hours in mid-winter. This requirement does not seem to appear anywhere else in the SPP or the BODC LPS. Also note the specific requirements for "north and east-facing windows of an existing dwelling on the same site".

Representation 74

From: Secretary
To: Break O Day Office Admin
Subject: RE: Exhibition – Break O'Day Council Draft Local Provisions Schedule
Date: Monday, 13 December 2021 4:11:05 PM
Attachments: image005.jpg
image006.png
image007.jpg
image008.jpg
Letter from Secretary, NRE Tas to Break O"Day Council.pdf

CAUTION: Do not click links or attachments unless you recognize the sender and know the content is safe

Good Afternoon,

On behalf of Secretary, Tim Baker, please see the **attached** letter for your attention.

Kind Regards,

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Level 9, 134 Macquarie Street, Hobart, TAS 7000 | GPO Box 44, Hobart TAS 7001

From: Jayne Richardson <jayne.richardson@bodc.tas.gov.au>
Sent: Thursday, 7 October 2021 9:20 AM
To: Baker, Tim <Tim.Baker@dpipwe.tas.gov.au>
Subject: Exhibition – Break O'Day Council Draft Local Provisions Schedule

Dear Mr Tim

Baker,

Exhibition – Break O'Day Council Draft Local Provisions Schedule

The Break O'Day Council gives notice of the public exhibition of the relevant exhibition documents in relation to the Break O'Day Council draft Local Provisions Schedule (LPS).

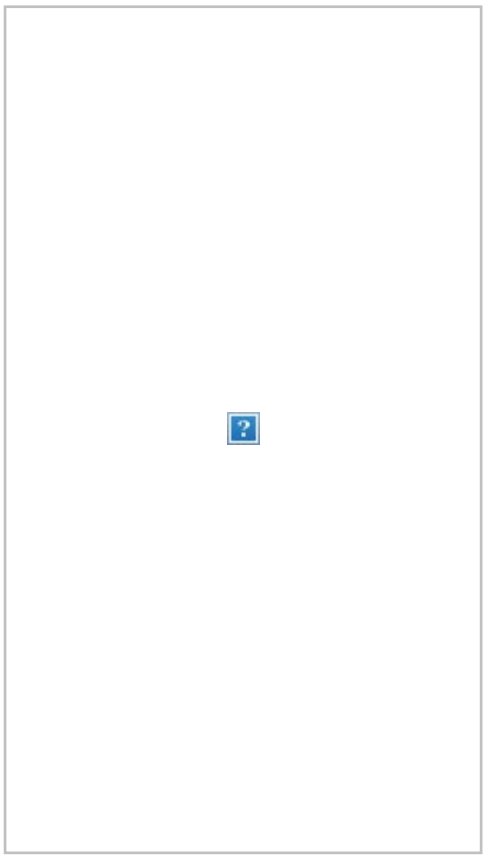
The Tasmanian Planning Commission (the Commission) has directed the planning authority to publicly exhibit the relevant exhibition documents in relation to the Break O'Day Council draft LPS under section 35B of the *Land Use Planning and Approvals Act 1993* (the Act).

A copy of the exhibition notice which will be published in the Examiner on Saturday 9 October is inserted below for your reference.

Council has also mailed you a hard copy of this letter and notice for your records.

Yours sincerely

John Brown
General Manager



Department of Natural Resources and Environment Tasmania

OFFICE OF THE SECRETARY

Hobart GPO Box 44, Hobart, Tasmania, 7001
Launceston PO Box 46, Kings Meadows, Tasmania, 7249
Devonport PO Box 303, Devonport, Tasmania, 7310
Ph 1300 368 550
Web: nre.tas.gov.au

Tasmanian Government

Our ref: D21-236902

Mr John Brown
General Manager
Break O'Day Council
via email: admin@bodc.tas.gov.au

Dear John,

TASMANIAN PLANNING SCHEME – BREAK O'DAY COUNCIL DRAFT LOCAL PROVISIONS SCHEDULE

Thank you for your letter of 7 October 2021 seeking comment on the Break O'Day Council's draft Local Provisions Schedule.

I can advise that the Department of Natural Resources and Environment Tasmania (the Department) has considered the proposed Local Provisions Schedule and has the following comments:

- For PID 6797938 the Department recommends the replacement of the proposed Recreation Zone (RZ) with an Environmental Management Zone (EMZ) in line with its tenure as Humbug Point Nature Recreation Area.
- The revision of the Crown Land at Sorell Street, Fingal located adjacent to the eastern boundary of folio of the Register 120261/3, from EMZ to RZ is not supported (p58 Draft LPS supporting report). Part of this portion is contained within the Fingal Rivulet Conservation Area and as such should be retained as EMZ.

The Department supports the following rezoning proposals contained within the LPS:

- Rezoning of the small portion at the southern end of Fingal 120261/3 from RZ to EMZ.
- Rezoning of the Ansons River Conservation Area from RZ to EMZ.
- Rezoning of Stieglitz 50226/1 from Environmental Living Zone to EMZ as it contains the Jocks Lagoon Ramsar Site.

If you have any further questions on this matter please contact Sonia Mellor, Policy Analyst, Strategic Projects and Policy Branch, Strategy and Business Services Division on mobile: 0436 636 279 or via email at sonia.mellor@nre.tas.gov.au

Yours sincerely

Tim Baker
SECRETARY
13 December 2021

Representation 75

From:	SEYM LONG
To:	Break O Day Office Admin
Subject:	Seymour Community Action Group Inc. - Representation to the Break O'Day Council Local Provisions Schedule 13-12-2021
Date:	Monday, 13 December 2021 4:34:43 PM
Attachments:	Final - Seymour Community Action Group Inc Representation to the Break O'Day Council Local Provisions Schedule-13-12-2021.pdf

Good afternoon,

Please receive our representation for the Local Provisions Schedule 2021.

Kind regards

Quentin Smith

President
Seymour Community Action Group Inc. ABN 62 393 709152
scagi7215@gmail.com - http://scagi7215.wixsite.com/scagi

Seymour Community Action Group Inc.
PO Box 25,
Bicheno, Tas, 7215
Email: scagi7215@gmail.com

To admin@bodc.tas.gov 12 Dec 2021

Please receive our submission.

Representation to the Break O'Day Council Draft Local Provisions Schedule (LPS).

- We support as proposed the Environmental Management and Landscape Conservation Zones for the Seymour area and request these be implemented.

- A minimisation of future ribbon development is what we would like to see continued. The retention of the prohibition for subdivision within 1km of the high-water mark along the coast should be guaranteed to help prevent this ribbon development and urban sprawl and focus development in serviced settlements.

- We support a stop to multiple dwellings and strata developments for tourism accommodation outside serviced areas including in the Landscape Conservation Zone.

- We support a Scenic Protection Code that protects landscape values across the municipality. The Council has adopted a minimalist approach of only looking at scenic protection along narrow road corridors.

- We support a zoning of Future Potential Production Forests (FPPF) land as Environmental Management Zone in recognition of the FPPF areas significant high conservation values and in some cases important scenic values.

- We support split zoning of Agricultural zoned land where there are important landscape conservation and or scenic values with non-farming areas. These should be included in the Landscape Conservation Zone.

- The Council has also zoned large amounts of private land as Rural. In the Rural Zone forestry and intensive uses such as feedlots and fish farms do not require a planning permit, while Landscape Conservation Zoning emphasises protecting landscape values. Areas such as between the bottom of Elephant Pass through to the Nicholas Range around St Marys are environmental lifestyle areas not Rural industry areas. As such the majority of properties in such areas should be zoned Landscape Conservation Zone.

- We would like to ensure that the biodiversity overlay in the Natural Assets Code is comprehensive and reflects the importance of landscape connectivity/wildlife habitat corridors.

- In the Seymour area the Natural Assets Code is inaccurate. The Radiata Pines out on Long Point should not be included in the Priority Vegetation Area. The Seymour Swamp wetland should include the northern areas in the Waterway and Coastal Protection. The Priority Vegetation Area should be more accurate and extended around the Seymour Swamp wetland. The Priority Vegetation Area is missing on Seymour Beach to the south of the Seymour Swamp.

- The Priority Vegetation Area needs to be extended into Rural and Agriculture Zones which extend down to the MHWM along the foreshore of the whole LGA.

- All wooded lots zoned Rural, or Agriculture should be included in the Landscape Conservation Zone or Environmental Management Zone, if they contain Medium to Very High CFEV Rivers – Integrated Conservation Value. For example, PID 2984322, 9633879, 9633879 and 9633878 in our area.

- We ask Council to improve its proposed Stormwater Specific Area Plan (SAP)

  A key objective of a Stormwater SAP should be to reduce the overall quantity and improve the quality of urban stormwater flows to waterbodies as part of a comprehensive stormwater management program that is premised on the identification of important aquatic ecosystem values and the need to avoid or minimise any potential ecological impacts. A priority should be the management of stormwater to reduce overland flow and to increase water quality at source and where this is impractical then as part of a local treatment process incorporated into the council stormwater infrastructure. The Council Stormwater SAP will not achieve these outcomes

Kind regards

Seymour Community Action Group Inc.
President

Quentin Smith

Representation 76

From:	ECC, CT
To:	Break O Day Office Admin
Subject:	Letter and Attachment from the Secretary - Department of Communities Tasmania
Date:	Wednesday, 15 December 2021 2:29:12 PM
Attachments:	Attachment 2 - Communities Tasmania - Submission Break O Day Local Provisions Schedule.PDF Attachment 1 - Letter - Exhibition Break O Day Council Draft Local Provisions Schedule.pdf

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Good Afternoon,

Please see the attached sent on behalf of the Secretary of the Department of Communities Tasmania

Kind Regards

Office of the Secretary
Department of Communities Tasmania

------< HPE Content Manager record Information >------

Record Number : D21/85661
Title : Attachment 2 - Communities Tasmania - Submission Break O'Day Local Provisions Schedule

------< HPE Content Manager record Information >------

Record Number : D21/74069/1
Title : Attachment 1 - Letter - Exhibition Break O'Day Council Draft Local Provisions Schedule

Department of Communities Tasmania

GPO Box 65, HOBART TAS 7001
Web: www.communities.tas.gov.au

Tasmanian Government

Contact Officer: Richard Gilmour
Phone: 6166 3616
Email: Richard.Gilmour@communities.tas.gov.au
Our Reference: D21/74069/1

Mr John Brown
General Manager
Break O' Day Council
32 -34 Georges Bay Esplande
ST HELENS TAS 7216

By email: admin@bodc.tas.gov.au

Dear Mr Brown

Subject: Tasmanian Planning Scheme - draft Break O' Day Local Provisions Schedule

Thank you for your invitation to comment on the draft Break O' Day Local Provisions Schedule (LPS). Communities Tasmania has reviewed the draft LPS and supporting reports in respect of land owned by the Director of Housing.

Communities Tasmania considers the draft LPS including the zone and overlay mapping primarily a translation from the *Break O' Day Planning Scheme* in accordance with the Tasmanian Planning Commission's Guideline No. 1 Local Provision Schedule (LPS): zone and code application.

A detailed analysis and comparison revealed however, issues that require further consideration and discussion with Council and the Tasmanian Planning Commission. The matters are contained in detail in the attached submission.

Please do not hesitate to contact Richard Gilmour, Director – Portfolio and Supply on 03 6166 3616 or at richard.gilmour@communities.tas.gov.au who can arrange for relevant officers to respond to any of the matters raised in this submission.

Yours sincerely

Michael Pervan
Secretary

14 December 2021

Attachments:
1. Communities Tasmania submission – draft Break O'Day Local Provisions Schedule

Attachment 1. Communities Tasmania – ***draft*** Break O'Day Local Provisions Schedule

St Helens, 25 Circassian Street (PID 6794008; CT 30960/1)

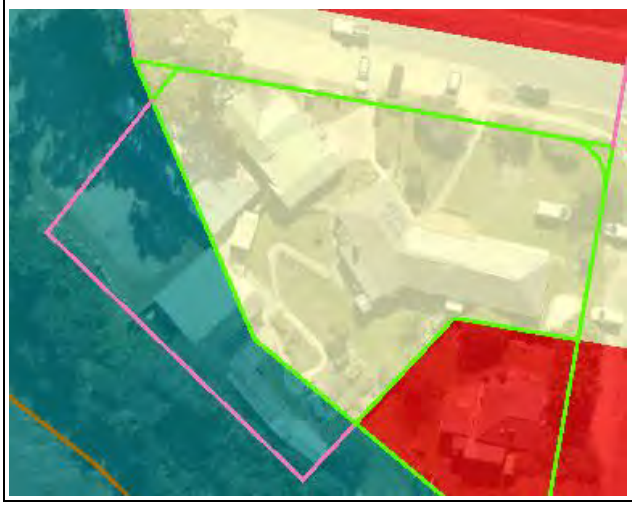
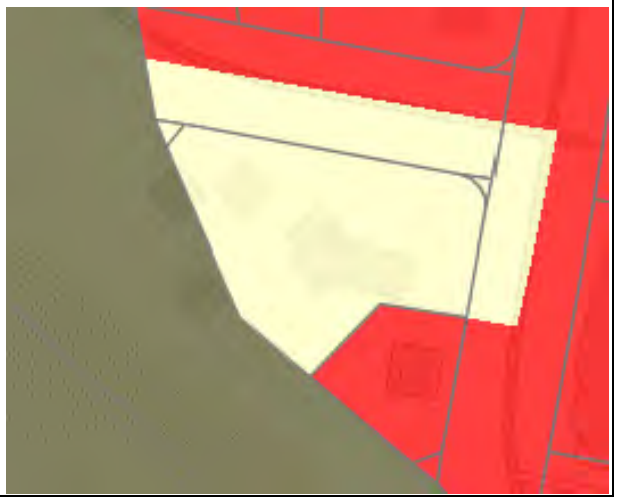
In February 2020, the Director of Housing (the Director) assumed ownership of the St Helens Neighbourhood House at 25 Circassian Street, St Helens. The site is zoned Community Purpose Zone under the current Break O'Day Interim Planning Scheme 2013.

Prior to transfer of ownership, a community shed and bungalow were constructed at the site, and unknowingly partially located across the titled boundary. The structures were built on untitled Crown Land located in the Environmental Management Zone as shown outlined in pink in the aerial below.

Image 1: Structures across titled boundary in the Environmental Management Zone

These assets are central to the services delivered by the Neighbourhood House such that demolition would result in a tangible loss to both the local and north-east regional community. As such, the Director secured Minister for Crown Lands approval to transfer this land to the Director for consolidation into CT 30960/1 (refer Attachment A). The Director also obtained Break O'Day Council's principled support for the boundary realignment (refer Attachment B).

The adjustment will result in the site being split zoned. The draft Local Provisions Schedule (LPS) shows the zoning of the land will transition directly to the Community Purpose and Environmental Management Zones.

Break O'Day Interim Planning Scheme 2013	**Break O'Day Local Provisions Schedule**
	

The *Section 8A Guideline No. 1 Local Provisions Schedule (LPS): zone and code application* state the purpose of the Community Purpose Zone is to:

- *Provide for key community facilities including health, educational, government, cultural and social facilities; and*
- *To encourage multi-purpose, flexible and adaptable social infrastructure.*

The Zone Application Guidelines further state for CPZ 1:

The Community Purpose Zone should be applied to land that provides, or is intended to provide, for key community facilities and services, including:
(a) schools, tertiary institutions or other education facilities;
(b) medical centres, hospital services or other care-based facilities;
(c) emergency services facilities; or
(d) large community halls, places of worship or other key community or cultural facilities.

The use and development on the adjacent Crown land do not align with the Zone Application Guidelines of the Environmental Management Zone EMZ 1, EMZ 2 or EMZ 3.

The Tasmanian Planning Commission's (the Commission) *Practice Note 7 – Draft LPS mapping technical advice,* instructs that zone maps should minimise the use of zone boundaries that do not align to the cadastral parcel boundaries or road centrelines.

Therefore, in accordance with CPZ 1 and the Commission's mapping advice, the Director requests that the Break O'Day Council and the Commission apply the Community Purpose Zone to the entirety of the new extent of 25 Circassian St, St Helens (CT 30960/1).

The Director has instructed the Office of the Surveyor General to prepare a plan of survey for the amended title boundaries, and these coordinates will be supplied in due course.

Minister for Parks
Minister for the Prevention of Family Violence
Minister for Police, Fire and Emergency Management

Tasmanian Government

Level 5, Parliament Square
4 Salamanca Place, HOBART TAS 7001 Australia
GPO BOX 123, HOBART TAS 7001
Ph: (03) 61657770
Email: minister.petrusma@dpac.tas.gov.au

Hon Michael Ferguson MP
Minister for State Development, Construction and Housing
michael.ferguson@dpac.tas.gov.au

Dear Minister Ferguson

I refer to your letter dated 10 August 2021 requesting the transfer of a parcel of Crown land adjacent to 25 Circassian Street, St Helens, to the Director of Housing.

I understand that the property at 25 Circassian Street, which has recently been transferred to the Director of Housing from the Department of Health, is currently utilised as the St Helens Neighbourhood House, and that two of the existing buildings, in part, encroach on to the adjacent Crown land.

Any transfer will need to appropriately deal with the encroachments of buildings onto the Public Reserve and I suggest that the Department of Communities/Director of Housing liaise with the PWS regarding this matter. I am confident that terms and conditions can be readily established which will provide an appropriate level of security and administrative controls for all parties to enable the transfer.

To progress this matter, I encourage the Department of Communities to contact the PWS directly to establish a long-term and suitable lease/licence agreement to cover the encroachments onto Crown land. Please contact Ms Kathryn Clark, PWS Manager Property Services, on 6165 4676, or kathryn.clark@parks.tas.gov.au

Yours sincerely

Hon Jacquie Petrusma MP
Minister for Parks

Insert CM reference

32-34 Georges Bay Esplanade
St Helens Tasmania 7216
T: 03 6376 7900 | ABN 96 017 131 248

Break O'Day COUNCIL

Our ref: 6794008
Enquiries: Deb Szekely

17/11/2021

Ms Kathryn Clark,
PWS Manager,
Property Services.
Kathryn.clark@parks.tas.gov.au

cc. jeff.krafft@communities.tas.gov.au

Dear Kathryn

Sale of Crown Land
Crown land adjoining 25 Circassian Street St Helens
Proposed sale of Crown land to Communities Tasmania

The Break O'Day Council has considered the above-mentioned sale of Crown land and consolidation with 25 Circassian Street, St Helens and forwards the following response.

Address:	25 Circassian Street, St Helens
PID:	6794008
Title Reference:	30960/1
Planning Scheme Zone:	Community Purpose Zone
Planning Scheme Overlays:	Nil
Crown Land Services Land	Adjoining west of CT30960/1
Planning Scheme Zone:	29 Environmental Management Zone
Planning Scheme Overlays:	Flood Prone Areas

Council's understanding is that the Crown land purchase and consolidation with CT30960/1 will occur as per the diagram below.

Proposed Crown land sale and consolidation with CT30960/1

Council consents to the proposed sale of Crown land and consolidation with CT30960/1. This will address the existing situation of structures traversing the property boundary. The proposed adjustment will result in the site being split zoned (Community Purpose Zone / Environmental Management Zone) and it is recommended that the relevant State Government Department addresses this matter by submitting a representation on the Break O'Day Draft Local Provisions Schedule, which is currently out for public exhibition until 13 December 2021.

Should you require further information concerning this matter please contact Deb Szekely on (03) 6376 7900.

Yours sincerely

John Brown
General Manager

Representation 77

From: Mark Chopping
To: Break O Day Office Admin
Subject: Letter to Break O"Day Council - Representation (Draft Local Provisions Schedule) to BRE (ID 110137).pdf
Date: Tuesday, 14 December 2021 5:24:36 PM
Attachments: image001.jpg
Letter to Break O"Day Council - Representation (Draft Local Provisions Schedule) to BRE (ID 110137).pdf

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CAUTION: Do not click links or attachments unless you recognize the sender and know the content is safe

Hello,

Please find attached Forico Pty Limited representation to the Break O'Day Council draft Local Provision Schedule.

Regards,

Mark Chopping
Land Manager

Forico Pty Limited | ABN: 33 169 204 059
T +61 3 6335 5234 **M** +61 4 07871277
E mark.chopping@forico.com.au

16 Techno Park Dr Kings Meadows TAS 7249
PO Box 5316 Launceston TAS 7250
Australia

www.forico.com.au

13/12/2021

General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
St Helens TAS 7216

To the General Manager

In response to the request for representations to the Break O'Day Councils draft Local Provisions Schedule.

Forico Pty Limited as the business operator and authorised agent for the Trust Company (PTAL) Limited atf the Tasmanian Forest Investment Sub Trust (of some 8000ha within the Break O'Day municipality) have concerns and wish to raise the following points for consideration in the final draft of the Local Provisions Schedule:

Landslip code

Forico Pty Limited manages several titles with an area of approx. 6600ha that sits within area classified by 'Landslip Hazard Code/Bands' throughout the Break O'Day council municipality. Our present practice is to harvest and replant plantation resource in accordance with forest practices plan certified under the Forest Practices Act within these areas.

We request clarification that forestry operations are exempt in the land slip code. As predominantly harvesting of our managed plantation resource would require harvesting of a vegetation area >1000m2.

Utilities Zone

Can it be further defined as to how forestry operations would be regarded when accessing a Utilities zone from a Rural Zone. An example of this would be within CT 238716-1 from the Rural zone to the Utilities zone/Mathinna Plains road within this title.

Forico Pty Limited
ABN: 33 169 204 059

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Kings Meadows
Tasmania 7249 Australia

PO Box 5316
Launceston
Tasmania 7250 Australia

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+61 3 6335 5297 (fax)

forico@forico.com.au
forico.com.au

Zoning:

Rural Living
Title CT 155683-2 (part)

The proposed zoning (for part, *Rural Living zone*)is inconsistent with the majority of the surrounding land associated with this title which is currently owned/managed and operated as a Plantation Forestry.

- Request to be rezoned to *Rural zone*
- or confirmation if this <1acre can be subdivided from the balance of 155683-2 and excised from the balance of this title.

Request titles to be rezoned
Request the following titles to be rezoned *Rural*.
The following titles are presently managed within a forestry business currently managed under the Forest Practices Act within these areas.

TITLE	44675-1	207314-1	TITLE	112336-2
248835-1	52073-24	248248-2	244651-1	236342-1
230177-1	213271-1	138263-4	108772-16	242421-1
116858-1	52073-31	102599-1	108772-18	171556-1
52073-6	230178-1	102599-4	227336-1	243942-1
52073-13	52073-3	211572-1	251739-1	238715-1
251142-1	212071-1	239215-1	238724-1	
238723-1	52073-19	211570-1	107686-1	
227339-1	52073-27	233173-1	229555-1	
216438-1	52073-33	248834-2	108772-20	
206579-1	251142-2	226612-2	251739-2	
248835-2	212072-1	226612-1	227338-1	
102599-3	52073-35	251951-1	108770-12	
52073-5	52073-18		227333-1	
243754-1	248248-1		108773-1	
143139-2	109165-1		106756-1	
113195-2	52073-26		112336-1	
52073-21	52073-29		108772-17	
52250-1	52073-23		108772-21	
104836-1	51922-1		108772-14	
52073-4	52073-7		108771-13	
243753-1	248834-1		108770-11	
113195-4	211571-1		209593-1	

For further information or clarification on any of the points raised above I am happy to assist and field any questions or queries.

Regards

Mark Chopping
Land Manager

Representation 78

From:	Margie Jenkin
To:	Break O Day Office Admin
Cc:	James Hattam; Leigh Walters
Subject:	late submission - BODC LPS
Date:	Tuesday, 14 December 2021 7:54:03 PM
Attachments:	image001.jpg image002.png image003.png image004.png image005.gif Submission Break O"Day Council - Tasmanian Land Conservancy_final.pdf
Importance:	High

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Hello

We're so sorry to have missed the deadline for the Break O'Day LPS submissions. Hoping the attached feedback can be accepted for consideration.

On behalf of the TLC's CEO, James Hattam,
Margie Jenkin

tlc_logo

Margie Jenkin
Manager Engagement and Giving

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+61 (0) 403 789 110

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@Tas_Land

facebook.com/taslandconservancy
instagram.com/tasland/

14 December 2021

Chief Executive Officer
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216
E: admin@bodc.tas.gov.au

To Chief Executive Officer

BREAK O'DAY COUNCIL LOCAL PLANNING SCHEDULES

The Tasmanian Land Conservancy (TLC) is a for-purpose, apolitical, conservation organisation that protects nature on private land (www.tasland.org.au). Our vision is for Tasmania to be a global leader in nature conservation. Through various programs and initiatives we look after Tasmania's unique natural places, rare ecosystems, and the habitat of threatened plants and wildlife on private land. We value nature and the cultural, social and economic benefits it provides us all.

The TLC works across four main areas of strategic intent:

- NATURE – Conserve areas of high natural value using the best available science applied with adaptability and cultural awareness amid increasing social and environmental change.
- PEOPLE - Provide diverse and practical ways for people to contribute to and be involved in nature conservation.
- INFLUENCE - Lead, learn and contribute to global best practice in nature conservation through science, innovation, collaboration and open communication.
- EXCELLENCE - Demonstrate the highest standards in everything we do, applying exceptional governance and accountability to our work, while leading with respect, equity and fairness in our workplace and relationships.

Read more about our work in the TLC's Strategic Plan 2020-2025 and in the TLC's 2019-2020 Annual Report.

As one of Tasmania's largest private landholders, we protect and manage areas with significant conservation values for nature and for the public good. We also work with the local landholders and the broader community to conserve nature, connecting habitat to build resilience across the landscape.

It is in the state's interest to look after nature, and planning instruments that protect natural values across Tasmania are critical. The public benefit from healthy and intact natural systems includes water quality and retention, ecosystem function, pollination services, soil health and stability, aesthetic values, landscape resilience in a changing climate and personal wellbeing.

Mapping natural assets
To maintain connectivity in the landscape, natural values must be understood: mapping plays a critical role. The Priority Vegetation layer must be a state-wide resource that is current and maintained. The Priority Vegetation Overlay (PVO) is an unreliable guide to vegetation status. The PVO is based on a Regional Ecosystem Model which means it is based on the predicted likelihood of occurrence of different vegetation types based on physical features of the land, occasionally but not consistently validated using aerial photography, satellite imagery or other forms of observation. All species and vegetation communities listed under the *Threatened Species Protection Act*, *Nature Conservation Act* and the *EPBC Act* should be included in the priority vegetation mapping. Beyond the mapping of threatened species and communities, important cross tenure landscape linkages and corridors should also be recognised. In a changing climate, priorities for nature conservation will also change and it is important for the planning system to be able to respond effectively based on current data. TLC suggests that the Break O'Day Council implement a process whereby mapping of the Natural Assets Overlays is continually revised, updated and re-evaluated.

Reducing fragmentation in the landscape
The connectivity of natural values is critical to achieve conservation outcomes. Connecting habitat from the coastal or riparian zones to ridgelines enables species movement across habitats, while building resilience in the landscape. Fragmentation of natural values impacts ecological function. Permitting development or a land use incongruent with ecological health, will impact the integrity of these systems.

We also believe that the Natural Assets Code, and the application of the Priority Vegetation Layer, should be applied across all zones (including agriculture).

Consistent application of the Natural Assets Code
It is important to have a Natural Assets Code as this is an essential tool in the protection of biodiversity and sustainable use. The Natural Assets Code information sheet notes that 'The Natural Assets Code provides consistency across the State regarding the protection of important natural values and recognises the significant role that other State and Commonwealth legislation has in biodiversity conservation'.

While claiming to provide consistency, the ***Natural Assets Code does not apply to the agricultural zone.*** This must be amended as a matter of urgency. Removing planning assessment based on the conservation value of vegetation in the Agricultural Zone diminishes the role of private land in the protection of the state's natural assets and increases the level of threat to Tasmania's listed plant and animal species and. To remedy this, the code also needs a full and thorough review to remove the exemptions, omissions, and terminology vagaries. Without a stronger commitment to the protection of our natural assets there will be continued fragmentation and degradation of important habitat. If the priority vegetation layer is not applied across all zones the risk of further extinctions in Tasmania will increase, while also adding more species to the endangered list. There is also a unique opportunity to apply a landscape-scale, cross-tenure approach that identifies habitat linkages, corridors and climate refugia.

Let's not miss the opportunity to ensure that natural assets such as irreplaceable, rare and significant species and vegetation communities are recognised, valued and protected.

Conservation covenants
While the public focus is often on national parks, extensive estate is protected through conservation covenants on private land. The Department of Primary Industries, Parks, Water

and Environment (DPIPWE) along with the agricultural sector and regional Natural Resource Management (NRM) committees, acknowledge the significant role of private landowners in conserving Tasmania's natural capital and the public and private benefits that flow from this approach. 'Capable land stewardship conserves the natural environment, providing benefits for future Tasmanians and visitors while enabling landowners to maintain market access and capitalise on new opportunities' (DPIPWE's Private Land Conservation Program).

Covenants are legally binding under the *Nature Conservation Act (2002)* and are registered on the land title. Usually established in perpetuity, covenants give peace of mind that natural values, such as native flora and fauna, natural wetlands and geo-conservation assets, will persist for generations. Nature conservation on private land makes an enormous contribution to the National Reserve System, Australia's network of protected areas.

Tasmania currently has approximately 900 conservation covenants, protecting 110,000 hectares across a diversity of habitats. Many of these covenants are vegetation communities that are poorly protected on public land. On-title protections identify the conservation values onsite, and the required management to ensure their wellbeing. Read more here.

The Break O'Day Municipality contains 135 properties with covenants registered under the *Nature Conservation Act 2002*. These covenants comprise a total area of approximately 5580 hectares within the municipal area. These properties are accounted for within Australia's National Reserve Estate.

As an organisation with land and associated partnerships throughout the state we have a strong interest in planning provisions, particularly regarding the recognition and protection of natural assets. The TLC welcomes the opportunity to provide feedback on the Break O'Day Council Local Provisions Schedule. We also wish to provide some additional general comments on the Tasmanian Planning Scheme State-wide Planning Provisions.

Zoning conservation covenants

In Tasmania, privately protected land covers a smaller area than publicly protected land, but it contains a higher percentage of threatened communities. Despite this, many properties with conservation covenants on title are currently zoned rural.

To ensure that the LPS properly reflects the current and future development potential of covenanted land there must be the application of an appropriate zone to the land. The TLC considers that, as a general rule, land subject to a conservation covenant ought to be zoned Landscape Conservation Zone or the Environmental Management Zone. The purposes of these zones properly reflect the underlying purpose to which covenanted land is put – that is (respectively), to "provide for the protection, conservation and management of landscape values" (clause 22.1.1 of the TPS) and to "provide for the protection, conservation and management of land with significant ecological, scientific, cultural or scenic value" (clause 23.1.1 of the TPS) and use compatible with those purposes (clauses 22.1.2 and 23.1.2 respectively).

Private reserves, including all private Conservation Covenants and TLC reserves, have a reserve management plan prepared by experts to protect, conserve and manage the ecological, scientific, cultural and aesthetic values of the area in the public interest. These plans guide the protection and management of the land.

Zoning for the broader landscape should also be carefully considered to avoid diminishing the surrounding natural values through fragmentation.

Future conservation covenants
The TLC runs the Revolving Fund program, where property with high conservation values is bought, and an on-title conservation protection established before the land is sold. Small-scale building envelopes are often defined within the title, identifying a site where disturbance will have the lowest impact on the conservation values that are being protected. A human presence in these natural settings helps to manage the natural values. While the exact location of future Revolving Fund properties cannot currently be discerned, the planning provisions should enable small-scale, appropriate residential opportunities for these situations.

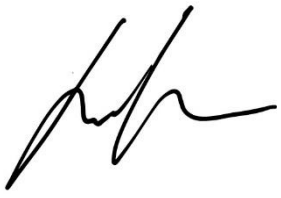
Applying the Precautionary Principle
Furthering the objectives of the Resource Management and Planning System (RMPS) as outlined in Schedule 1 of the *Land Use Planning and Approvals Act 1993* through sustainable development involves:

> 'managing the use, development and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being and for their health and safety while –
>
> (a) sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and
> (b) safeguarding the life-supporting capacity of air, water, soil and ecosystems; and
> (c) avoiding, remedying or mitigating any adverse effects of activities on the environment.'

With unprecedented seasonal variations, natural systems and vegetation communities are changing. Now more than ever, we need good planning, based on the best information available at the time. Applying current research, monitoring and mapping data is critical to ensure sustainable use. The most up to date information must inform decisions, and when we don't have adequate information, the precautionary principle should apply.

We welcome this opportunity to provide a submission.

Yours sincerely



James Hattam

CEO, Tasmanian Land Conservancy

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Representation 79

From:	Smith, Hilary
To:	Break O Day Office Admin
Subject:	FW: Tasmanian Heritage Register - Notification of Permanent entry of THR 12023, Enstone Park (with attachment)
Date:	Wednesday, 15 December 2021 8:47:03 AM
Attachments:	image001.jpg image002.png THR12023 Permanent entry BREAK ODAY COUNCIL.pdf

(My apologies – attachment is now included)

From: Smith, Hilary
Sent: Wednesday, 15 December 2021 8:41 AM
To: St Helens AP <admin@bodc.tas.gov.au>
Subject: Tasmanian Heritage Register - Notification of Permanent entry of THR 12023, Enstone Park

ATTENTION: THE GENERAL MANAGER
Good morning,
Please find our letter notification from the Tasmanian Heritage Council attached for your referral, for the Permanent entry of **THR 12023, Enstone Park** in the Tasmanian Heritage Register, along with copies of its datasheet, and CPR.
Kind regards,

Hilary Smith | Administration Officer | Heritage Tasmania
Department of Natural Resources and Environment Tasmania
GPO Box 618 HOBART TAS 7001
T: (03) 6165 3700 | 1300 850 332 (local call cost)
E: Hilary.Smith@nre.tas.gov.au
W: www.heritage.tas.gov.au

Text□ □ Description automatically generated

Tasmanian Heritage Council
GPO Box 618 Hobart Tasmania 7000
Tel: 1300 850 332
enquiries@heritage.tas.gov.au
www.heritage.tas.gov.au

15 December 2021

Mr John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216
(Via email: admin@bodc.tas.gov.au)

THR 12023

Dear Mr Brown,

PERMANENT ENTRY OF A PLACE OR PLACES IN THE TASMANIAN HERITAGE REGISTER

Further to our correspondence of 6 July 2021, the Tasmanian Heritage Council has finalised the new entry for the following place or places and resolved to permanently register it in the Tasmanian Heritage Register, under the provisions in section 21(1)(a) and 26(a) of the *Historic Cultural Heritage Act 1995* ("the Act"):

THR 12023, Enstone Park, 22746 and 22464 Tasman Highway, Falmouth

Enclosed is formal notification of the new permanent registration, as required under section 26(a) of the *Historic Cultural Heritage Act 1995*, along with the boundary plan and datasheet outlining the particulars of the place and its boundary in the Heritage Register.

If you have any questions or concerns, please contact Heritage Tasmania on 1300 850 332 (for the cost of a local call) or 6165 3700 or via email to: enquiries@heritage.tas.gov.au.

Yours sincerely

Ms Brett Torossi
Chair
Tasmanian Heritage Council

(Encl.)

Tasmanian Heritage Council
GPO Box 618 Hobart Tasmania 7000
Tel: 1300 850 332
enquiries@heritage.tas.gov.au
www.heritage.tas.gov.au

15 December 2021

NOTICE OF THE PERMANENT ENTRY OF AN ENTRY OR ENTRIES IN THE TASMANIAN HERITAGE REGISTER

To:
Mr John Brown
General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216
(Via email: admin@bodc.tas.gov.au)

In accordance with section 26 (a) of the *Historic Cultural Heritage Act 1995* ("the Act"), and having considered:

- the objections made under section 19 of the Act; and
- the submissions made under section 20 of the Act –

in relation to the Tasmanian Heritage Council's intention to enter a place in the Heritage Register on a permanent basis, the Tasmanian Heritage Council gives notices that it will permanently enter the following entry or entries in the Tasmanian Heritage Register:

Place(s):
THR 12023, Enstone Park, 22746 and 22464 Tasman Highway, Falmouth

Any person who lodged an objection under section 19 of the Act or a submission under section 20 of the Act, may appeal this decision to the Resource Management and Planning Appeal Tribunal under section 27 of the Act. An appeal must be made in writing and lodged with the Tribunal (GPO Box 2036, Hobart 7001) within 30 days of the publication of this notice.

Ms Brett Torossi

Chair
Tasmanian Heritage Council
15 December 2021

Tasmanian Heritage Register Datasheet

Tasmanian Heritage Council

134 Macquarie Street (GPO Box 618)
Hobart Tasmania 7001
Phone: 1300 850 332 (local call cost)
Email: enquiries@heritage.tas.gov.au
Web: www.heritage.tas.gov.au

Name: Enstone Park
Status: Permanently Registered
Tier: State
Boundary: CPR11059

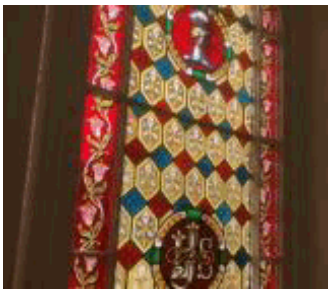
THR ID Number: 12023
Municipality: Break O'Day Council
Date Listed: Not applicable

Location Addresses	Title References	Property Id
22746 TASMAN HWY, , FALMOUTH 7215 TAS	141662/3	2507024
22464 TASMAN HWY, , FALMOUTH 7215 TAS	168326/1	3473508

Enstone Park house

©DPIPWE 2020

Rendered side of Enstone Park house and mature pla
©DPIPWE 2020



Ferguson, Urie and Lyon stained glass window featu
©DPIPWE 2020

Old cheese room/dairy, Enstone Park
©DPIPWE 2017

Window slats and ventilation holes, old cheese
©DPIPWE 2020

Interior of old cheese room/dairy, showing ventila
©DPIPWE 2020

Site of Thomson Villa, beside old cheese room/dair
©DPIPWE 2020

Workers' cottage, Enstone Park
©DPIPWE 2020

Setting: Enstone Park overlooks Henderson Lagoon, a tidal, saltwater inlet near Falmouth on the East Coast which adjoins the Scamander Conservation Area to the east and private conservation reserves to the north and south. The skyline to the south of Enstone Park homestead features St Patricks Head and an associated range of hills, with a mosaic of woodlands and pasture at their base reflecting Aboriginal and European burning patterns of centuries past. With its fringe of mature trees, taller than the house itself, crops such as poppies and green paddocks for a foreground, eucalypts and more pasture reaching into the background hills, and St Patricks Head seeming to tower over it from behind, the house simultaneously gives the impression of a transplanted English nobleman's country residence as well as the centre of a complex agricultural cultural landscape.

Description: The place consists of the Enstone Park homestead with associated plantings and outbuildings among grassy flats and coastal marshland. The main buildings stand beside Ferntree Glen Creek, with a wide view of Peat Marsh, Henderson Lagoon, the ocean beyond and the village of Falmouth. The original entrance to the property from the south-west is still used today, and is lined with recently planted cypresses. A modern timber stockyard with a loading ramp stands beside it. The entrance road approaches the back of the homestead. However, when the present Enstone Park house was built in 1867, it was served by a tree-lined entrance avenue from the old coach road to the north-east, that is, to the front of the house. No sign of this avenue remains today. The Peat Marsh section of the Enstone Park property, which was farmed as early as the 1830s, is now a private conservation reserve adjoining Henderson Lagoon.

The registration includes the main homestead; the archaeological site of the earlier house, Thomson Villa; the early dairy/cheese room; the workers' cottage; and the archaeological site of the former flour mill infrastructure, including the site of the sluice gates and dam near the creek confluence south-east of the dairy and the cottage. Modern farm buildings including the so-called 'ram shed' are of little or no heritage value.

Enstone Park house (1867) is a two-storey, symmetrical building in an Italianate style characteristic of other high status residences of the time. The house faces north-east towards the lagoon. It was constructed of bricks moulded from local clay and fired on the property (McManus 1993, pp.198–99). The eastern wall is rendered. There are also rendered quoins, a rendered string course and rendered external architraves to the windows and doors. The hipped roof has large exposed rafter ends supporting wide eaves, and there are two rendered, corbelled chimneys. The original roof of peppermint gum shingles has been replaced with corrugated iron sheeting painted red (McManus 1993, p.199). The front rooms on both storeys have double-hung four-paned windows above pairs of 'inwardly opening rebated wooden doors', which originally gave access to an iron filigree verandah supported on six pillars (ground floor) and an upper balcony or sun deck with a waist-high railing (first floor). The verandah/balcony was removed during the twentieth century. The first floor windows are arched, but the ground floor windows are rectangular. The front entrance has a central panelled door. The arched window above it on the first floor has niches to each side which may have been intended to hold statues (McManus 1993, p.199). The eastern wall has a central panelled door and the same arrangements of windows except that there are only two on each level and no rebated wooden doors. There is a central stained glass window on the first floor. The western wall has three windows on each level, and the rear, south-western wall has a brick extension to one side.

The ground floor consists of two large lounge rooms divided by an entrance hall. Behind the right-hand lounge room are a pantry, cool room and kitchen, while on the left a narrow hall serves a dining room and an office with an exterior door. The staircase to the bedrooms above is also in this part of the building. The entrance hall has a large fanlight and features fluted timber Corinthian columns. The cool room has a trap door entrance to the cellar below (McManus 1993, pp.199–202).

The staircase has two stages with a landing illuminated by a stained glass window made by Ferguson, Urie and Lyon, Melbourne's earliest stained glass manufacturer, who won two medals at the 1867 Melbourne Exhibition (Zimmer 1984, pp.90–91). The window has a pattern of acorn motifs 'dominated by a steel-clad knight' and featuring the stylised initials 'JLS' (John Leslie Steel) (McManus 1993, pp.201–02).

The first floor consists of two equal-sized bedrooms at the front, separated by a nursery, with three small bedrooms and a study or fourth small bedroom behind. One of the main bedrooms has a communicating door with the nursery. Each bedroom has a fireplace. There are also a bathroom and toilet on this floor (McManus 1993, p.199).

Thomson Villa (1820s) was a split timber, shingle-roofed cottage which stood immediately to the north of the surviving early dairy/cheese room. In keeping with that building, the western roofline of Thomson Villa extended almost down to the ground in the form of a low verandah. In 1993 only 'rudimentary ruins' of the original Thomson Villa house remained, the 1840s barn, stable, men's shed and granaries also having been demolished. Today only a few stones mark the site, but a cellar is believed to exist below the surface. Beams from the Thomson Villa Dutch barn may have been redeployed in the weatherboard 'ram shed' (McManus 1993, p.80). The footprints of some of the demolished buildings may have been obliterated by this 1960s shed.

What is now considered to be an **early cheese room** appears to be the brick dairy with freestone flagstones and with a verandah on each side described by John Steel in 1858 (John Steel 1858). It has a stone rubble foundation, red brick walls and a steeply pitched hipped roof of corrugated iron sheeting. The eaves of the building form a low verandah on each side, with bush poles for uprights. Dilapidated split timber in-fill and a low corrugated iron sheeting fence enclose parts of this low verandah area. The cheese room has a paved floor, and a vaulted ceiling of lath and plaster, but there are no interior walls, the bricks merely being whitewashed on the inside to match the ceiling. Sections of plaster have collapsed. There are four ventilation holes arranged in a star pattern and a small two-pane window with sandstone lintel and sill in the northern wall. In the western wall near the timber door are two small windows with sandstone lintel and sandstone

window sills. One window contains vertical wooden slats which may have had gauze wire attached as an insect screen; the other three panes contain broken glass. There are four ventilation holes arranged in a rectangle below the window with wooden slats. The door has a sandstone lintel and a sandstone stoop. There is remnant shelving around the inside of the walls. In the 1930s wooden rails connected the cheese room with another dairy building, enabling cheese to be pushed in bogies from the latter to the former for storage. In form the building resembles the historic dairy/cheese room at neighbouring Glencoe (THR#12019), suggesting that they were based on the same design. The paved floor, ventilation openings and potential use of gauze wire as an insect screen in models of English dairies and cheese rooms were discussed by Loudon (1834, pp.360, 363 and 1164).

The **workers' cottage** may have been built on the platform prepared by William Steel in 1834 to receive his flour mill machinery which was probably never installed (Dawson 1839; McManus 1993, p.50). This is a red brick building on a stone rubble foundation with three double-hung, six-pane windows, and a gabled roof of corrugated iron sheeting (the spacing of the studs shows that it was originally shingled). The windows in the northern and southern elevations have a sandstone window sill and a brick lintel. Above the northern window is a loft entrance with a brick lintel. The window in the western elevation has a sandstone lintel and was originally a doorway, the bottom half of the doorway beneath the present window having been bricked up. The former doorway would have provided symmetry with the existing doorway, that is, there would have been two equally spaced doorways. The existing doorway has a brick lintel. A former small window opening in the western elevation which has been bricked up gives another glimpse of the original form of the buildings. There is a corbelled chimney near the southern end serving a fireplace.

The eastern side of the cottage has a timber skillion addition with its own entrance to the east. This has a flat corrugated iron roof gradually sloping down from the roofline of the earlier building. A row of six cypress trees stands along the northern elevation of the building.

Potential archaeological sites: Dawson's 1839 survey of the property marked a dam, head and tail races, sluice gates and mill site from the William Steel era (Dawson 1839; McManus 1993, p.50). There are no visible surface remains of these today. The mill site is now possibly occupied by the **workers' cottage**. A timber, shingle-roofed building, probably a surviving Thomson Villa outbuilding (perhaps another dairy building or a barn or granary), stood on the edge of the bank immediately east of the old cheese room/dairy until at least 1960 (McManus 1993, p.249). A building platform and possible remnant foundation stones are visible there today. The 1948 aerial photo shows two large buildings on the western side of the driveway opposite the cheese room and cottage. These were possibly the stable and men's shed from the Thomson Villa era. This area is now partly occupied by a stockyard but otherwise appears to have remained undeveloped.

History: Enstone Park is located within the country of the Oyster Bay nation (Ryan 2012, p.15), being part of a landscape managed and kept open using fire by Aboriginal people for thousands of years before European occupation.

In the 1820s Alexander Thomson, an early settler in the Fingal Valley, built a small coastal villa on what was then unassigned land near St Patricks Head. A medical practitioner, Thomson reputedly used the small building not only as a 'retreat' but as a consulting room, making him the first doctor to practise on the East Coast (McManus 1993, p.4). At the time, this was a remote part of the colony. No land had been selected there in March 1829 when the editor of the *Cornwall Press and Commercial Advertiser* described the 'considerable extent of good land, well-watered, and eligible for farms … rich meadow land, connected here and there by small ponds or rushy lagoons' near St Patricks Head ('Hobart Town' 1829, p.4).

William Steel's ill-fated flour milling venture

In March 1830 William Steel of Chipping Norton, Oxfordshire, England, was located 2410 acres at Henderson Lagoon, including the land on which Thomson had built his villa. Steel adopted the villa as his original homestead and called the property Thomsonville (aka Thompsonville, Thomson's Villa and Thomson Villa), after his predecessor. He decided to build a flour mill on the property. Ambitiously, in 1834 he chartered a vessel to transport the equipment, making the first attempt by a European to cross the bar at the entrance to Georges River. The ship ran aground on the bar and Steel and two others drowned, including Dunn, his miller (editorial, *Hobart Town Courier*, 12 September 1834, p.2). Some machinery was probably salvaged from the vessel.

William Steel's heir was his nephew Michael Steel, then a minor. Located land had to be occupied and improved over a period of five years, so in order to prevent the land reverting to the Crown and to gain title William Steel's sister and Michael's mother, Jane Cook needed to keep it in use. As a result, from 1841 to 1849 when Michael Steel turned 25 and came of age, Thomson Villa was leased to Henry Cowell, a migrant from Kent ('PWS' 1935).

Dairy produce for convict road parties

In the period 1836–48 convict parties built roads in the Falmouth area, including the St Marys Pass link between Falmouth and St Marys. Government operations of this kind presented commercial opportunities to settlers who competed to provision them.

Dairying in Tasmania is usually associated with late-nineteenth and twentieth-century farmers who selected land under the provisions of the *Waste Lands Acts* and *Crown Lands Acts* in the far north-east or in the north-west. However, dairy products were needed right from the advent of European settlement, and in the St Marys region local demand and natural conditions prompted the adoption of dairying on mixed farms selected primarily for wool-growing. In an era before refrigeration was available, a relatively remote place like Falmouth needed to be able to produce its own milk and butter because it was difficult to transport. The development of dairying in the St Marys area can be put down to suitable open grasslands, local demand for dairy produce and cool nights which helped to keep such produce without refrigeration (Cassidy 1995, p.165).Henry Cowell and his neighbour Archibald McIntyre are said to have embarked on or extended dairying enterprises in response to the establishment of the Falmouth Probation Station (1843–46) (McManus 1993, pp.54–55; Ryland 2003). An inventory of Thomson Villa in 1848 suggested a well-developed farm, listing a timber dwelling house, including dairy and cellar; a timber barn; two granaries; a Dutch barn; a six-stall stable; a cow shed; a blacksmith's and carpenter's shop; a fowl house; a cart shed; three pig sties; a men's cottage; 150 acres laid down in grass and under cultivation; and 2709 rods (that is, 13.6 km) of fencing (McManus 1993, p.78). The keeping of pigs is consistent with a dairying operation, the pigs typically being fed skim milk from the dairy.

Some of William Steel's salvaged milling machinery was redeployed in the dairying operation by the time his nephew Michael Steel took over the property from Cowell. Since milk kept for only 24 hours without refrigeration, Michael Steel turned to cheese making all year round in order to have marketable produce (Michael Steel to Joseph Steel, 1855).

Michael Steel introduces tenant farmers

In the post-transportation era, when convict labour was no longer available, many landowners engaged tenant farmers—often ex-convicts or immigrant farm labourers—as a way to continue development of their property while keeping it viable. Michael Steel initially engaged German farming families, assisted immigrants who had arrived on the ship America, including the property's future chief drover Philip Lohrey; Henry Lohrey junior; the Haas, Becker and Rubenach families; John Strochnetter and family, who occupied Peat Marsh; and the Nicoli and Zanglein (Singline) families. They had ten acres each, and in addition had to work for Steel as required (McManus 1993, pp.101 and 123). Other tenants included Charles Slatter, a specialist dairyman brought out from Oxfordshire, Scotsmen Colin McPherson and John Nesbit (McManus 1993, pp.114 and 153), and an ex- convict named William 'Yorkie' Binns (c1820–81), who had passed through the probation system, reaching the stage where he could work for Henry Cowell at Thomson Villa before attaining a conditional pardon in 1852 (conduct record, CON33/1/53, image 56). He became a tenant

on the property at Peat Marsh, married Regina Strochnetter (1839–1923), a German tenant farmer's daughter, and saved enough money to buy 100 acres of Henry Cowell's property adjoining Thomson Villa in order to secure his family's financial independence (McManus 1993, pp.164–66, 196–97).

In 1864 Thomson Villa passed to a third member of the Steel family, when Michael Steel leased it to his younger brother John Steel for 21 years, the latter being so taken by the property that he resolved to end his days there. Alexander Thomson's timber villa had been enlarged. It was now 'very comfortable … but … old-fashioned looking', being accompanied by a brick dairy paved with freestone and with a verandah on each side (John Steel 1858). John Steel purchased all the stock (milking cows, working bullocks, fattening steers, heifers, yearling females, two-year-old steers, calves, horses, foals, full-mouth ewes, two- and four-tooth ewes and lambs) and farm machinery. Benefiting from the fine herbage on the property, for years his fat beef cattle were driven to Hobart and marketed there as being from 'the famous herds' or 'the celebrated grasses' of John Steel, Thomson Villa ('Commercial intelligence', 1873; advert, 1874).

Building the present Enstone Park house

The present Enstone Park house was built in 1867 when the property was still known as Thomson Villa. Built for John Steel, it was designed by Launceston architect Peter Mills ('HTD' 1868). He and Harry Conway were 'the leading designers of Launceston buildings in the era after Clayton' and the 'transformer[s] of Victorian Launceston' (Ratcliff 2015, pp.1050 and 1061). The house's grand appearance expressed Steel's prosperity and social standing. It bears a striking resemblance to another Peter Mills design, that of Struan House (the Supreme Court Building, THR#3493) in Launceston (1870–71), which also features Ferguson, Urie and Lyon stained glass and originally had a very similar balcony arrangement. Mills' use of internal Corinthian columns recalled his design for John Crookes' Mount Pleasant (THR#4440) and anticipated his use of them in Struan House. Enstone Park's original long entrance approach lined with deciduous trees through paddocks stocked with deer (McManus 1993, p.202) must have given the impression of an English nobleman's manor house, while Ferguson and Urie (without Lyon) secular stained glass windows like the one at Enstone Park became a feature of some of Melbourne's best mansions (Zimmer 1984, p.94). Governor Frederick Aloysius Weld and party slept at the house during his north-eastern tour in 1879 ('His Excellency's tour in the north-east' 1879).

After the St Marys Railway opened in 1886, John Steel gave up fattening beef cattle and reverted to dairying, milking 100 cows (McManus 1993, p.247). St Marys was known as the centre of Tasmanian cheese production during the second half of the nineteenth century. Cheese making was extremely hard, daily work, but cheese had the advantage of keeping without refrigeration (Cassidy 1995, pp.7 and 39). In 1888 Steel was using horse power to work a De Laval cream separator and large barrel churns, turning out 350 to 400 lbs of butter per week ('Falmouth' 1888). In 1894 the Tasmanian Dairy Company established a cooperative creamery at St Marys, which contributed cream to the main factory in Launceston. However, it proved to be too far from Launceston to supply cream before it curdled, and by 1897 it was converted into a cheese factory which operated into World War One (1914–18). The Wardlaws at Glencoe apparently preferred to consign their cream and bacon to Murdoch's in Hobart via the railhead at St Marys (McManus 1993, pp.259–60). After this time, Falmouth farmers like those at Glencoe and Enstone Park reverted to farmstead cheese production (Cassidy 1995, p.169).

Leslie Steel and Enstone Park

After the death of John and Michael Steel, Thomson Villa was sold to John's son Leslie Steel, who changed the name of the latter to Enstone Park (McManus 1993, pp.279–81). The homestead's verandah/balcony was still in place in the 1920s (McManus 1993, p.297) but gone by the 1950s (McManus 1993, p.361). The advent of electricity enabled modernisation. In the 1930s wooden rail tracks connected the dairy (now gone) and the cheese room, 'along which the large vats of fresh milk were wheeled twice daily. Electric motors … were used to turn the stirring paddles …' (McManus 1993, p.340). A second St Marys Cheese Factory operated in the years c1938–70, during which time bigger operators came to dominate dairying and some St Marys district farmers gave it up (Cassidy 1995, p.171). Regular dairying at Enstone Park ceased in 1948, although in the 1950s Leslie Steel allowed his stockman Jack Bingley to machine milk twelve cows in the antiquated milking shed (McManus 1993, pp.357–58). Leslie Steel reached the age of 102, dying in 1968 (McManus 1993, p.383).

In 1969 Enstone Park was put up for auction, but when bidding failed to reach reserve price, it was divided into two lots of 900 acres of beachfront at the Scamander end of Steels Beach, and 3100 acres of farmland which were bought by Pat Wardlaw (McManus 1993, pp.383–85). The beachfront blocks were bought by Sydney developers and subdivided further into nineteen fifty-acre blocks. Dairying ceased altogether at Falmouth by the 1970s (McManus 1993, p.389), and in 1993 the Glencoe–Enstone Park complex was a Spanish Merino stud (McManus 1993, p.385). The 'ram shed' from the Wardlaw days with its stockyards remains.

Comparative analysis

Nineteenth-century cheese rooms/dairies

Enstone Park has a rare, intact example of a mid-nineteenth-century dairy/cheese room. It was not a

milking shed. In an era when dairy herds were small and cream separators had not yet been invented, cows were routinely milked in the field and pans of milk were left to set on benches in a dairy building as part of the process of creating cream, butter and cheese. In the pre-refrigeration days, the most important thing was to keep the milk cool so that it didn't curdle. The early dairy/cheese room at Enstone Park has a particular design which reflects the desire to keep the contents of the buildings cool: a steeply-pitched hip roof with eaves extending almost to the ground, creating a four-sided verandah (McManus 1993, p.153). Cassidy credits John Steel's Scottish dairyman Charles Slatter with devising 'a useful ventilation system for his brick cheese and butter storage room' (Cassidy 1995, p.167), presumably referring to the ventilation holes in the bricks which also would have helped to cool the interior. Verandahs, louvred shutters and roof vents were used in early Van Diemen's Land buildings to deal with hot weather (Ratcliff 2015, vol.1, p.100). In the old Enstone Park cheese room maturing cheeses would have been arranged on benches or shelves around the walls.

The Enstone Park dairy/cheese room has similar design features to the dairy/cheese room which is of a similar era at neighbouring Glencoe (THR#12019), although the latter lacks the extended eaves. The restored dairy at Killymoon (THR#604) is also from a similar period, and in 1867 at least Killymoon had a 'famous' commercial dairying operation, selling butter in Hobart (advert 1867). The Killymoon dairy is very similar in form to the Enstone Park building, being a small rectangular brick building with a steeply pitched hipped roof, centrally placed door and a vaulted lath and plaster ceiling. It is unknown whether it originally had extended eaves and verandah on all four sides of the building.

A mid-nineteenth-century rendered stone cream setting room which survives at Old Wesley Dale (THR#4764) features horizontal wooden shutters (Cassidy, pp.187 and 216), a similar ventilation device to the building at Enstone Park. This appears to be the same dairy building described by Theophilus Jones in 1883 as being 'large and cool, with cement floor, centre and side benches … [with] perfect ventilation though perforated blinds' (Jones 1883).

Most surviving early Tasmanian dairy buildings are from a later period, following the invention of milk-separation equipment. By 1885 the mechanical milk separator which skimmed off the cream had ended the time-consuming process of setting milk in pans (Cassidy 1995, p.10). Later dairy buildings did not place the same emphasis on keeping milk products cool for long periods. Lade's cheese room at Ripple, (THR#729) for example, was used 1893–1914 (Cassidy 1995, p.106) but today only its shelves recall its original purpose. Lade's cheese room is also a timber addition to the main house rather than a standalone building, and it bears none of the cooling features of the earlier cheese rooms at Glencoe and Enstone Park such as the steeply pitched, low-slung roof and ventilation holes. The timber cheese factories from this later period which survive on farms are simple gabled buildings with few outward distinguishing characteristics.

Ferguson and Urie/Ferguson, Urie and Lyon stained glass
Enstone Park homestead has a rare private example of a Ferguson and Urie/Ferguson, Urie and Lyon stained glass window. This company, Melbourne's earliest stained glass manufacturer, produced stained glass windows for several Tasmanian churches in the second half of the nineteenth century, including St Johns Anglican Church at Ross (THR#12013), St Johns Anglican Church in Launceston (THR#4612), St Matthews Anglican Church at New Norfolk (THR#1212) and All Saints Anglican Church at South Hobart (THR#91), but the only other known examples of their work in Tasmanian private residences are at Mona Vale (THR#5266), Rouseville/Bellona (THR#3104) and Struan House (THR#3493)(Ferguson and Urie website).

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'Falmouth' 1888, *Colonist*, 29 December 1888, p.3.

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Statement of Significance: *(non-statutory summary)*

Enstone Park demonstrates aspects of early pastoralism and agriculture in colonial Van Diemen's Land, including the granting of the savannah woodlands to men considered respectable wool-growers as part of Lieutenant-Governor Arthur's convict assignment system; the economic significance of convict labour; the development of the dairy industry in the nineteenth and twentieth centuries; and labour force changes on major rural properties. The mid-nineteenth-century dairy/cheese room and the Ferguson, Urie and Lyon stained glass window are rare examples of their kind in Tasmania. The property has a special association with Peter Mills, architect of Enstone Park house (1867).

Significance:

The Heritage Council may enter a place in the Heritage Register if it meets one or more of the following criteria from the Historic Cultural Heritage Act 1995:

a) The place is important to the course or pattern of Tasmania's history.

Enstone Park demonstrates the granting of savannah woodlands to 'respectable' wool-growers as bastions of the convict assignment system; the economic significance of convict labour in Van Diemen's Land; and the development of the dairy industry during the nineteenth and twentieth centuries. The historic farming complex is now only partially intact, consisting of a mid-nineteenth-century homestead, the archaeological site of the earliest (c.1830) homestead and an historic dairy/cheese room, but the agricultural setting remains much as it was, with open paddocks extending back to the hills. The farming complex commands a cultural landscape shaped by Aboriginal burning practices and the continuation of these as part of European agricultural and pastoral practices. Thousands of years of Aboriginal land management and almost 200 years of European land management are imprinted on the landscape in the form of fire-managed grasslands and paddocks.

b) The place possesses uncommon or rare aspects of Tasmania's history.

Enstone Park has a rare, intact example of a mid-nineteenth-century dairy/cheese room, with design features (steeply-pitched roof with extended eaves, wide verandah, and ventilation holes) intended to keep the interior cool. Only a few dairy buildings remain in Tasmania from this pre-milk-separation era when such features were needed to try to keep milk from curdling during the slow settling process.

Enstone Park homestead has a rare private example in Tasmania of a Ferguson and Urie/Ferguson, Urie and Lyon stained glass window.

c) The place has the potential to yield information that will contribute to an understanding of Tasmania's history.

Enstone Park is likely to include surface and subsurface remains and deposits associated with the construction and occupation of the former Thomson Villa, as well as Enstone Park itself. Anticipated archaeological evidence includes a wide range of agricultural and domestic outbuildings, structural remains associated with flour milling (including a mill race and sluice gate system), workers' cottages, lime kilns and other farm infrastructure that may have the potential to yield information about the structure, spatial configuration and functioning of a nineteenth-century mixed farm. The area around the site of the original homestead, Thomson Villa, is of particular interest, because of its early occupation period, even pre-dating William Steel's efforts to establish himself in the early 1830s.

d) The place is important in demonstrating the principal characteristics of a class of place in Tasmania's history.

No Data Recorded

e) The place is important in demonstrating a high degree of creative or technical achievement.

No Data Recorded

f) The place has a strong or special association with a particular community or cultural group for social or spiritual reasons.

No Data Recorded

g) The place has a special association with the life or works of a person, or group of persons, of importance in Tasmania's history.

Enstone Park has a special association with Peter Mills (c1828–86), architect of the main house (1867). After emigrating to Tasmania in 1857, the London-born architect designed many prominent northern buildings, including Struan House (the Supreme Court Building, THR#3493), Mount Pleasant (THR#4440), the commercial building at 45 Cameron Street (THR#4254) and Joseph's Corner (THR#3889), all in Launceston, the Perth School House (THR#5214) and the Longford Municipal Hall (THR#5164). Mills and Harry Conway were 'the leading designers of Launceston buildings in the era after Clayton' and the 'transformer[s] of Victorian Launceston' (Ratcliff 2015, pp.1050 and 1061).

h) The place is important in exhibiting particular aesthetic characteristics.

No Data Recorded

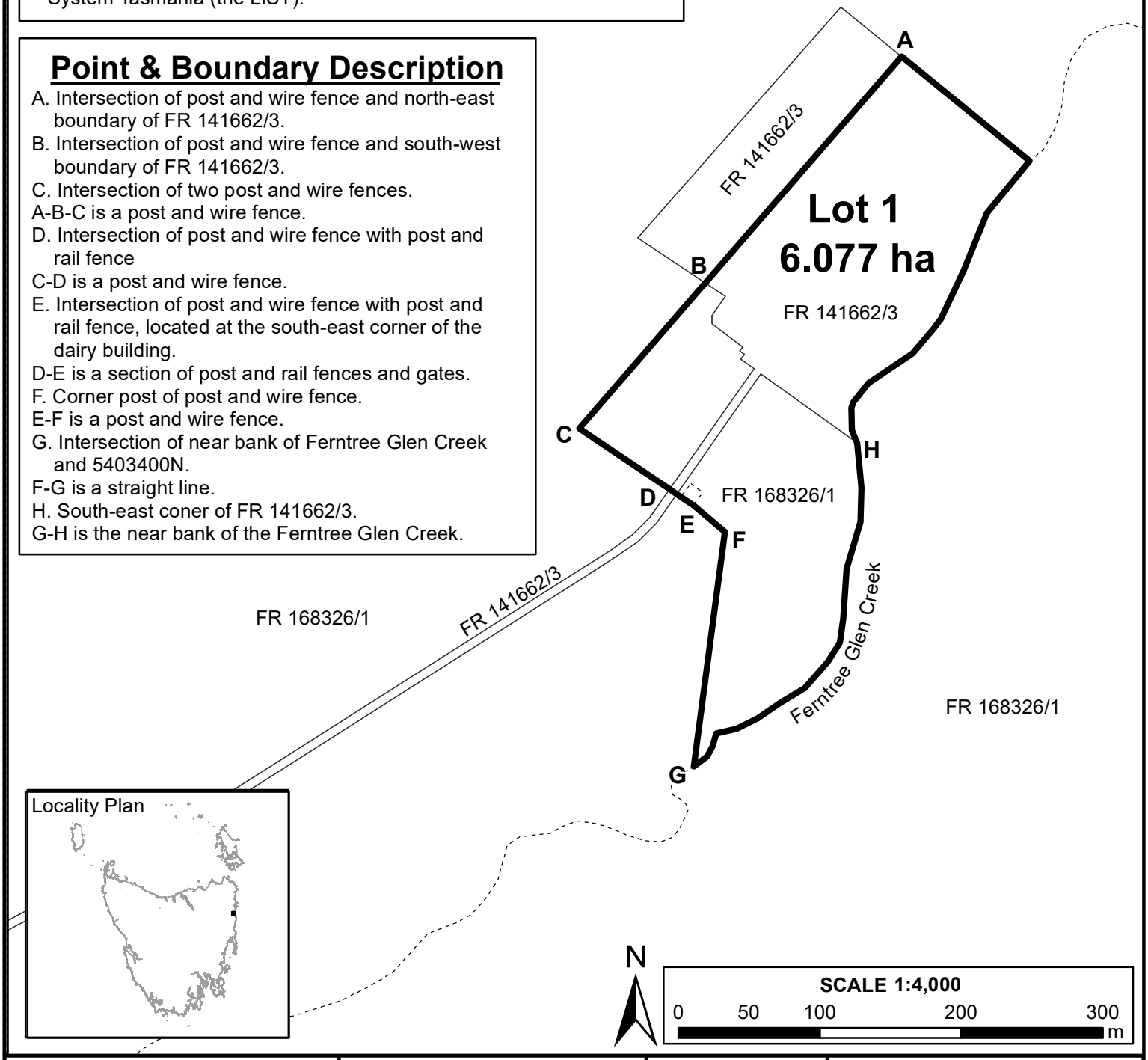
PLEASE NOTE This data sheet is intended to provide sufficient information and justification for listing the place on the Heritage Register. Under the legislation, only one of the criteria needs to be met. The data sheet is not intended to be a comprehensive inventory of the heritage values of the place, there may be other heritage values of interest to the Heritage Council not currently acknowledged.

Note

1. Lot 1 represents the registered boundary for 'Enstone Park', #12023 on the Tasmanian Heritage Register.
2. Lot 1 represents part of FRs 141662/3 and 168326/1, the boundary of which is marked by a thick black line and described below.
3. Lot 1 includes standing features and archaeological potential, as described in the datasheet for THR#12023.
4. All boundaries are cadastral boundaries unless otherwise described, details of land parcels may be accessed through the Land Information System Tasmania (the LIST).

Point & Boundary Description

A. Intersection of post and wire fence and north-east boundary of FR 141662/3.
B. Intersection of post and wire fence and south-west boundary of FR 141662/3.
C. Intersection of two post and wire fences.
A-B-C is a post and wire fence.
D. Intersection of post and wire fence with post and rail fence
C-D is a post and wire fence.
E. Intersection of post and wire fence with post and rail fence, located at the south-east corner of the dairy building.
D-E is a section of post and rail fences and gates.
F. Corner post of post and wire fence.
E-F is a post and wire fence.
G. Intersection of near bank of Ferntree Glen Creek and 5403400N.
F-G is a straight line.
H. South-east coner of FR 141662/3.
G-H is the near bank of the Ferntree Glen Creek.



TASMAP:	FALMOUTH - 6040	GRID:	MGA94 / ZONE 55	DATUM:	AHD	CONTOUR INTERVAL:	N/A

No.	PRODUCTION / AMENDMENT	AUTHORITY	REFERENCE	DRAWN	APPROVED	DATE
1	Production	THC	12023	JS	A ROBERTS	30JUN21

Tasmania

Enstone Park

22746 Tasman Highway, Falmouth

PREPARED BY
HERITAGE TASMANIA

Tasmanian Heritage Council

CENTRAL PLAN REGISTER

GDA

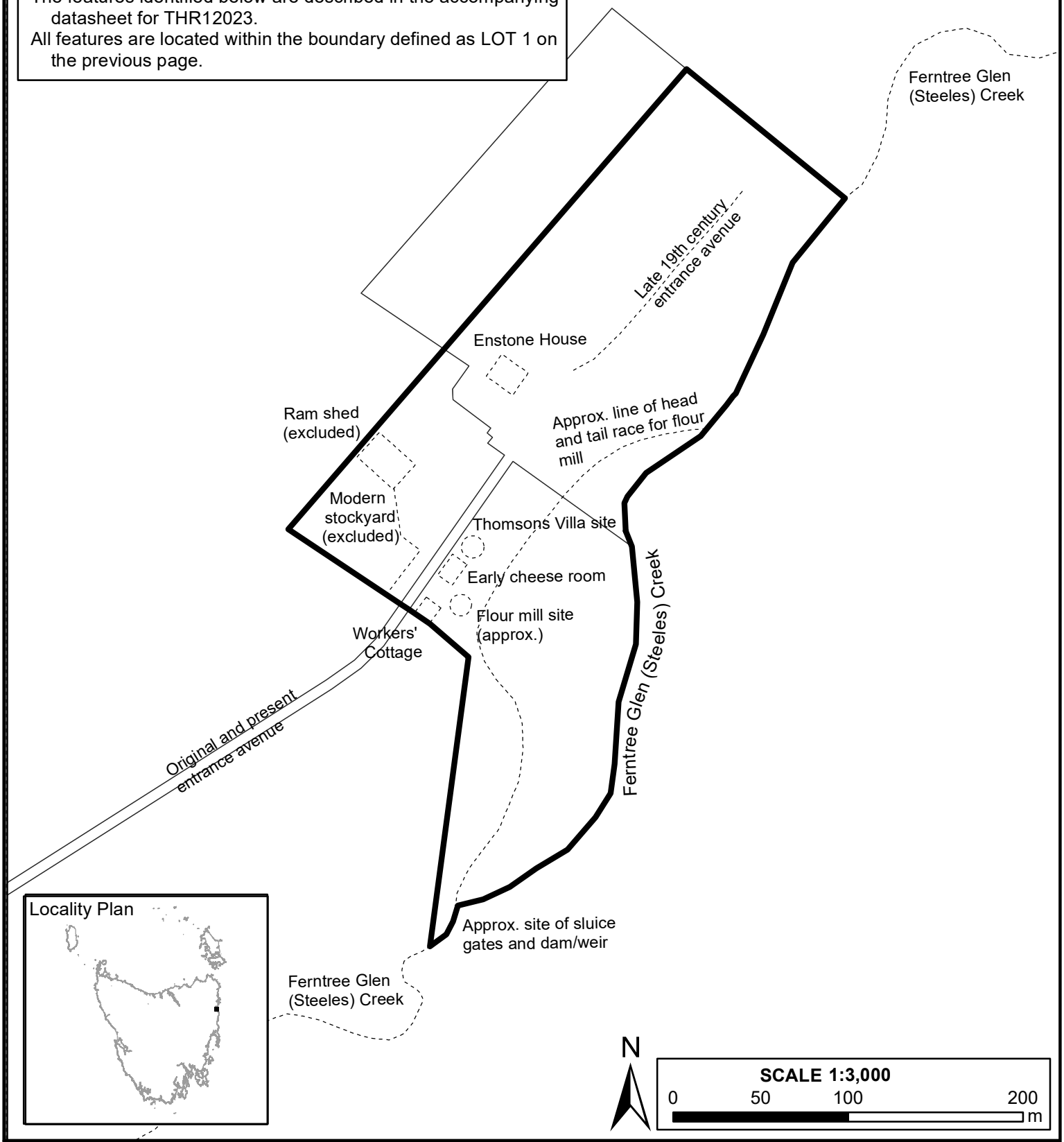
p.p. Surveyor General: _____

Date Registered: 6 JULY 2021

CPR 11059

Note

The features identified below are described in the accompanying datasheet for THR12023.
All features are located within the boundary defined as LOT 1 on the previous page.



TASMAP:	GRID:	DATUM:	CONTOUR INTERVAL:
FALMOUTH - 6040	MGA94 / ZONE 55	AHD	N/A

No.	PRODUCTION / AMENDMENT	AUTHORITY	REFERENCE	DRAWN	APPROVED	DATE
1	Production	THC	12023	JS	A ROBERTS	30JUN21

Tasmania

Enstone Park

22746 Tasman Highway, Falmouth

PREPARED BY
HERITAGE TASMANIA

Tasmanian Heritage Council

GDA

CENTRAL PLAN REGISTER

p.p. Surveyor General: _____

Date Registered: 6 JULY 2021

CPR 11059

Representation 80

From:	Richard Barnes
To:	Break O Day Office Admin
Cc:	Michael Morley
Subject:	Representation obo Parnella Holdings Pty Ltd - Break O"Day LPS
Date:	Monday, 13 December 2021 11:38:10 AM
Attachments:	Representation BOD LPS Parnella Holdings Pty Ltd.pdf

Dear Sir

Please find **attached** a representation I submit to Council on behalf of Parnella Holdings Pty Ltd.

regards
Richard

--
Dr Richard Barnes BSc(Hons) PhD GDURP MPIA MESA
Principal Environmental, Regional and Urban Planner
Environmental Specialist and Ecologist

Director, Van Diemen Consulting Pty Ltd,
Mobile: 0438 588 695

Van Diemen Consulting
PO Box 1
New Town TAS 7008
Mob: 0438 588 695
Email: rwbarnes73@gmail.com

BREAK O'DAY DRAFT LPS - PLANNING EXHIBITION REPRESENTATION

To:	General Manager, Break O'Day Council, admin@bodc.tas.gov.au
From:	Dr Richard Barnes, Van Diemen Consulting obo Parnella Holdings Pty Ltd
Date:	December 13, 2021
Re:	**BREAK O'DAY DRAFT LPS -** PLANNING EXHIBITION REPRESENTATION

The Tasmanian Planning Commission directed Council to commence exhibition of the Break O'Day Draft Local Provisions Schedule (LPS) under section 35B of the *Land Use Planning and Approvals Act 1993* (the Act). The Break O'Day LPS is on public exhibition and representations are invited on the contents of the LPS to the close of business, 13 December 2021.

I submit this Representation to the Break O'Day Council on behalf of Parnella Holdings Pty Ltd (ACN 009 516 901) for a parcel of land it owns at 36 Parnella Drive, Stieglitz TAS 7216. The Land is known as Certificate of Title Volume 30650 Folio 3 (the 'Land').

The Directors of Parnella Holdings Pty Ltd are Mr Michael Morley (0410 612 176) and Ms Nataliya Katzman.

The LPS seeks to zone the Land as **Open Space**, surrounded by General Residential zoned land.

Parnella Holdings Pty Ltd objects to the Open Space zone being applied to their Land in the LPS. The Land is not public. The Land has been in the ownership of Parnella Holdings Pty Ltd since 1978 (see Attachment 2).

The historical zoning of the Land must be considered by this process because it is relevant to the request made here obo Parnella Holdings Pty Ltd. Attachment 1 provides maps and information about the historical zonings of the Land.

To summarise here, the Urban zoning (see Attachment 3 for 1996 Planning Scheme maps) was changed to the Open Space zone during the drafting of the Interim Planning Scheme. There was no strategic planning documentation to justify the zoning change, it should not have been allowed given that process was 'like-for-like' in the absence of any strategic planning considerations. The change was made without the consent nor knowledge of Parnella Holdings Pty Ltd.

The surrounding land has been and continues to be identified for 'residential' use; Urban (1996 Scheme; see Attachment 3), General Residential (Interim Planning Scheme), and General Residential in the LPS.

The rezoning to **Open Space** was clearly an administrative error.

The current process provides an appropriate and timely mechanism to correct the error by zoning the Land as General Residential in the LPS. Parnella Holdings Pty Ltd therefore seeks the LPS to zone the Land as General Residential.

Yours sincerely

Dr Richard Barnes BSc(Hons) PhD GDURP MPIA MESA

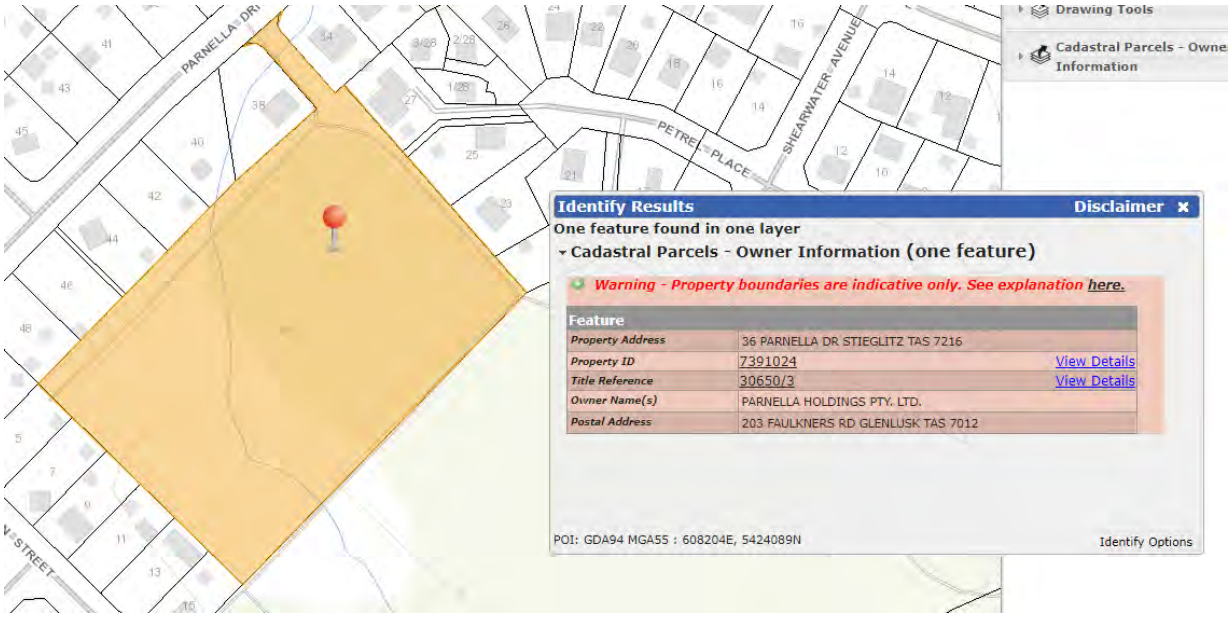
Principal Environmental, Regional and Urban Planner, Environmental Specialist and Ecologist

ATTACHMENT 1

Background information to the representation

THE LAND

The physical address of the land is 36 Parnella Drive, Stieglitz TAS 7216. The owner is Parnella Holdings Pty Ltd (Certificate of Title Volume 30650 Folio 3) is shown below, accessed from TheLIST.



ZONING UNDER THE BREAK O'DAY PLANNING SCHEME 1996

The zoning of the Land (see arrow) in the 1996 Scheme was Urban, surrounded by other Urban zoned land.

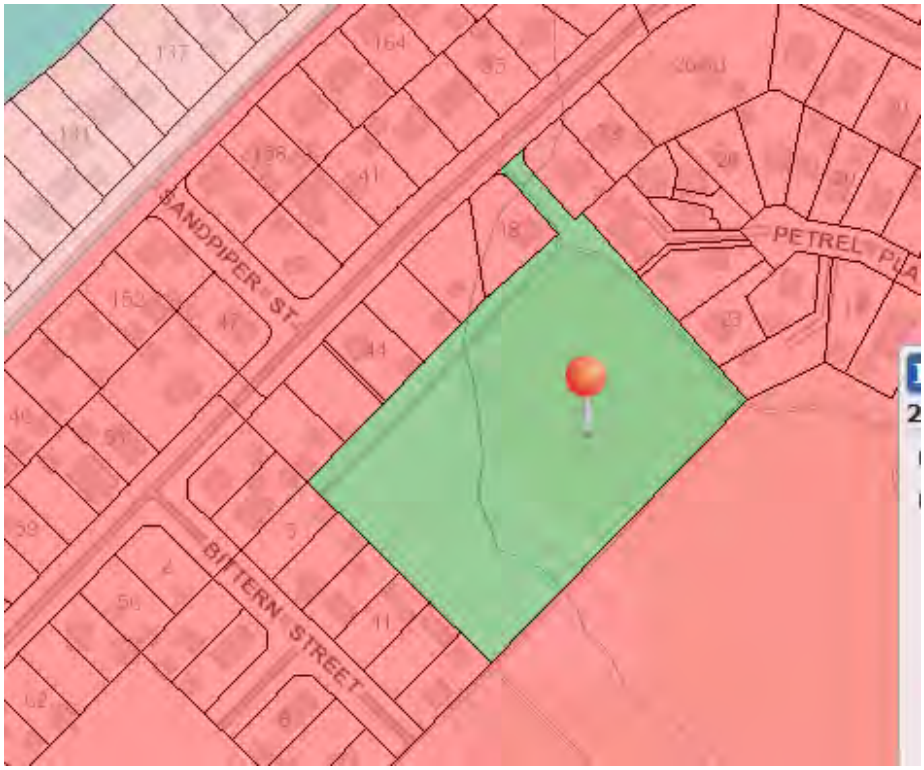
ZONING UNDER THE BREAK O'DAY INTERIM PLANNING SCHEME 2013

The existing zoning of the Land is **Open Space**, surrounded by General Residential zoned land.

The 'residential' zoning of the Land was actively replaced with the **Open Space** zone during the development of the Interim Planning Scheme without any strategic planning documentation to justify the changed zoning, and without the consent nor knowledge of the Owner. The surrounding land has been and continues to be identified for 'residential' use, either as the Urban (1996 Scheme) or General Residential (Interim Planning Scheme) zone.

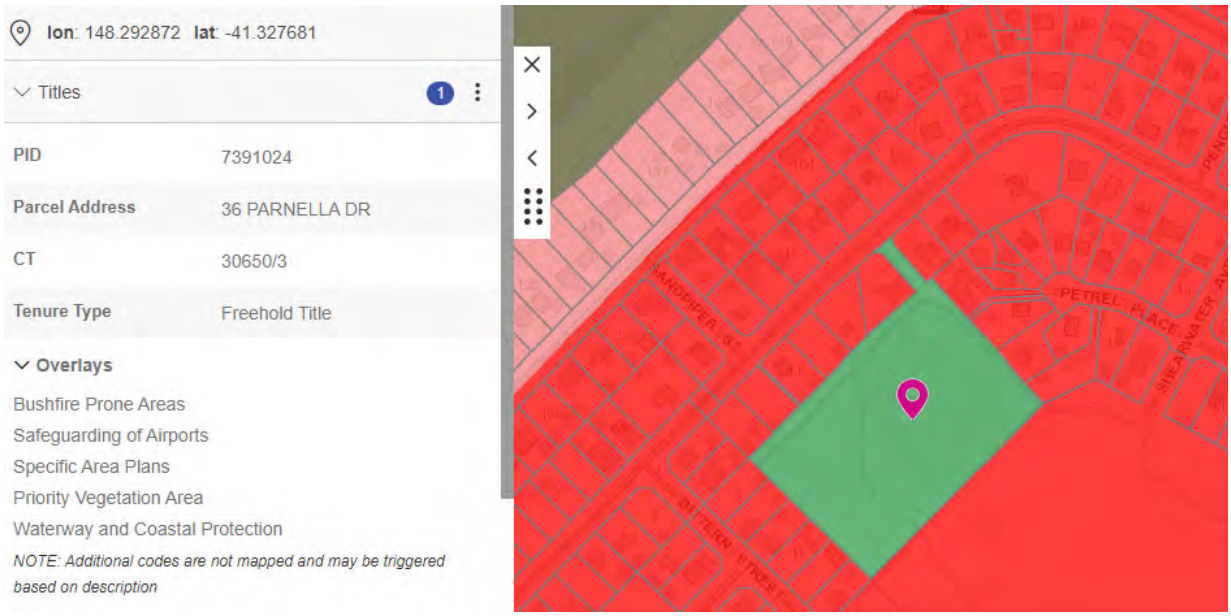
The Land is not public.

The Land has been in the ownership of Parnella Holdings Pty Ltd since 1978 (see Attachment 2).



BREAK O'DAY DRAFT LPS

The Land is shown below. The DRAFT LPS seeks to zone the Land as Open Space.



ATTACHMENT 2

Letter from Robert Hamilton dated 2 December 2021

ROBERT M. HAMILTON

Robert M. Hamilton BA. LLb. MSc.
7 Egret Street
BONGAREE QLD 4507
AUSTRALIA

Phone: +61 7 3410 0444
Mobile: 0418 120 717
Email: rmhamilton44@bigpond.com

2 December 2021

TO WHOM IT MAY CONCERN

I write at the request of Mr Michael Morley with respect to land owned by Parnella Holdings Pty Ltd. (Parnella) at St. Helens in Tasmania.

To the best of my knowledge, information and belief, and following extensive research, I advise that Parnella Holdings Pty. Ltd. has owned the particular land continuously since 1978.

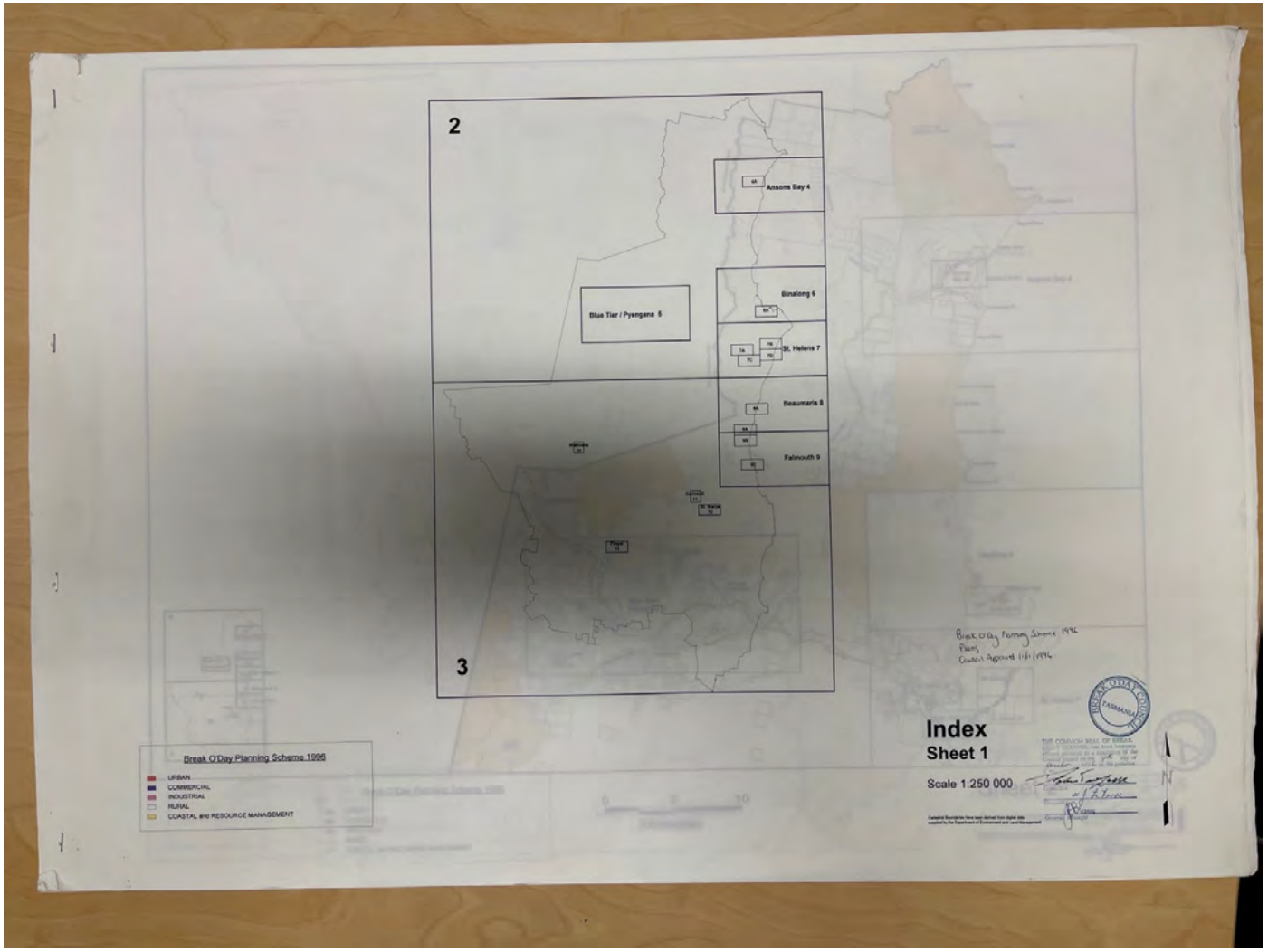
I researched the zoning of the land between 1978 and 2019 and my research revealed that Parnella intended that the land be used for residential development in 1978, but somehow and at some time it was rezoned open land. I do not know how this came about, but I have not found any evidence that Parnella Holdings Pty. Ltd. participated in the rezoning or approved it.

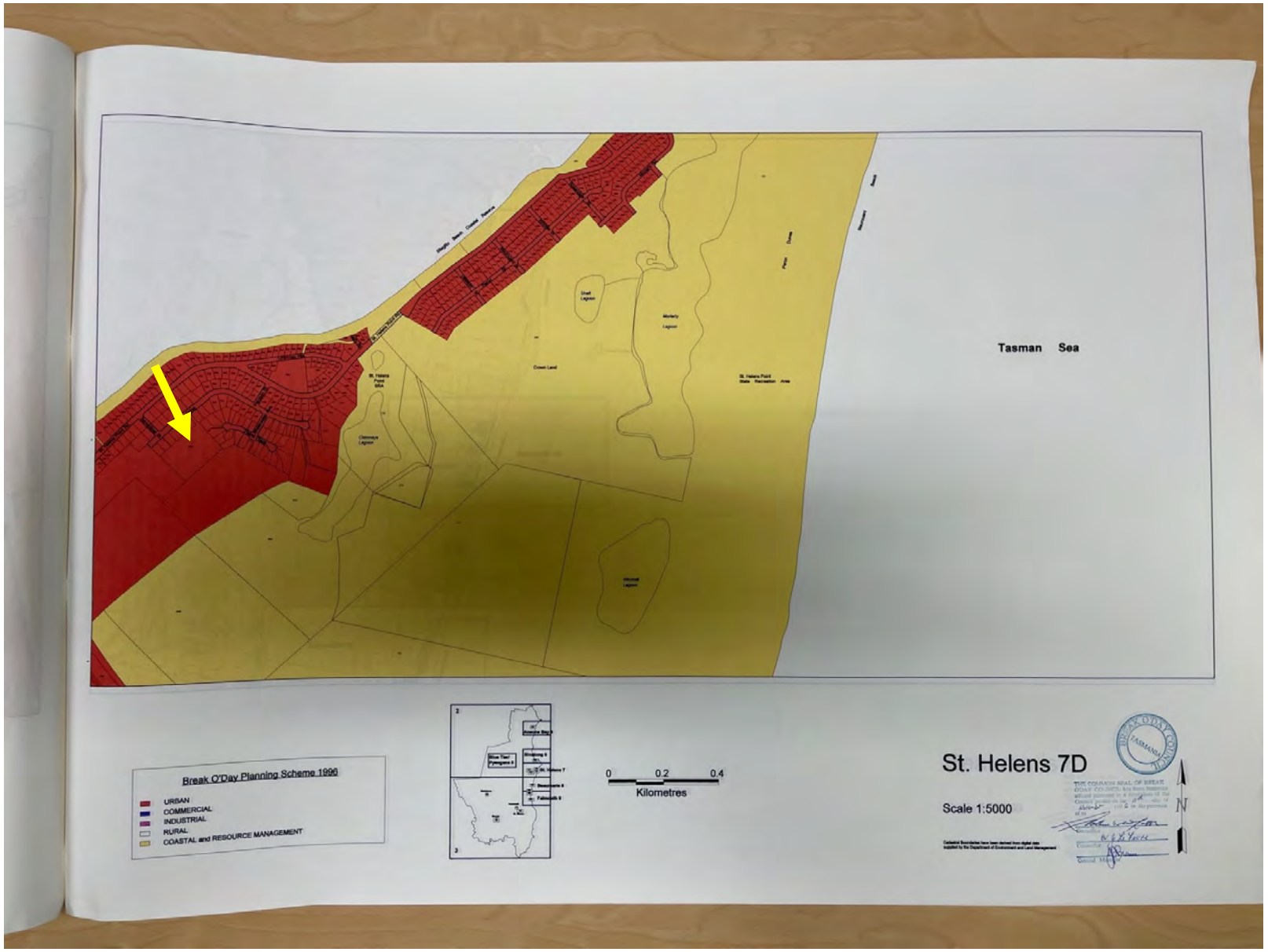
Yours sincerely

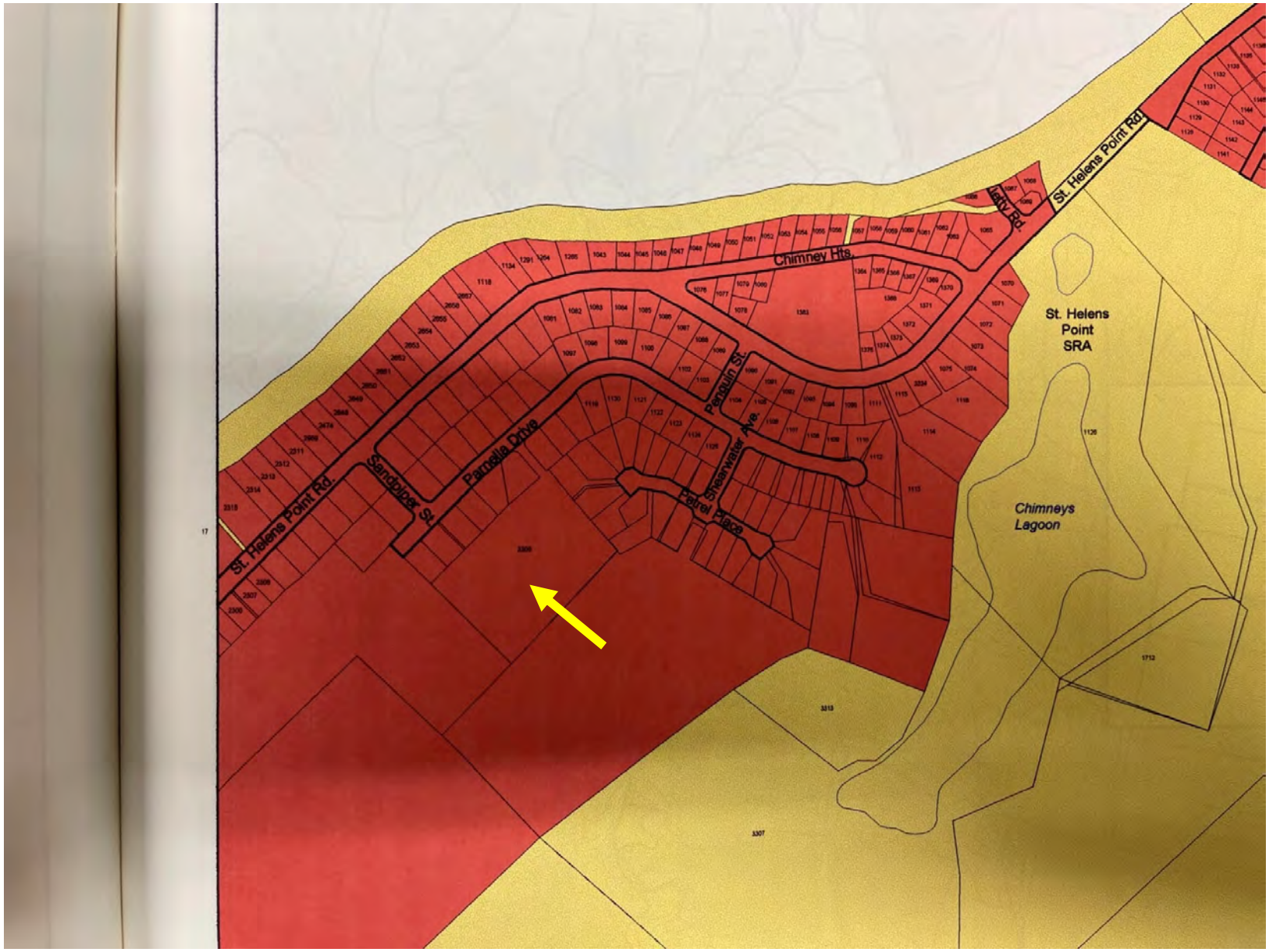
Robert M. Hamilton

ATTACHMENT 3

Photographed pages from the Break O'Day Planning Scheme 1996




Tasman Sea
Break O'Day Planning Scheme 1996
URBAN
COMMERCIAL
INDUSTRIAL
RURAL
COASTAL and RESOURCE MANAGEMENT
0 0.2 0.4
Kilometres
St. Helens 7D
Scale 1:5000
N


St. Helens Point Rd.
Sandpiper St.
Parnella Drive
Penguin St.
Shearwater Ave.
Petrel Place
Chimney Hts.
Kathy Rd.
St. Helens Point Rd.
St. Helens Point SRA
Chimneys Lagoon

Representation 81

From:	NE Bioregional Network
To:	Break O Day Office Admin
Subject:	Fw: Break O Day LPS representation (1of 6)
Date:	Friday, 17 December 2021 3:32:54 PM
Attachments:	Representation Letter Break O Day LPS FINAL...docx Attachment A Supporting Report LPS Final.doc Attachment B DRAFT LPS WRITTEN DOCUMENT Final.doc Representation Letter Break O Day LPS FINAL.. Replacement.docx

Please find attached a revised Representation Letter (there was a minor edit to rectify a numbering issue) regarding our Break O Day LPS representation. .

Please now disregard the document entitled Representation Letter Break O Day LPS FINAL and replace it with the document attached entitled Representation Letter Break O Day LPS FINAL....Replacement.

Thanks

Todd Dudley
President
North East Bioregional Network

Phone (03) 6376 1049
Postal address: 24751 Tasman Hwy, RSD St. Marys 7215

----- Forwarded message -----
From: NE Bioregional Network <telopea_tas@yahoo.com.au>
To: Break O. Day Office Admin <admin@bodc.tas.gov.au>
Sent: Friday, 17 December 2021, 12:33:55 pm AEDT
Subject: Break O Day LPS representation (1of 6)

Please find attached the first of six emails which constitute the North East Bioregional Networks Break o Day LPS representation. Could you please acknowledge receipt of each email and confirm content is readable.

Thanks

Todd Dudley
President
North East Bioregional Network

Phone (03) 6376 1049
Postal address: 24751 Tasman Hwy, RSD St. Marys 7215

17th December 2021

The General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216

By email: admin@bodc.tas.gov.au

Dear Mr Brown,

Representation in response to Draft Break O'Day Local Provisions Schedule

The North East Bioregional Network (**NEBN**) provides the following representation in response to the draft Break O'Day Local Provisions Schedule (**Draft LPS**).

The review conducted of the Draft LPS has focussed on the zone and overlay provisions considering:

- the possible use and development outcomes in the coastal zone;
- the scenic landscape values and protecting the natural attributes of the coast and hinterland in the municipality; and
- if the fundamental principle of 'sustainable development' is achieved through the proposed provisions of the draft LPS.

In summary, the NEBN representation seeks the modification of the Draft LPS to:

1. introduce an additional Specific Area Plan – Coastal Zone to be applied to the land area 1km inland of the High Water Mark (HWM) to:
    - prohibit subdivision in the Landscape Conservation Zone, Rural Zone and Agriculture Zone;
    - prevent inappropriate intensification of development in the Low Density Residential Zone; and
    - limit the use class Visitor Accommodation in the Landscape Conservation Zone, Rural Zone and Agriculture Zone to not give rise to inappropriate coastal development outside of the towns and settlements;

2. increase the spatial extent of the Landscape Conservation Zone, applying it instead of the Rural Zone to the north, south and east of St Marys due to the landscape values and the contiguous native vegetation cover identified;

3. support or modify the proposed zones for the identified properties and areas contained in Attachments A and C;

4. reduce the spatial extent of the land area to which the *BRE-P3.0 Particular Purpose Zone – St Helens Coastal Maritime* is applied as shown on Zone Map 12 of 44;

5. delete the BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area Plan;

6. delete the BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area Plan from the *written document* and the *Tasmanian Planning Scheme – Specific Area Plan: Break O'Day Local Provisions Schedule maps;*

7. modify the BRE-S2.0 – Stormwater Management Specific Area Plan in the written document to finetune the proposed controls;

8. apply scenic protection areas in the Code Overlay maps in addition to the scenic road corridor concerning the Scenic Protection Code and add the listings to Table C8.2;

9. increase the spatial extent of the Priority Vegetation Area as shown in the Code Overlay maps concerning the Natural Assets Code;

10. apply the Environmental Management Zone to Future Potential Production Forest instead of the Rural Zone;

11. include listings to Table C6.5 Significant Trees in the written document as can be applied through the Local Historic Heritage Code; and

12. list additional weed species in BRE-P1.8.1 Environmental weeds in the written document.

To support the representation, the following evidence is offered:

Attachment	Report
Attachment A	Support Reporting LPS – Excerpt of the proposed zones
Attachment B	Draft LPS Written Document
Attachment C	Draft LPS Zone Maps Response
Attachment D	North East Bioregional Network Land Use Plan
Attachment E	Protection of coastal natural values in the Break O'Day Municipality
Attachment F	Review of residential development on the ecological health of receiving waters
Attachment G	Threats of residential development to aquatic values in the Break O'Day Municipality
Attachment H	Scenic Protection Report
Attachment I	Draft LPS Written Document and Scenic Protection Areas
Attachment J	Estimated breeding population of resident shorebirds and small terns Break O'Day municipality
Attachment K	Saltmarsh Maps
Attachment L	Priority Vegetation Area Mapping for Break O'Day Municipality
Attachment M	Linking Landscapes – New Reserves for North East Tasmania
Attachment N	Verification of the Heritage Values of ENGO – proposed reserves

The expert reports attached to this representation provide important context and information in support of '*sustainable development*' outcomes. In conjunction with these reports, the proceeding discussion provides the reasons and rationale for the requested changes. The representation demonstrates that the request is in accordance with the LPS Criteria under *section 34 of the Land Use Planning and Approvals Act 1993* (LUPA Act).

Summary of Expert Reports

Attachment D - NEBN Land Use Plan

A Conservation Action Plan for the Break O'Day region which identifies key strategies to maintain ecological processes and genetic diversity as per the requirements of Schedule 1 Part 1 1.(a). The report follows best practice conservation planning methodology using the Conservation Action Plan process. This involves identifying and understanding key landscape scale ecological processes to guide conservation management. A number of Focal Conservation Assets are determined followed by an assessment of their viability, threats to their integrity and resilience and finally strategies to maintain ecological processes.

This document is to our knowledge the only report that specifically addresses the issue of ecological processes and genetic diversity for the Break O'Day area and reinforces the importance of cross tenure landscape scale planning in order to meet the requirements of Schedule 1 of the *Land Use Planning and Approvals Act 1993* (the Act) and relevant state policies such as the *Tasmanian State Coastal Policy 1996* (State Coastal Policy).

Attachment E - Protection of coastal natural values in the Break O'Day Municipality (Nick Fitzgerald 2021)

In this report the values of the coastal environment of Break O'Day are detailed along with risks to coastal ecosystems and species. The report concludes with recommendations to improve biodiversity outcomes through the planning scheme.

Attachment F - Review of impacts of residential development on the ecological health of receiving waters (Simon Roberts 2021)

A comprehensive review of scientific literature related to the impacts of land use change and in particular urbanisation on water quality and aquatic ecosystems.

Attachment G - Threats of residential development to aquatic natural values in the Break O'Day municipality (Simon Roberts 2021)

This report builds on the Review document (Attachment F) and provides an analysis of the threats to the Break O Days coastal aquatic ecosystem values from development. These two reports should be read collectively and provide compelling evidence that development in the coastal zone must be subject to rigorous standards and controls to avoid degrading aquatic values.

Attachment H - Scenic Protection Assessment: North East Tasmania (Geoscene International 2019)

This report is a comprehensive analysis of the scenic values present along the Break O'Day coastline as well as St Marys Pass and Elephant Pass and needs to be read in conjunction with the NEBN Scenic Protection Areas Table document (Attachment I). The Scenic Protection Areas in the NEBN table correlate with the maps on pages 25 to 28 of the Scenic Protection Assessment report.

Attachment I - Scenic Protection Areas

The attached contains the Scenic Protection Area table as proposed by NEBN consistent with the Scenic Protection Report from Geoscene International

Attachment J- Estimated breeding populations of resident shorebirds and small terns Break O'Day Municipality (Eric J. Woehler Birdlife Tasmania 2020)

A recent Birdlife Tasmania report which concludes that shorebird values on the Break O'Day coastline are internationally significant for shorebird conservation.

Attachment K - Saltmarsh Mapping (Scott Foyster/Vishnu Prahalad UTAS 2021)

Mapping of all Saltmarsh locations in the Break O'Day municipality. Saltmarsh is a EPBC listed vegetation community of high conservation value and vulnerable to the impacts of coastal development and sea level rise.

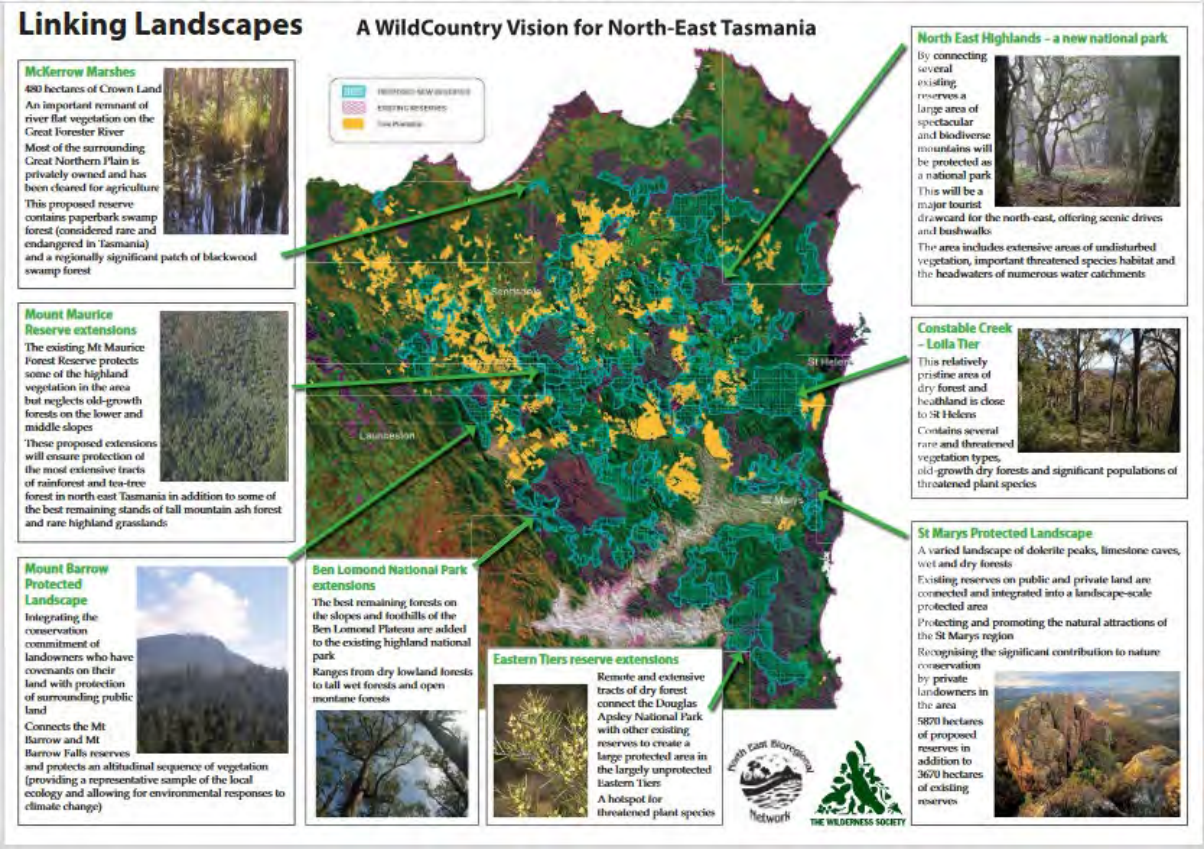
Attachment L- Priority Vegetation Area Mapping for Break O'Day Municipality (Nick Fitzgerald 2021)

This report documents a recommended Priority Vegetation Area overlay for the Natural Assets Code in the new Break O'Day Planning Scheme.

Attachment M

Linking Landscapes- New Reserves for North East Tasmania (September 2007)

This report provides detailed information on the ecological and associated values of all the Future Potential Production Forest (FPPF) land in the Break O'Day municipality. This report along with the Hitchcock report is tendered in support of all FPPF land in the Break O'Day municipality being zoned Environmental Management in recognition of its critical landscape connectivity function, high conservation values and range of other values including scenic beauty, geo conservation, water catchment protection and carbon sinks.



Attachment N

Verification of the Heritage Values of ENGO- proposed reserves-IVG Forest Conservation Report 5A (Hitchcock 2012) This report verifies the scientific rigour of the Linking Landscapes report and acknowledges that "those parcels forming the East Coast Connectivity Corridor have been assessed collectively to have National Heritage significance- one of the more important latitudinally connected tracts of native habitat in Australia". This report needs to be read in conjunction with the Linking Landscapes report and NEBN Land Use Plan to consolidate the importance of landscape connectivity to maintain ecological processes and genetic diversity.

1. SPECIFIC AREA PLAN – COASTAL ZONE

Planning Scheme History

In 2006, a development control was inserted into the *Environmental Protection Zone* and *Natural Resources Zone of the Break O' Day Planning Scheme (the Scheme). The control prohibited all subdivisions from creating new lots within 1km of the High Water Mark"All new lots must be located a minimum of 1km from High Water Mark".*

The (former) Resource Planning and Development Commission (RPDC) approved this provision acknowledging the threat that urban sprawl and coastal ribbon development posed to the Break O'Day coastline. The RPDC noted that ***"Parts of the coastline*** *(of the municipality)* ***captured by this standard are of the highest visual and environmental quality in the State"*** *and determined that this measure would protect the coastline from inappropriate development.*

The RPDC further noted that a managed, planned, and protected coastal zone in the Break O'Day municipality benefits the local community, the region, and the State and has particular qualities unique to the area that are well recognised not only within Tasmania but nationally and internationally.

The Break O'Day coastline is the municipality's greatest asset and requires a high level of planning and management excellence to avoid overdevelopment and degradation of those qualities and values. Examples of the qualities and values referred to include; the orange lichen encrusted granite boulders, turquoise waters, wildflower-rich heathlands and white sandy beaches of the Bay of Fires.

The RPDC also at this same time inserted the following Acceptable Solution with No Performance Criteria regarding Strata Schemes "No lot defined in the *Strata Titles Act 1998* can be created by a strata scheme" in the Environmental Protection Zone and the Natural Resources Zone (Draft amendment 01/03) in the former planning scheme. The RPDC considered "the use of strata in non-urban areas to avoid subdivision standards of the planning scheme" to be a "valid matter" and accordingly prohibited strata in these zones. In 2007 the Break O'Day Council initiated an amendment through the RPDC to revisit the Strata prohibition. In 2008 the RPDC approved strata but only for tourism accommodation not residential use in these zones (noting that tourism visitation to Tasmania has nearly doubled between 2008 and 2018/2019).

The 1km subdivision prohibition was transitioned into the *Break O'Day Interim Planning Scheme 2013* (the Interim Scheme) in the Environmental Living and Rural Resource zones.

In October 2019, a Council community newsletter contained a statement from the current General Manager, John Brown that the Draft LPS would not carry over the subdivision controls. Mr Brown stated that the controls of the Landscape Conservation Zone as per the State Planning Provisions (SPPs) would replace the Interim Scheme subdivision controls. The replacement would result in "the same outcome

or better" in coastal development controls. He also stated that the minimum lot size permitted would be 50ha. The Council provided the same information at the Draft LPS community "drop-in sessions" concerning the Draft LPS.

The statement is incorrect and takes a very different interpretation of proposed provisions of the Landscape Conservation Zone. Subdivision of lots with areas of 20ha within 1km of the HWM will be possible in the Landscape Conservation Zone. The subdivision prohibition would also no longer apply to Rural Zone and Agriculture Zone as applied to the coastal zone.

Additionally the scope of use classes, prohibited in the Environment Living Zone under the Interim Scheme will now be expanded to include, but not limited to, *Resource Development, Sports and Recreation, Tourist Operation, General Retail and Hire* (associated with a Tourist Operation), *Food Services, Community Meeting and Entertainment*. These use classes will be discretionary and provide a permit pathway for consideration.

There is increasing evidence that the density and development controls in the coastal zone through the application of the Landscape Conservation Zone, Rural Zone and Low Density Residential Zone are being undermined without introducing additional controls as these zones provide permit pathways for visitor accommodation, multiple dwellings and subdivision. Additionally, the Low Density Residential Zone applied to settlements in the coastal zone will allow a minimum lot size that will result in the intensification of development that is not sustainable. NEBN submits that the outcomes of the implementation of the Draft LPS, as publicly exhibited, is contrary to the LPS criteria at *section 34 of the Land Use Planning and Approvals Act 1993. (See **Appendix 1** after this letter for examples of multiple units/dwellings/strata undermining density controls in the current Environmental Living Zone.)*

Coastal Zone and Draft LPS

The Break O'Day municipality has a coastline that extends from Cod Bay to the Denison Rivulet Conservation Area, stretching a linear length (including the outer islands) of more than 100 km and includes the 'coastal zone' (refer to Figure 1) as defined in the State Coastal Policy.

The coastal zone in the State Coastal Policy means

> *Under the State Coastal Policy Validation Act 2003, a reference in the State Coastal Policy 1996 to the coastal zone is to be taken as a reference to State waters and to all land to a distance of one kilometre inland from the high-water mark. The Act states that "State waters" has the same meaning as in the Living Marine Resources Management Act 1995.*

The coastal zone incorporates the sensitive natural aquatic environment and contains significant biodiversity values that must be carefully considered in future use and development. The coastal zone protection also becomes more urgent, with the ramifications of climate change yet to be fully realised. The Draft LPS plays a critical role in shaping land use patterns, and the controls are necessary to protect the natural coastal environment as substantiated by the submitted reports to this representation, including:

- *North East Bioregional Network Land Use Plan (refer to Attachment D);*
- *Protection of coastal natural values in the Break O' Day municipality (Attachment E)*
- *Review of residential development on the ecological health of receiving waters (refer to Attachment F)*

- *Threats of residential development to aquatic values in the Break O'Day Municipality (refer to Attachment G).*
- *Shorebird (Attachment J) and Saltmarsh (Attachment K) reports*

Several of the SPPs zones and the proposed three (3) particular purpose zones are applied to the coastal zone. The Draft LPS also introduces two (2) specific area plans, one of which is to manage the quality and quantity of stormwater associated with use and development.

The main urban centres of the municipality, St Helens and Scamander are captured within the coastal zone and apply a typical zoning regime consistent with urbanised areas comprising a mix of residential, commercial, business and industrial activities.

The land areas outside of the settlements in the draft LPS spatially applies a mix of the Environmental Management Zone, Landscape Conservation Zone, Rural Zone, Agriculture Zone and Utilities Zone. The coastal settlements of Binalong Bay, Beaumaris and Falmouth are in the Low Density Residential Zone, with the Landscape Conservation Zone, the Environmental Management Zone or Rural Zone spatially applied to land immediately around the built-up area of the settlements. The land areas beyond the settlements are zoned a mix of Rural, Environmental Management, Landscape Conservation, Agriculture and Utilities.

The NEBN submits that the spatial application of the SPPs zones in combination with the particular purpose zones and the specific area plans does not provide the same level of protection currently afforded by the provisions of the Interim Scheme. While it is recognised that economic growth and development is vital for the community's prosperity, a balance must be struck to ensure that the natural environment is equally protected and enables the principle of 'sustainable development' to be implemented in planning controls. The implementation of these controls is vital for the municipality to continue to prosper as implied by the *Break O'Day Council Strategic Plan 2017-2027*.

The current restriction on subdivision controls has safeguarded the coastal zone from the fragmentation of landholdings and the intensification of use and development, which is in accordance with the outcomes of the State Coastal Policy. Additionally these planning controls are consistent with the *Northern Tasmania Regional Land Use Strategy* (NTRLUS) and the objectives of the Planning and Management System of Tasmania as set out in Schedule 1 of the *Land Use Planning and Approvals Act 1993* (the Act).

The current provisions applying to the coastal zone in the Interim Scheme will be lost through the Tasmanian Planning Scheme and the Draft LPS and if not modified will:

- *provide inadequate subdivision controls in the coastal zone;*
- *facilitate inappropriate intensification of use and development, resulting in increased surface water flows into the natural aquatic environment of the coast; and*
- *impact on biodiversity generally.*

The submission requests that the Draft LPS be substantially modified to meet the LPS criteria set out in section 34 of the Act by:

- introducing a Specific Area Plan to the coastal zone to impose subdivision controls and restrictions on intensification of development; and

- modify the BRE-S2.0 – Stormwater Management Specific Area Plan to limit the area of a site covered by impervious surfaces and avoid and minimise negative ecological impacts arising from stormwater.

State Coastal Policy and Subdivision Controls in the Interim Scheme

Planning authorities and the Tasmanian Planning Commission must create planning schemes that are consistent with Tasmanian State Policies: sections 13 and 13C of the *State Policies and Projects Act 1993*, and 15(2)(c) and 34(2)(d) of the Act.

The Tasmanian State Coastal Policy 1996 (State Coastal Policy) has the following key guiding principles:

1. Natural and cultural values of the coast shall be protected.
2. The coast shall be used and developed in a sustainable manner.
3. Integrated management and protection of the coastal zone is a shared responsibility.

These principles are to guide the outcomes listed elsewhere in the State Coastal Policy. In relation to urban and residential development, the State Coast Policy directs that the following outcomes be achieved:

> 2.4.1. Care will be taken to minimise, or where possible totally avoid, any impact on environmentally sensitive areas from the expansion of urban and residential areas, including the provision of infrastructure for urban and residential areas.
>
> 2.4.2. Urban and residential development in the coastal zone will be based on existing towns and townships. Compact and contained planned urban and residential development will be encouraged in order to avoid ribbon development and unrelated cluster developments along the coast.
>
> 2.4.3. Any urban and residential development in the coastal zone, future and existing, will be identified through designation of areas in planning schemes consistent with the objectives, principles and outcomes of this Policy.

These outcomes are presently given effect through Interim Scheme clauses 14.4.3 A4 of the Environmental Living Zone and 26.4.2 A3 of the Rural Resource Zone.

Clause 14.4.3 A4 of the Environmental Living Zone relevantly provides, *"All new lots must be located a minimum of 1km from High Water Mark".* There are no associated performance criteria for this clause. Clause 26.4.2 A3 of the Rural Resource Zone relevantly provides, *"All new lots must be located a minimum of 1km from High Water Mark, except for those lots that are required for the crown, public authority or a municipality*." There are no associated performance criteria for this clause.

The RPDC decision to introduce these controls acknowledged the threat that urban sprawl and coastal ribbon development posed to the Break O'Day coastline as highlighted earlier in the representation.

NEBN considers the provisions in the Interim Scheme have been vital to ensuring that urban and residential development within the Break O'Day municipality has been limited to existing settlements, towns and townships (consistent with outcome 2.4.2 of the State Coastal Policy) and that the impacts of such developments on environmentally sensitive areas have been avoided or minimised (consistent with outcome 2.4.1 of the State Coastal Policy).

These provisions are also not included in the transitional arrangement declared by the Minister for Planning under Schedule 6 of the Act.

Given the effectiveness of the Interim Scheme provisions at achieving the outcomes of the State Coastal Policy, NEBN is highly concerned that similar protections for the coastal zone are not reflected in the State Planning Provisions (SPPs), or in the Draft LPS.

Northern Tasmania Regional Land Use Strategy

Planning authorities and the Tasmanian Planning Commission must create planning schemes that, as far as practicable, are consistent with regional land use strategies as per 34(2)(e) of the Act.

The Northern Tasmania Regional Land Use Strategy (NTRLUS) is applicable to the municipal area and was declared on 23rd of June 2021 by the Minister for Planning. The revised version of the NTRLUS was amended to include an addendum applying to the preparation of the local provisions schedule where this was submitted to the Tasmanian Planning Commission prior to the Strategy coming into effect.

A2 of this statement states that the provisions contained in Sections D and E2.4 are replaced by the provisions in Part G.

In Part G, the principles for planning for *Natural Environment Areas* should seek to:

- Protect, manage and enhance the region's biodiversity values;
- Protect, manage and enhance regional landscape values that advance the region's liveability, health, lifestyle and economy;
- Protect significant biodiversity values, improve ecological connectivity, and promote improved habitat condition and rehabilitation within biodiversity networks;
- Optimise biodiversity conservation outcomes by locating environmental (and carbon) offsets within identified biodiversity
- networks and other suitable areas, giving priority to the protection or rehabilitation of significant biodiversity values;
- Plan, design, and manage development, infrastructure and activities to protect, manage and advance regional landscape values; and
- Prioritise where, when and how investment can be most effectively targeted to restore and maintain landscape values.

The NTRLUS seeks to enhance the regional landscape values and recognises that this is essential for the community's wellbeing. The principles should also seek to protect the biodiversity values and that development must have regard to manage the impacts of the sensitive coastal environment and protecting native habitat and vegetation cover.

Part E7.0 concerning the Regional Environment Policy is not excluded from consideration in preparing the Draft LPS. The policy and actions of Section E7.2 reaffirm that that use and development controls in the Draft LPS concerning the coastal zone should seek to implement the following:

- CW-PO1
  Protect and improve the ecological integrity of coastal environments.
- CW-A01
  Include appropriate provisions in planning schemes to minimise the clearance of coastal vegetation, particularly in soft sediment coastal environments which will have increased vulnerability to sea level rise, coastal erosion and recession and storm surge events.
- CW-A02
  Manage the expansion and limit further linear expansion within the coastal zone where it is not within the existing settlement pattern.

- CW-PO5
  Protect and manage the ecological health and environmental values of surface and groundwater.
- CW-A04
  Apply planning scheme provisions on land adjoining the coast to: „ Restrict development to minimise long-term risk to life and property and its impact on the coastal process; and „ Require appropriate assessment of the impact of engineering works on coastal processes and to ensure best practice.

The Draft LPS does not uphold these policies and actions of the NTRLUS as referred to above.

Landscape Conservation Zone

It is proposed that land currently within the Environmental Living Zone in the Interim Scheme will now be zoned Landscape Conservation under the SPPs, while the land currently within the Rural Resource Zone of the Interim Scheme will be zoned Rural or Agriculture. However, unlike in the Interim Scheme, the Landscape Conservation, Rural and Agriculture zones of the SPPs provide no express requirement that land within one kilometre (**1km**) of the high-water mark not be subdivided.

In the Table of Changes for the Environmental Living Zone to Landscape Conservation Zone, Break O'Day Council (**Council**) summarised the changes to the subdivision requirements for land currently zoned Environmental Living Zone as it is transitioned to the Landscape Conservation Zone under the SPPs as follows:

> Environmental Living Zone
>
> - Minimum of 40ha to be able to subdivide into 20ha minimum lots
> - Minimum frontage = 4m
> - All new lots must be located 1km from high water mark.
>
> Landscape Conservation Zone
>
> - Minimum 100Ha to be able to subdivide into 50ha minimum lots
> - Minimum frontage = 40m

REMOVED: All new lots must be located a minimum of 1km from the high water mark. The Landscape Conservation Zone subdivision requirements give effect to this limitation.

Council's justification for the removal of the prohibition of subdivisions within the coastal zone on land currently zoned Environmental Living or Rural Resource appears to be that such regulation is unnecessary given other protections within the SPPs. For example, in the Break O'Day Council Draft LPS 2020 Supporting Report (**Draft LPS Report**) Council states (at 3.1.15, p 68):

> Another notable difference is the removal of the subdivision standard within the [Environmental Living Zone] which prohibited new lots within 1km from the HWM. This particular provision is unique to Break O'Day and has not been included in the Tasmania Planning Scheme. The Landscape Conservation Zone subdivision standards along with other code requirements is (sic) considered to adequately protect coastal areas from unsuitable subdivision.

The Draft LPS Report provides no information as to how the new standards and requirements in the relevant zones of the SPPs will protect coastal areas from unsuitable subdivision for the purposes of urban or residential development to the equivalent standard as provided by the Interim Scheme.

There is no evidence to support Council's assertion in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone that subdivision requirements will give effect to the existing limitation currently expressed in cl 14.4.3 A4 of the Interim Scheme. This would require an equivalent provision effectively prohibiting subdivision in the coastal area up to 1km from the high-water mark. Such a provision which is not included in the SPPs. Furthermore, the statement by Break O'Day Council in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone that minimum lot sizes in the Landscape Conservation Zone will be 50ha is misleading. Under clause 22.5.1 P1 of the SPPs, lots of 20ha can be created if they meet performance criteria. Contrary to the statement by the Council in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone, there is no requirement that the original blocks in the Landscape Conservation Zone be a minimum size of 100ha before subdivision.

The Landscape Conservation Zone subdivision standards make no reference to the coastal zone, and the Council has not demonstrated how the changed zoning provides sufficient protection for coastal areas from unsuitable subdivisions for the purposes of residential or urban development. Several lots with lot areas of more than 40ha offer a permit pathway for subdivision and potentially open opportunity for the fragmentation of landholdings and new development and is contrary to the State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

Meanwhile, the Draft LPS Report and Table of Changes for Rural Resource Zone to Rural Zone or Agriculture Zone make no mention of the removal of the prohibition on subdivisions within 1km of the high-water mark for land currently zoned Rural Resource. There is also no indication in these documents how the protections for the coastal zone would be maintained within the new zones.

There is no minimum lot size prescribed for the Rural Zone, while in the Agriculture Zone the minimum lot size is 1ha, but even then, that restriction only applies in limited circumstances (see clause 21.5.1 P1(b)(ii) of the SPPs). None of the provisions in either the Rural or Agriculture Zones are explicitly aimed at achieving State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

The Rural or Agriculture Zones do contain some restrictions on new residential development, but these tend to rely on the entry of a Part 5 agreements (under section 71 of the LUPA Act) "preventing future Residential use if there is no dwelling on the balance lot" (see clauses 20.5.1 P1(b)(ii) and 21.5.1 P1(c)(ii) of the SPPs). While it is encouraging to see that these Part 5 agreements are recognised in the SPPs as qualifications in the Table of Use for the Rural and Agriculture zones, there is nothing to prevent the Council from simply varying or revoking a Part 5 agreement after a permit for a subdivision has been granted, provided that is done with the consent of the landowner (see section 74(3) of the LUPA Act). This loophole creates a real and significant risk of Rural and Agriculture zoned land being subdivided for residential purposes.

While areas within the Landscape Conservation, Rural or Agriculture zones may be subject to the Natural Assets Code, in NEBN's submission the provisions of this Code are insufficient to achieve the outcomes identified in the State Coastal Policy at 2.4.1-2.4.3 or the NTRLUS policies of CW-P01 and CW-PO5. For example:

- While land may fall within "waterways and coastal protection areas" of the Natural Assets Code, this only refers to an area of 40 metres from the high-water mark of tidal areas (see clause C7.3.1 and Table 3.1 of SPPs), and even then, there is no prohibition on subdivision or residential developments (see clauses C7.6.1 and C7.7.1 of the SPPs). Waterways and coastal

protection areas represent a far smaller area than the 1km from the high-water mark envisaged by the coastal zone of the State Coastal Policy.

- Land within the Landscape Conservation, Rural or Agriculture zones may also be captured by the "future coastal refugia" areas, however again, the extent of these areas are extremely limited, and there is still no prohibition of subdivision or residential development in these areas (see clauses C7.6.1 and C7.7.1 of the SPPs).
- While some land within the Landscape Conservation Zone, Rural or Agriculture zones may fall within the Natural Assets Code due to it being mapped as a "priority vegetation area", the Code does not expressly prohibit its clearance for the purposes of subdivision or residential dwellings (see clauses C7.6.2 and C7.7.2 of the SPPs), and the clearance of vegetation in priority vegetation areas is exempt from the Code where it is located on existing crop or production land irrespective of the proposed purpose of the clearing (see clause C7.4.1(c) of the SPPs), or it is within the Agriculture Zone (see clause C7.2.1(c) of the SPPs).
- The subdivision standards of the Coastal Inundation Code or the Coastal Erosion Code only apply in the areas subject to the coastal inundation or the coastal erosion hazard bands. The planning scheme overlay maps only apply to a fraction of the coastal zone as the bands do not exceed 100m. The subdivision standards of either code will not apply outside of the hazard band.

The Draft LPS Report responds to the State Coastal Policy outcomes 2.4.1- 2.4.3 by stating simply (at p 17) that no residential zones have been expanded or created in the Draft LPS, and that (at p 21) the draft LPS is "on balance" consistent with the Policy. As outlined above, the proposal to rezone land within the Environmental Living and Rural Resource zones of the Interim Scheme to Landscape Conservation Zone, Rural and/or Agriculture is wholly inadequate to protect the coastal zone from ribbon development outside of towns and townships and avoid or minimise adverse impacts of such developments on the sensitive environment of the coastal zone.

General Residential Zone, Low Density Residential Zone, Particular Purpose Zone – Coastal Settlement

Within 1km of the mean high water mark, the following urban residential zones are spatially applied in the coastal zone:

- General Residential;
- Low Density Residential; and
- BRE-P3.0 Particular Purpose Zone – Coastal Settlement.

The spatial application of the General Residential Zone to the main service centres of St Helens and Scamander is generally not contested apart from a few ecologically and or scenically sensitive titles identified in Attachment A and Attachment C. The main service centres should be the focus for future growth in the municipality.

The concerns of the NEBN lies mostly with spatial application of the Low Density Residential Zone as applied to the established residential areas of the small coastal settlements of Binalong Bay, Beaumaris, Falmouth and Stieglitz.

The increasing numbers of residents and tourists respectively living in or visiting Tasmania means that development pressure is rising on land within the coastal zone. In this context there are a number of reasons why the Draft LPS must urgently integrate stricter controls for residential and non-residential

development as well as subdivision especially as it applies within 1km of the HWM. The NEBN contends that the provisions in the Low Density Residential Zone must impose stricter controls in the municipality if it is to maintain the settlement character, provide for residential amenity and protect the environmental assets such as coastal bushland and beaches, waterways and wetlands.

Furthermore, Draft LPS Report notes (pg 84) the deficiencies in the Low Density Residential Zone as the Zone does not satisfactorily control "*further development and densification*" while stormwater problems are also identified in a number of settlements (pg 88-90).

The Draft LPS Report also recognises the need to manage small lots in the coastal zone and has proposed a Particular Purpose Zone – Coastal Settlement. The spatial extent of this Zone, however, is only applied to small land areas in the coastal zone and does not manage the sensitive environmental issues that are equally applicable in the Low Density Residential Zone.

The Low Density Residential Zone imposes a site area for multiple dwellings limiting the number of dwellings that can be constructed on a single lot. Most of the coastal settlements in the municipality are outside the TasWater sewer serviced area and therefore must provide a minimum site area per dwelling of 2500m^2 to comply with clause 10.4.1, A1. Or if an application satisfies clause 10.4.1, P1, then the dwelling site area can be reduced to 2000m^2.

Consequently, roofed buildings can occupy an area of 750m^2 (30% site coverage rule applied to a site area of approximately 2500m^2) if clause 10.4.1, A1 is achieved. Additionally, there are no restrictions imposed to limit impervious surfaces on the site as the term 'site coverage' excludes this consideration (refer to clause 10.4.4). The Car Parking and Sustainable Transport Code also requires internal driveway and manoeuvring areas associated with a Residential Use in the Low Density Residential Zone to be sealed to comply with clause C2.6.1 A1. The BRE-S2.0- Stormwater Management Specific Area Plan also does not offer additional controls to impose to limit on the area of impervious surfaces that may be created as part of a development.

There is also a conflict between the standard for residential density for multiple dwellings (see clause 10.4.1) and the subdivision controls (see clause 10.6.1 – Lot Design). The subdivision standards provide a pathway for the creation minimum lot areas of 1500m^2 or 1200m^2 if clause 10.6.1 P1 is relied upon. The multiple dwelling density is immediately undermined as the subdivision standards allow the creation of smaller lots, leading to intensification of development which is again contrary to the Coastal Policy and NTRLUS.

The Low Density Residential Zone also opens the opportunity for the use class Visitor Accommodation. The use class Visitor Accommodation is not subject to the same use and development standards as the use class Residential (refer to clause 10.3.2 and 10.5.1). Other than site coverage, the Low Density Residential Zone provides no density controls for Visitor Accommodation. If a proposal cannot comply with the clause 10.5.1, A4, it relies on the P4 of the same clause. Reliance on P4 means that the site coverage can exceed 30%.

The effect of this control means that there building densities for Visitor Accommodation could be much higher than that for multiple dwelling development in the Low Density Residential Zone. Increased densities in the coastal zone can have significant detrimental impacts on the coastal environment if stormwater and waste water is increased impacting on the natural aquatic environment.

Therefore, the NEBN calls for stronger development controls for non-residential development and subdivision in the Low Density Residential Zone to mitigate and manage the risk, as required by the outcomes of the State Coastal Policy and NTRLUS.

Landscape Conservation Zone – Visitor Accommodation

The Landscape Conservation Zone can consider use and development for new buildings for Visitor Accommodation (refer to clause 22.3.2). The use class Visitor Accommodation, if approved, can provide a pathway for strata development under the *Strata Titles Act 1998*. While the site coverage (refer to clause 22.4.1) limits development, P1 is not explicit, potentially resulting in a site coverage of more than 400m^2 with no set parameters. While Residential Use in the zone is limited to single dwellings, the Use Class Visitor Accommodation may result in a built form typically found in an urban setting.

The NEBN is concern raised is demonstrated through the use and development outcomes achieved by the implementation of *Planning Directive No.6 – Exemption and Standards for Visitor Accommodation in Planning Schemes (PD6) in the* Interim Scheme.

PD6 illustrates that the provisions are inadequate and have given rise to inappropriate coastal development, providing an avenue for multiple buildings to be constructed on a site for visitor accommodation. The resulting land use pattern is equivalent to a multiple dwelling development typically found in the General Residential Zone or Low Density Residential Zone. Examples of the effects of PD6 is contained in Appendix 1.

The acceptance of the Landscape Conservation Zone without modification in this instance is contrary to the State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

NEBN recommends that clause 22.3.2 is substituted as it applies to the coastal zone is limited to the use being restricted to a single building for Visitor Accommodation.

Proposal for inclusion of coastal zone Specific Area Plan in draft LPS

In response to this significant gap in the protection offered to the coastal zone under the SPPs and the Draft LPS, NEBN proposes a Specific Area Plan - Coastal Zone (Coastal Zone SAP) be included in the Draft LPS. Put simply, the Coastal Zone SAP seeks to continue the operation of the restrictions that currently exist for the subdivision of land within the Environmental Living or Rural Resource zones as it is transitioned to new zones within the Tasmanian Planning Scheme, namely the Landscape Conservation, Agriculture and Rural zones. Additionally, the Coastal Zone SAP would strengthen the controls to minimise the effects of new development in the coastal zone as it applies to the to the Low Density Residential Zone, the Landscape Conservation Zone, Rural Zone and Agriculture Zone. The proposed Coastal Zone SAP meets the LPS criteria outlined under *section 34 of the LUPA Act* and is a targeted and proportionate response to the problems posed by coastal ribbon development within 1km inland of the HMW.

Coastal Zone SAP

The NEBN requests Coastal Zone SAP spatially apply to the defined coastal zone, 1km inland of the HWM, and that these provisions apply in either addition or substitution to relevant clauses of:

- Low Density Residential Zone;
- Landscape Conservation Zone;
- Rural Zone; and
- Agriculture Zone.

The purpose of the Coastal Zone SAP would be as follows:

- To provide for compatible use and development that is of a scale and intensity that protects and minimises the impact on the coastal environment.
- To maintain the coastal landscape values between settlements.

It is recommended (but not limited to) that the written document introduce the Coastal Zone SAP with the intent to:

- substitute clause 10.3.2 to restrict the use class 'Visitor Accommodation' in the Low Density Residential Zone to limit the number of buildings for this purpose on a site;
- substitute clause 10.4.4, A1 and 10.5.1, A4, imposing a 400m^2 site coverage at the Acceptable Solutions instead of a 30% rule with No Performance Criteria;
- substitute clause 10.6.1 Lot Design to require a minimum lot area of 2500m^2 instead of 1500m^2 and re-draft P1 Performance Criteria that provides for no smaller lots than 2000m^2;
- substitute clauses 20.5.1, 21.5.1 and 22.5.1, prohibiting subdivision 1km of MHW, unless for minor boundary adjustments, consolidation of lots within the same zone or for public use by the Crown, a council or a State authority.
- substitute clause 22.3.2 to limit Visitor Accommodation to a single building; and

Coastal Zone SAP consistent with LPS criteria

Consistent with section 32 of the LUPA Act

The SAP is in accordance with section 32 of the LUPA Act. Section 32(3)(b) of the LUPA Act provides that an LPS may, if permitted to do so by the SPPs, include an SAP. The SPPs (at cl. 5.3) expressly allows for the inclusion of SAPs, such as the Coastal Zone SAP, in an LPS.

The proposed Coastal Zone SAP is appropriate for inclusion in the LPS pursuant to section 32(4) of the LUPA Act as the coastal zone has "particular environmental, economic, social or spatial qualities that require provisions, that are unique to the area of land, to apply to the land in substitution for, or in addition to, or modification of, the provisions of the SPPs". The State Coastal Policy makes clear that the coastal zone is an area of significant environmental benefit and particular spatial qualities that requires particular treatment in planning schemes (see for example, outcome 2.4.3). In NEBN's submission, there is no provision within the SPPs that provides as clear a response to the principles and outcomes of the State Coastal Policy and the NTRLUS.

Furthers LUPA Act objectives

The Coastal Zone SAP furthers the objectives set out in schedule 1 of the LUPA Act as it promotes the sustainable development of natural and physical resources through subdivisions and residential development being located within appropriate zones and preventing ribbon development. The SAP will also assist maintaining the significant ecological processes and genetic diversity located within the coastal zone, by discouraging inappropriate subdivision or development.

Consistent with State Policies

As already outlined, the Coastal Zone SAP is consistent with State Coastal Policy and in particular outcomes 2.4.1 -2.4.3. As we have already outlined, the Coastal Zone SAP is consistent with State Coastal Policy and in particular outcomes 2.4.1 -2.4.3 and it is also aligned with the State Policy on the Protection of Agriculture land 2009 or the State Policy on Water Quality Management 1997.

Consistent with the Regional Land Use Strategy

The Coastal Zone SAP is, as far as practicable, consistent with the Northern Tasmania Regional Land Use Strategy

Consistent with the Northern Tasmania Regional Land Use Strategy

The Coastal Zone SAP is, as far as practicable, consistent with the Northern Tasmania Regional Land Use Strategy as it will carefully balance the outcomes in Part G with Part E7.0.

Has regard to Strategic Plan

The proposed SAP has regard to the Break O'Day Council Strategic Plan 2017 -2027 goal for the environment of ensuring the natural environmental is available for future generations to enjoy as we do. This is because the SAP puts in place necessary regulation to enable "appropriate use and address inappropriate actions" (see Strategic Plan at p 11). The SAP encourages sensible and sustainable development of residential and urban areas within the appropriate zones, and not with the Landscape Conservation, Rural and Agriculture zones (see Strategic Plan at p 11). The SAP is also consistent with the Break O'Day Environment and Natural Resource Management Action Plan 2018-2023 (**Action Plan**) which lays down the detailed framework for the realisation of the Strategic Plan. One of the aims of the Action Plan is (at 1.3.1):

> Native habitat health and integrity is maintained and the threat of extinction for species and communities is reduced.

This is to be achieved through the action:

> Ensure habitat connectivity and integrity in Biodiversity Code and trigger (map); land use zoning strategy maintains habitat connectivity (**e.g. avoids fragmentation by coastal 'ribbon development'**)

The SAP provides a clear mechanism for implementing this action by way of preventing subdivision and the intensification of buildings and developments along the coast.

Consistent with and co-ordinated with any adjacent LPSs

The Coastal Zone SAP will be consistent and coordinated with neighbouring the LPSs for adjacent municipalities and will not give rise to inconsistent development outcomes.

2. Spatial application of the Landscape Conservation Zone instead of the Rural Zone at St Marys and Elephant Pass

   The NEBN seeks to increase the spatial extent of the Landscape Conservation Zone instead of the Rural Zone to the north, south and east of St Marys due to the landscape values identified and the contiguous native vegetation cover. Please refer to Attachment A for the justification with respect to the change sought. The justification is further supported by Attachments D,L,M and N and all provide context in terms of the importance of maintaining ecological processes and genetic diversity through cross tenure landscape scale conservation planning. Attachments H and I indicate important scenic values in the St Marys area.

   NEBN also believes more assessment of properties inland from St Helens such as in the Goshen, Goulds Country, and Weldborough areas should be undertaken to ensure titles with important conservation and landscape connectivity values are not zoned Rural but Landscape Conservation.

3. Proposed Zones for identified properties

The NEBN submits that some of the proposed properties identified in Attachment A are not in accordance with '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*' and an alternative zone should be considered. Please note that in some instances, the NEBN has also supported the zoning, Attachment A.

The NEBN submits that some of the proposed properties identified in Attachment C are not in accordance with the '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*' and an alternative zone and or additional development controls should be considered. In addition, in Attachment C of this representation it is NEBN's contention that all titles with a conservation covenant should be zoned Landscape Conservation Zone to be consistent with '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*'.

5. BRE-P3.0 Particular Purpose Zone – St Helens Coastal Maritime

The NEBN requests that the spatial extent of the BRE-P3.0 PPZ be revised for the reasons identified in Attachment B.

6. Delete BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area

The NEBN requests that the BRE-S1.0 SAP is deleted for the reasons identified in Attachment B.

7. Delete BRE-S2.0 – Stormwater Management Area Plan

The NEBN requests that the BRE-S2.0 SAP is modified to improve the assessment tools provided to reduce the overall quantity and improve the quality of urban stormwater flows to waterbodies as part of a comprehensive stormwater management program that is premised on the identification of important aquatic ecosystem values and the need to avoid or minimise any potential ecological impacts including limiting impervious surfaces on a site as outlined in Attachment B.

8. Scenic Protection Area

The NEBN requests that scenic protection areas in the code overlay maps in addition to the scenic road corridor concerning the Scenic Protection Code is included as per the justification in Attachments H and I.

9. Priority Vegetation Area

The NEBN requests the priority vegetation area shown in the code overlay maps is amended as per the justification in Attachment L.

10. Future Potential Production Forest

The NEBN requests the Environmental Management Zone is applied to the land areas shown as Future Potential Production Forest as per the specific information regarding ecological values provided in Attachments M and N and the broader landscape scale analysis provided in Attachments D and L.

11. Significant Trees

The NEBN requests that the Table C6.5 includes the list of significant trees contained within Attachment B.

12. Environmental Weeds

The NEBN requests that the additional weed species identified Attachment B are included in BRE-P1.8.1.

Conclusion

The NEBN has provided clear evidence, through the submitted reports and representation, demonstrating that the current restrictions on subdivision within the Environmental Living and Rural Resource zones of the Break O'Day Interim Planning Scheme have been effective in the protection of the unique and sensitive environment of the coastal zone.

While Council correctly notes that the current prohibition of subdivision in the Environmental Living and Rural Resource zones are "unique" provisions, this of itself is no justification for the Council not to carry over the provisions to the draft LPS, particularly when the SPPs provide inadequate protection for the coastal zone.

NEBN's proposed Coastal Zone SAP will ensure that the Council continues to properly discharge its obligation to achieve the outcomes under the State Coastal Policy, and its Strategic Plan and Action Plan. But more importantly, including the Coastal Zone SAP in the draft LPS will ensure that future generations will be able to enjoy the coasts of the Break O'Day municipality as we do – unspoilt by ribbon development.

Furthermore, the array of other zoning and code matters raised in this representation must also be carefully considered to ensure that the use and development controls meet the LPS criteria at section 34 of the Act.

Yours sincerely Todd Dudley President North East Bioregional Network

Postal address: 24751 Tasman Highway RSD St Marys 7215 Email: telopea_tas@yahoo.com.au

APPENDIX A

Examples of strata development in the Environmental Living Zone.

(a) 24798 Tasman Highway St Helens DA 027-2017 and DA 186-2020

Figure 1: Example of an existing strata development north of Dianas Basin

Figure 2: Location of the strata development as shown in Figure 1.

Expression of Interest

24798 Tasman Highway St Helens TAS 7216

Vacant land

Property Description

PRIVATE RETREATS...

What a prime opportunity!
Two parcels of land of this size so close to town is very rare!
Consisting of Lot 2. 11.67 ha (28 acres) approx. and Lot 6. 8.967 ha (22 acres) approx. The gently sloping land of both lots has a backdrop of natural bushland with established shade trees, views to the ocean and beyond!
Both lots having an approved building envelope with power available.
Smart use of either or both of these properties could create your private country life style retreat/accommodation opportunity. (STCA) Less than ten minutes' drive from St Helens town centre on Tasmania's Sunny East Coast.

Anyone seeking privacy and seclusion however still close to all facilities. This is for you!
St Helens is the largest town on the sunny Tasmanian East Coast. Complimented with a new hospital, district high school and thriving business CBD including, supermarkets, major bottle shop, many dining and retail options and accommodating the strong mountain bike

network. All only being 2 hours from Launceston and 3 ½ hours from Hobart, coupled with a vibrant and friendly local community has to make it the perfect spot to reside.

Disclaimer: View Real Estate has no reason to doubt the accuracy of the information in this document which has been sourced from means which are considered reliable, however, we cannot guarantee accuracy. Prospective purchasers are advised to carry out their own investigations.

Figure 3: Real Estate advertisement concerning the existing strata development

(b) 46 Franks Street Falmouth DA 043-2019 "Saltwater"

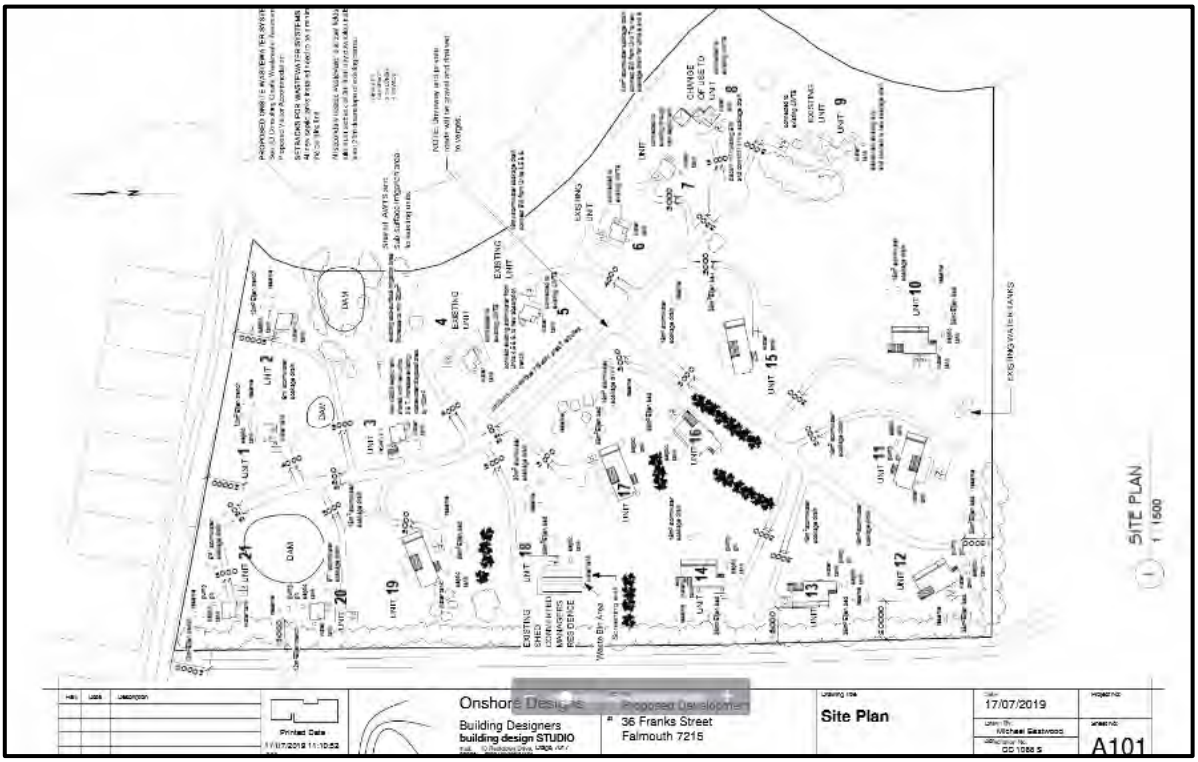


Figure 4: Strata development example at Falmouth

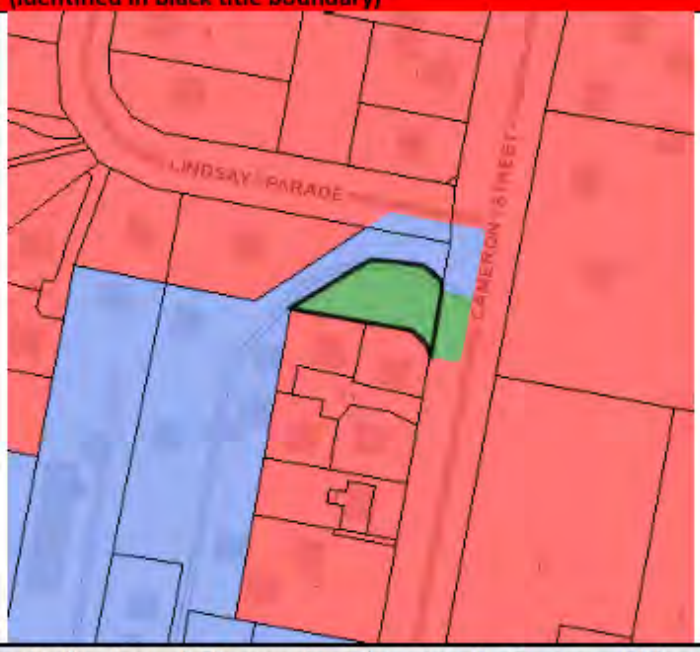
Figure 5: Real Estate advertisement in the shop front window concerning the existing strata development at Falmouth

Figure 6: Aerial view of the strata title development at Falmouth

Response to Break O Day Council Draft LPS 2020

Supporting Report (Attachment A)

Proposed rezonings

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT30649/2	OSZ	GRZ	
Justification	Council has identified the site for disposal. The rezoning is based on the Strategy which states - *Disposal of a number of local parks and utilise funds to upgrade facilities in other parks including the parks located:...at corner of Lindsay Pde and Cameron St as this land provides access to adjacent commercial area has limited level of useability for open space purposes and is in the vicinity of other more useable foreshore and local parks in St Helens.* Proposed rezoning to the GRZ is consistent with GRZ 1, GRZ 2 and GRZ 3 and is the most appropriate zone given the surrounding land use pattern.		

Comment: This land should be set aside for treatment of stormwater in the vicinity of the site. A wetland treatment system could be implemented with benefits for water quality and the environment. At a minimum maintaining the current grassed area helps trap sediment and filters pollutants before they enter the stormwater system (at the lowest point on the title) which is only a few hundred metres from Georges Bay. The land would have originally been Melalueca ericifolia swamp forest because it lies in a low lying poorly drained area. Retain as OSZ

St Helens CT30563/27 & CT30563/28	OSZ	GRZ	
Justification	Council has identified the site for disposal. Rezoning based on Strategy which details - *Disposal of a number of local parks and utilise funds to upgrade facilities in other parks including the parks located: …at Cnr Mimosa St and Jason St, St Helens as this land is too steep to be effectively used for open space purposes.* The proposed rezoning to the GRZ is consistent with GRZ 1, GRZ 2 and GRZ 3 and is considered the most appropriate zone given the surround land use pattern.		

Comment: The land is not too steep for open space purposes (in fact some of it is relatively flat).The notion that all open space land must be flat to accommodate either play equipment or other amenities such as landscaping , picnic tables etc is outdated. Adventure playgrounds are very well suited to sites that are not perfectly flat and are a more contemporary design solution to providing play opportunities for children. In addition as stated the site is not so steep that it could be used for other passive activities including providing some green space for landscaping for native flora and fauna. Retain as OSZ.

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT141663/9	OSZ	GRZ	
Justification	Council has identified the site for disposal. Rezoning based on Strategy which details - *Disposal of a number of local parks and utilise funds to upgrade facilities in other parks including the parks located: in Falmouth St, St Helens as this land is too steep to be effectively used for open space purposes.* Proposed rezoning to the GRZ is consistent with GRZ 1, GRZ 2 and GRZ 3 and is considered the most appropriate zone given the surround land use pattern.		

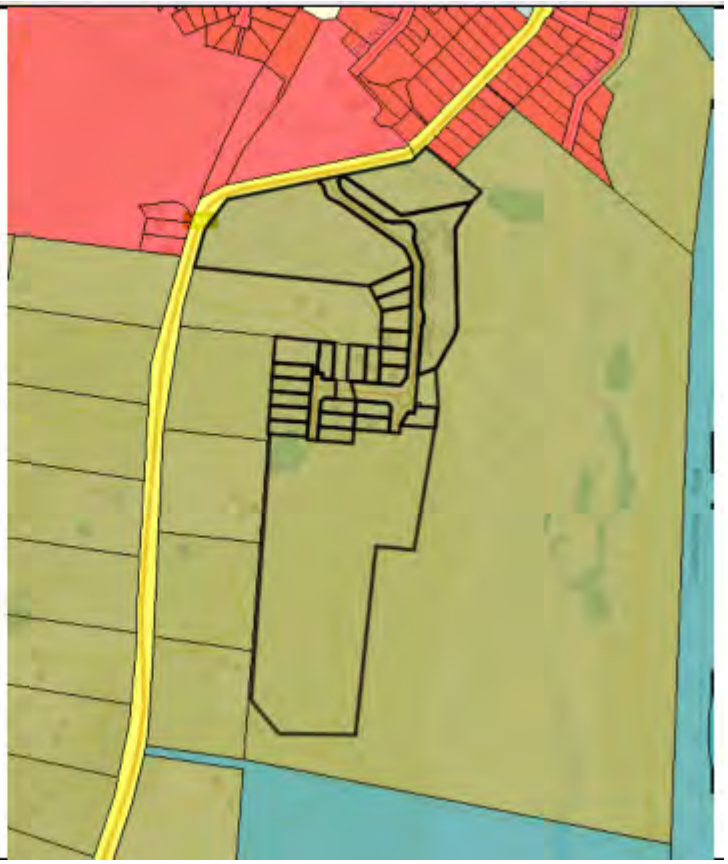
Comment: Contrary to Councils assertion the so called "Open Space Strategy" referred to is nothing more than a fire sale of Council (community) assets. The land in question is most certainly not too steep for use as Public Open Space and in conjunction with Crown Land to the north forms a continuous corridor of public land that could be used to create pathways to connect residents with the foreshore multi use track around Georges Bay. The lengths to which Council will go to sell such land is exemplified by the fact the owners of land that abutts the Public Open Space (Title 2503453) who wish to subdivide offered to contribute resources towards developing a multi user track on the Public Open Space land as a contribution towards improving liveability in the area but this was rejected by the Council (clearly in breach of the Break O Day Strategic Plan). In addition the land is still in relatively natural condition with five species of Eucalypts (sieberi, viminalis, ovata, globulus and amygdalina) and other species such as Allocasuarina littoralis, Gahnia radula (habitat for the threatened Chaostola Skipper butterfly), Acacias (melanoxylon, mearnsii and dealbata), Bursaria spinosa, Cassinia aculeata, Exocarpus cupressiformis, Lomandra longifolia, Lepidosperma most of the grass cover being native species such as Themeda (Kangaroo Grass) Microleana (Weeping Grass), Stipa (Spear Grass). The Eucalyptus ovata (Black Gum) and Eucalyptus globulus (Blue Gum)trees on the land are habitat for the endangered Swift Parrot (noting that the original forest in the drainage line of the block would have been Eucalyptus ovata forest (a State and Federally listed forest type) and this could be restored without a lot of effort. Frogs are regularly heard and a number of Bennetts Wallaby were sighted when looking at the site in the late afternoon.

There are some weeds such as Spanish Heath but they are in manageable quantities.

In addition the land is an important riparian vegetation corridor which reduces sediment and pollutants from stormwater entering Georges Bay…..and being a watercouse is prone to flooding in high rainfall events. The Council has proposed introducing a Stormwater SAP as part of the LPS process in acknowledgement that stormwater management is a problem in most of the Break O Day settlements. Maintaining natural areas which can absorb and filter run off from residential areas is a preferred strategy to further intensification of development especially when this involves rezoning and selling off Public Open Space for high density residential development as permitted in the General Residential Zone.

For all the reasons mentioned above this land should remain in the Open Space Zone. Our group would be happy to develop a Management Plan for the land which protects and restores natural values, maintains its function as a riparian ecosystem mitigating the impacts of stormwater and to work towards a multi purpose link between the Open Space through the Crown Land to the Georges Bay foreshore track. The proposed rezoning is inconsistent with a number of objectives under the Northen RLUS including RSN P7, RSN P14, RSN P17, RAC P8, RAC P5, OSR PO1 and PO2. Zoning as Open Space is consistent with 29.1.1 and 29.1.2 of Guideline no 1 as well as OSZ 1(a)(b)

Note watercourse running through the land

Scamander CT129825/1, CT159724/101, CT176276/920 (partial), CT161875/1, CT159724/17, CT161875/18, CT167461/36, CT170174/35, CT176275/34, CT176275/46, CT176275/45, CT176275/44, CT176275/43, CT172882/42, CT176275/41, CT176275/40, CT169339/39, CT169339/38, CT159724/37, CT159724/15, CT159724/16, CT159725/14, CT159724/13, CT167461/12,	ELZ	GRZ	

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
CT170985/11, CT159724/100			
Justification	The rezoning boundary is based on the approved DA and is further supported in the Strategy. The Strategy details - *On completion of the subdivision of land around Winifred Drive in accordance with the existing development approval, the land should be rezoned to General Residential to reflect its current and future use*. The Strategy identifies the lots within Future Urban Growth / Settlement Boundary. Proposed rezoning to the GRZ is consistent with GRZ 1, GRZ 2 and GRZ 3 and is considered to be the most appropriate zone given the approved subdivision, the removal of the ELZ and that the site is serviced. The balance of the site, to the east along the foreshore, which is within the ELZ is to be rezoned to the EMZ, which is discussed in coming sections of this report.		

Comment: As identified on page 70 of this report this title has significant environmental values and is bounded to the east by Parks and Wildlife land and to the south by the Winifred Curtis Reserve which is recognised for its ecological values. This title has similar values to the Winifred Curtis Reserve. Unfortunately the highly biodiverse heathy woodland and forest present which includes the area recommended for rezoning above was approved for a relatively high density subdivision some years ago now. In light of the vaues of the land it is recommended that restrictions on density need to be placed over this portion of the land to minimise the impacts particularly from urban run off/ stormwater on the balance lot which is recommended in this report to be rezoned to Environment Management Zone. As such retain LCZ zoning and apply NEBN SAP development controls over the land. There has been insufficient consultation with the community regarding Growth Boundaries and such considerations should be decided through independent Tasmanian Planning Commission hearings rather than by Council and private consultant

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Falmouth CT136081/1, CT149067/21, CT149067/22, CT149067/23, CT149067/24, CT149067/25, CT149067/26, CT14906/27, CT149067/28, CT168325/4	ELZ	LDRZ	
Justification	The LDRZ is considered to be the most logical zone given the removal of the ELZ, the lot sizes and the surrounding development pattern. Further, the sites are not serviced and are not identified within the Strategy's Future Urban Growth / Settlement Boundary. The rezoning to the LDRZ is consistent with LDRZ 1, LDRZ 2, LDRZ 3 and LDRZ 4. The rezoning is supported by the Strategy which details - *Land directly south of the Village currently zoned Environmental Living and already subdivided into allotments generally 1500-1800m² should be rezoned to Low Density Residential to reflect the current and future use.*		

Comment: As noted on page 84 of this report the Low Density Residential Zone "would allow for further development and densification of these sites which could result in changing of their intrinsic value". As such LDRZ is not appropriate for Falmouth. Restrictions on subdivision, multiple dwellings and strata need to be put in place to protect the character and amenity of Falmouth and also to ensure stormwater and waste water can be sustainably managed.

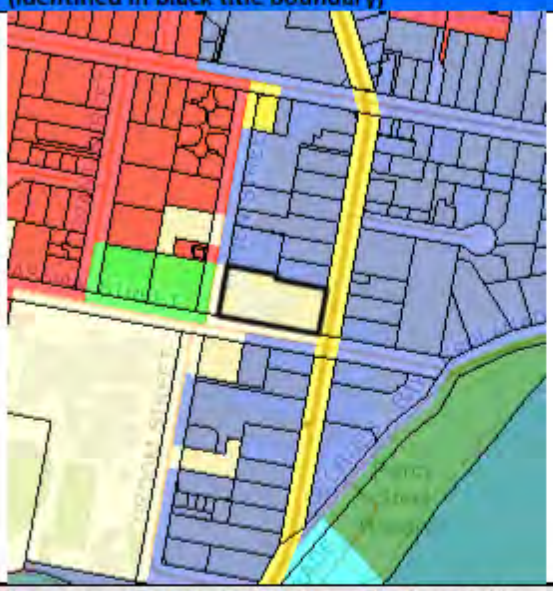
Akaroa CT54668/3, CT65776/4, CT54668/5, CT54668/6, CT32060/3, CT64450/8, CT64450/1, CT64450/2	ELZ	LDRZ	

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Justification	The LDRZ is most practical zone given the removal of the ELZ and the existing and surrounding development pattern. This zoning is consistent with the Guideline and the sites are not serviced, unlike other residential land in Akaroa. The adjoining land within the ELZ all forms part of one title and holds significant natural values. Given the majority of this land is undeveloped, highly vegetated and includes the foreshore, the LCZ is to be applied. This is discussed further in following sections of the report. Rezoning of highlighted sites to the LDRZ is consistent with LDRZ 1, LDRZ 2, LDRZ 3 and LDRZ 4. Further the LCZ is not considered appropriate for the highlighted titles.		

Comment: The land should be ideally Environment Management Zone given its vulnerability to sea level rise (see image below) Landscape Conservation Zone (as per LCZ 3 of Guideline no 1) or failing that be incorporated into the new Coastal Settlement PPZ. The location of these lots is highly scenically and ecologically sensitive being surrounded by the St Helens Point Conservation Area and adjacent ecosystems including threatened ecological communities such as Saltmarsh and Melaleuca ericifolia forest as well as the marine ecosystem of Georges Bay. As acknowledged on page 84 of this report the Low Density Residential Zone is not fit for purpose for controlling development and density in ecologically sensitive areas.

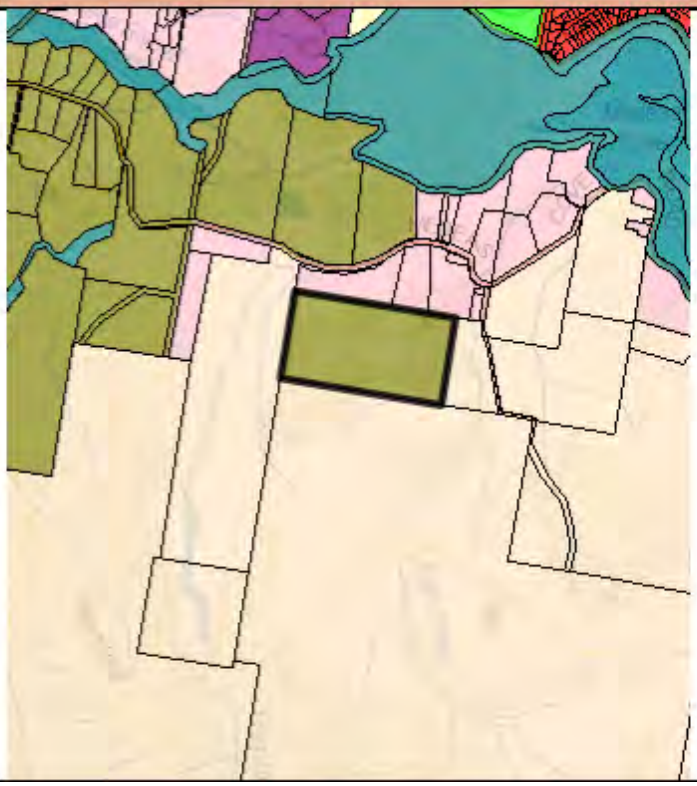
Predicted Sea Level Rise 2100

Predicted Sea Level Rise 2050

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT147446/1	CPZ	GBZ	
Justification	The site identified is the former hospital site in St Helens. The hospital has since been relocated and as such it is appropriate for the site to be rezoned from the CPZ to the GBZ. This rezoning will allow for continuation of GBZ along Cecilia Street, allow for future use and development of the site, and a consolidation of business activity to the central area of St Helens. The rezoning is in accordance with GBZ 1 and GBZ 2. CPZ not considered to be appropriate for site.		

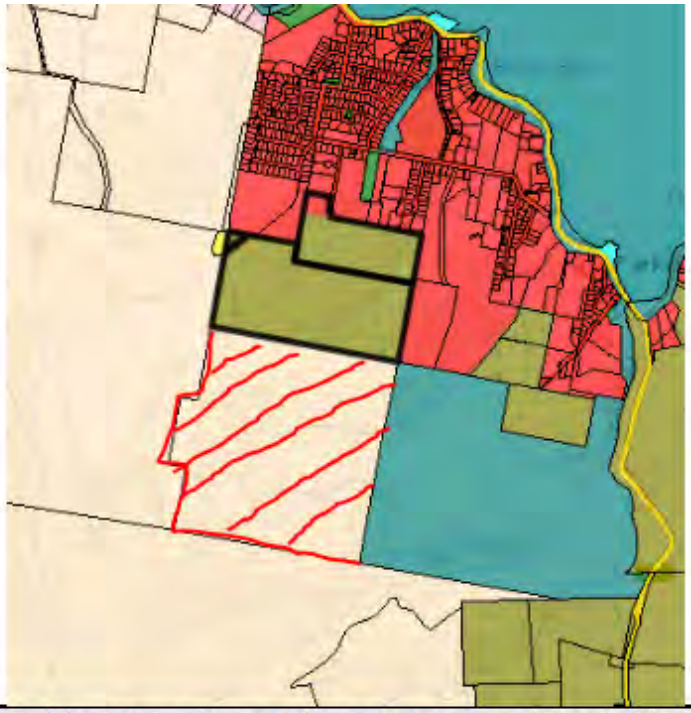
Comment: The built section of the land coud be zoned GBZ but the grassed and landscaped area fronting Cecilia st should be zoned Open Space to create some valuable protected Green Space in the town centre

See below Blue = GBZ Red = Open Space Zone

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT121458/1	ELZ	RZ	

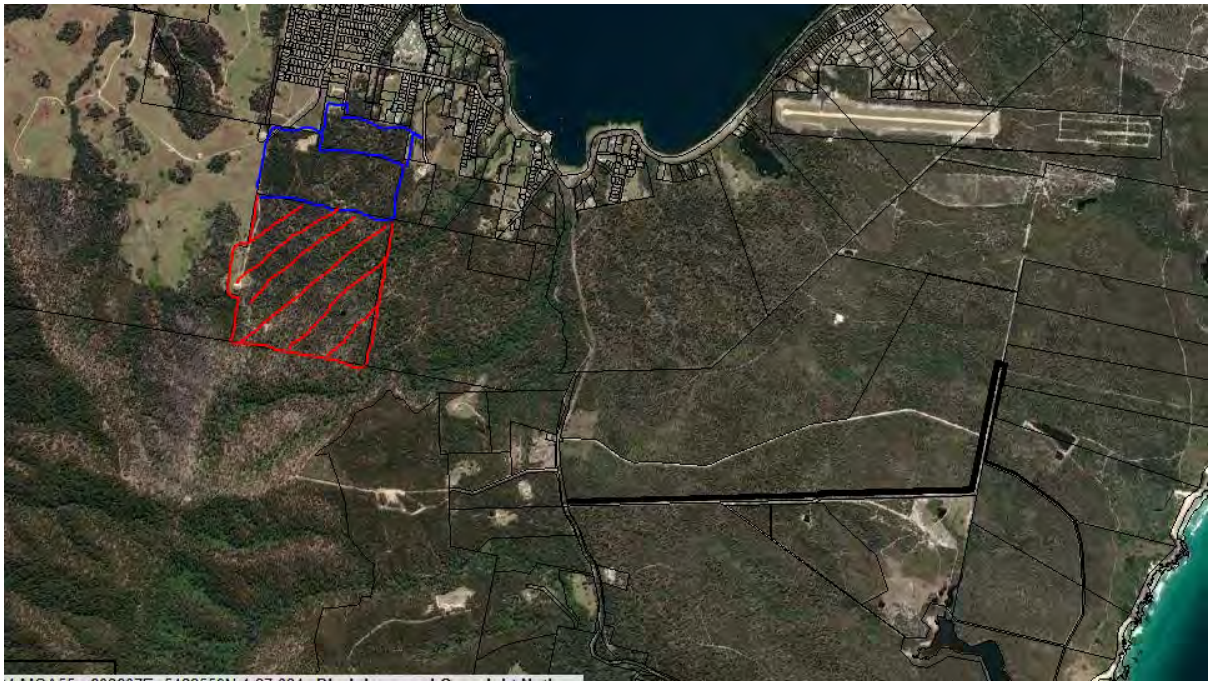
Justification	The title is within the ELZ of the interim planning scheme and located outside of the Future Urban Growth / Settlement Boundary within the Strategy. Land to the east, west and south all identified for AZ within the Mapping Project. However, given on ground features and topography as well as proximity to GRZ land (to the east) it has been determined these sites are more suitable for RZ. As such, highlighted title is also to transition to RZ. This application is consistent with RZ 1, RZ 2 and RZ 3.

Comment: The land still has a significant amount of native vegetation cover on it so is more suited to Landscape Conservation Zone than Rural Zone

St Helens CT141663/100, CT106405/1	ELZ	RZ	
Justification	Titles within the ELZ of the interim planning scheme. Despite being located within the Future Urban Growth / Settlement Boundary the Strategy does not reference any opportunity for development or densification of this land. Given the availability of surrounding GRZ land that is not developed, a residential zoning is not considered appropriate at this point in time. The land is also predominantly covered in vegetation. Rezoning to RZ is considered the most logical application given the surrounding RZ to the south and west. This application is consistent with RZ 1 and RZ 2. The existing split zoning at the north with GRZ will remain.		

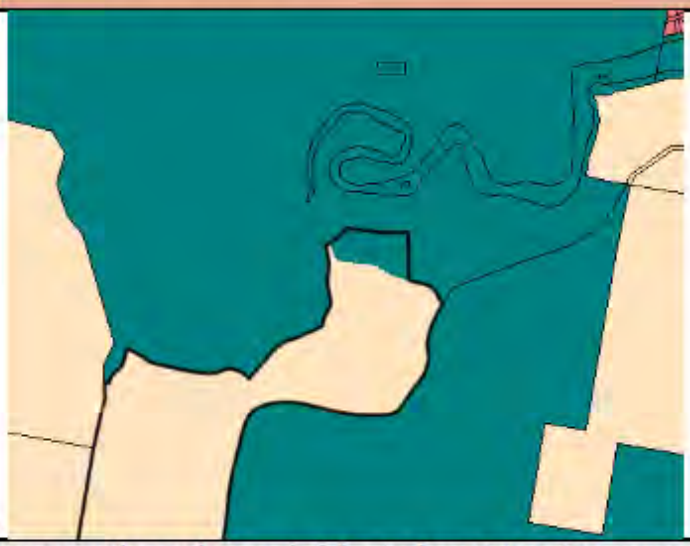
Comment: The land is zoned Environment Living currently because both titles are covered in native forest. It is likely at least part of the titles have threatened forest types E viminalis and E ovata on them (ie on drainage lines and south and esat facing slopes and gullies). There are significant catchment protection and flooding/erosion issues associated with these titles if there isn't appropriate protection and management of riparian areas. There is a clear delineation between the forested areas including this block which extend to the south and eastwards to provide landscape connectivity/wildlife corridors to the coast and hinterland and more cleared rural land to the west (see attached image). Rural zone is therefore not appropriate for these titles as there is insufficient protection for the natural values on the land in that zone. These titles should be zoned Landscape Conservation Zone.

The land directly south to these two titles (PID 6812018 Cobrooga Drive) should also be zoned Landscape Conservation Zone because it is covered in native forest and adjoins the Boggy Creek Conservation Area. Agriculture Zoning is not appropriate for this title



Scamander PID 3385567	RecZ	RZ	
Justification	Revise the zoning of that part of PID 3385567 outlined in black that is currently zoned Recreation (RecZ) to RZ. This land forms part of Future Potential Production Forest and is owned by DPIPWE. Application of zone is consistent with RZ1.		

Comment:Support all rezoning of FPPF land to Environment Management Zone

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
The Gardens PID 6807980	EMZ	RZ	
Justification	Rezone the small portion at the northern end of the site from EMZ to RZ to remove split zoning. The rezoning is consistent with RZ1.		

Comment: Maintain as EMZ

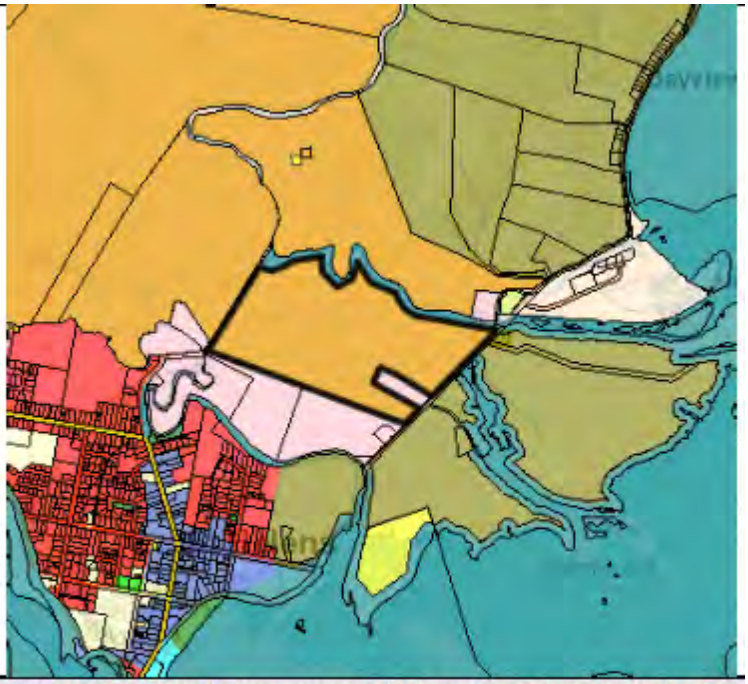
Esk Main Road PID3384177	EMZ	RZ	
Justification	Revise the zoning of the land adjoining the western boundary of Esk Main Road folio Register 212077/1 and PID 3384177 as outlined in blue in the diagram to RZ. Rezoning is consistent with RZ1 as land is Future Potential Production Forest.		

Comment: All FPPF land should be zoned EMZ

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Ansons Bay 11915/32, 11914/31	RRZ	RZ	
Justification	All land identified as Potentially Unconstrained (orange) will transition to the AZ with the exception of the two identified titles. These titles and land adjoining to east and west that is not mapped (cream) are to be transitioned to the RZ. The titles identified have extensive areas of native vegetation that is identified as priority vegetation. Further, these sites are challenged by topographical constraints and are not under the same ownership as surrounding Potentially Unconstrained land. Rezoning of these titles to the RZ is consistent within adjoining titles as well as AZ 6, RZ 1, RZ 2 and RZ 3 in the Guideline.		

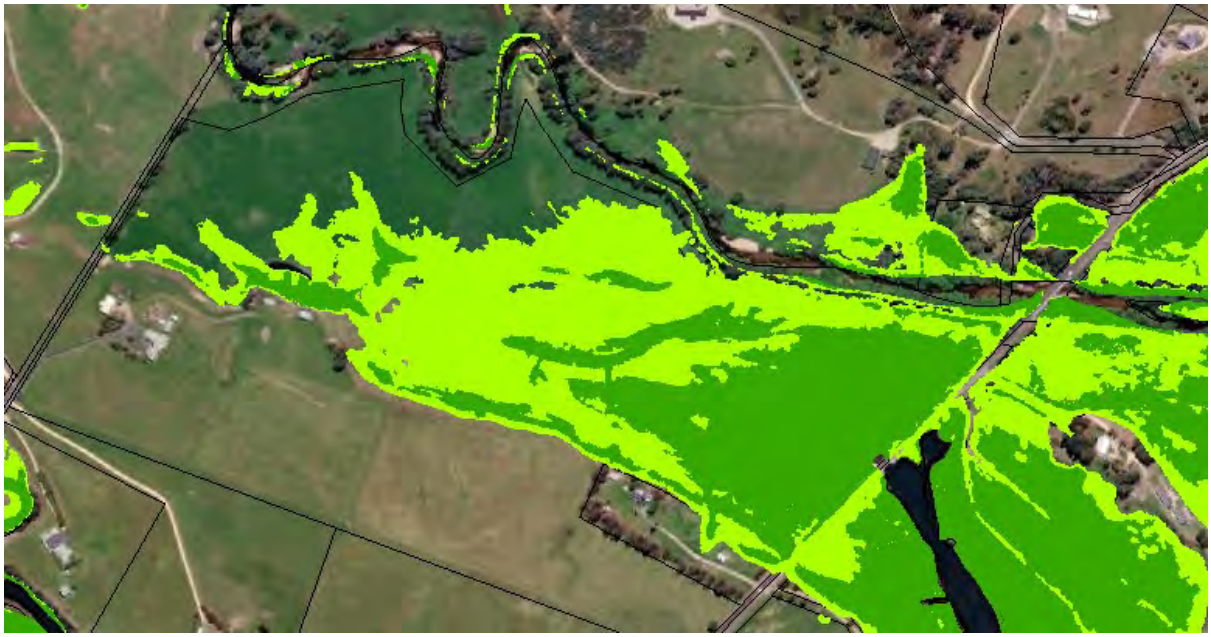
Comment: If the land has “topographical constraints”, extensive areas of native vegetation and is priority vegetation it should not be zoned Rural. Should be zoned Landscape Conservation Zone.

RZ 1 The Rural Zone should be applied to land ... which is not more appropriately included within
the Landscape Conservation Zone or Environmental Management Zone for the protection of
specific values

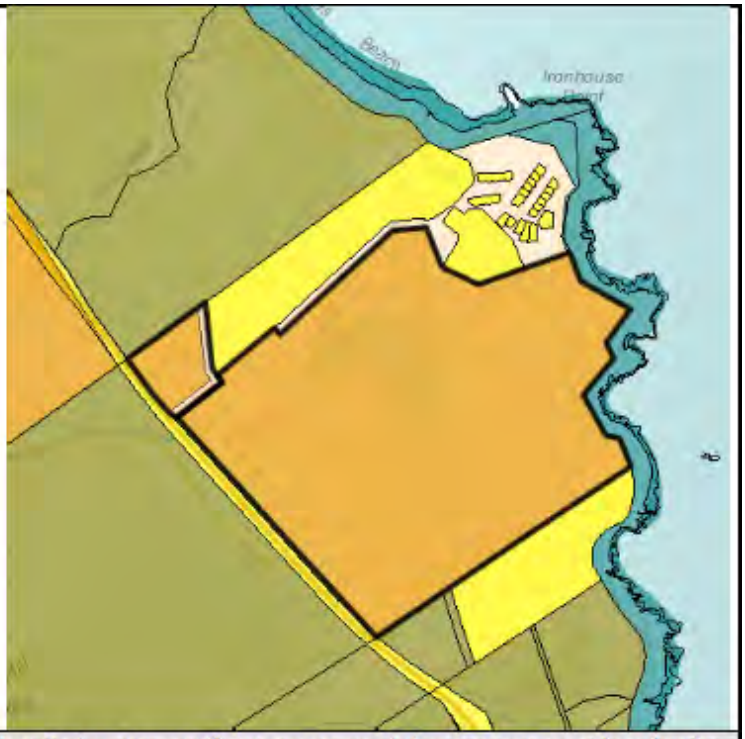
St Helens CT29213/2	RRZ	RZ	
Justification	Despite the title being identified as Potentially Unconstrained it is not considered suitable for the AZ. The RZ is considered to be more appropriate given lack agricultural viability of the land, existing uses and surrounding development pattern. Numerous titles to the east identified in dark green is currently zoned ELZ and will transition to the LCZ, as will the large title to the north that is also mapped as Potentially Unconstrained land (to be discussed in LCZ section of this report). The RZ is more appropriate than the AZ given environmental and flooding constraints. The application of the RZ is consistent with AZ 6, RZ 1, RZ 2 and RZ 3.		

Comment: This title has some land mapped as Saltmarsh (see report Vishnu Prahalad and red area in photo below). In addition much of the northern half of the title is subject to sea level rise (see other image below) Recommend that the northern half of the title be zoned Environmental Management in recognition of the need to provide inundation pathways and to protect saltmarsh which will expand in this area in the next few decades

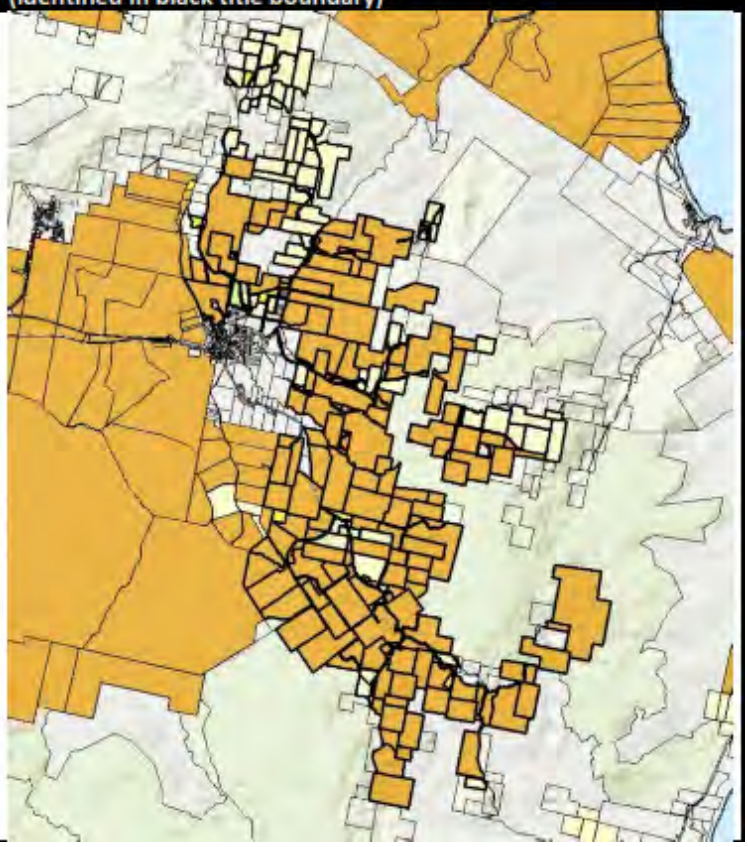
Red area indicates Saltmarsh present



Predicted inundation on this title

Ironhouse Point CT123961/2, CT100528/2 (partial)	RRZ	RZ	
Justification	Despite the titles being identified as Potentially Unconstrained they are not considered to be suitable for the AZ. The RZ is considered more appropriate given the existing land uses that occur on site. This requires a partial (split zoning) for CT 100528/2 with the land to the west of highway that is identified as Potentially Unconstrained to transition to the AZ, as this land is currently used for agriculture, while land on east side of highway (identified in black) to transition to the RZ. The RZ is more appropriate as surrounding land to be rezoning to MTZ and the RZ allows for a broader range of uses to occur. This zoning is consistent with AZ 6, RZ 1, RZ 2 and RZ 2. Further detail regarding the application of the MTZ is discussed in the coming sections of this report.		

Comment: The land in question has been cleared of virtually all native vegetation and trellis for the establishment of further vineyards is being constructed now. As such the land should be zoned Agriculture consistent with the vineyard on the western side of the roads zoning.

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Marys (CT's detailed below)	RRZ	RZ	

Justification	As detailed above the area relates to a large number of titles that have been identified in the Mapping Project as Potentially Unconstrained and Potentially Constrained Criteria 2A land. These titles surround Elephant Pass Road to the south of St Marys and include Gray and Irish Town. To the north of St Marys they extend along Esk Main Road and German Town Road and include titles around German Town. Given the topography of the land, the existing land uses occurring and the relative small titles under different ownership, coupled with environmental values the RZ is considered to be a more appropriate zone than the AZ. This is consistent with the AZ 6, RZ 1, RZ 2 and RZ 3 guidelines. Further the application of the AZ

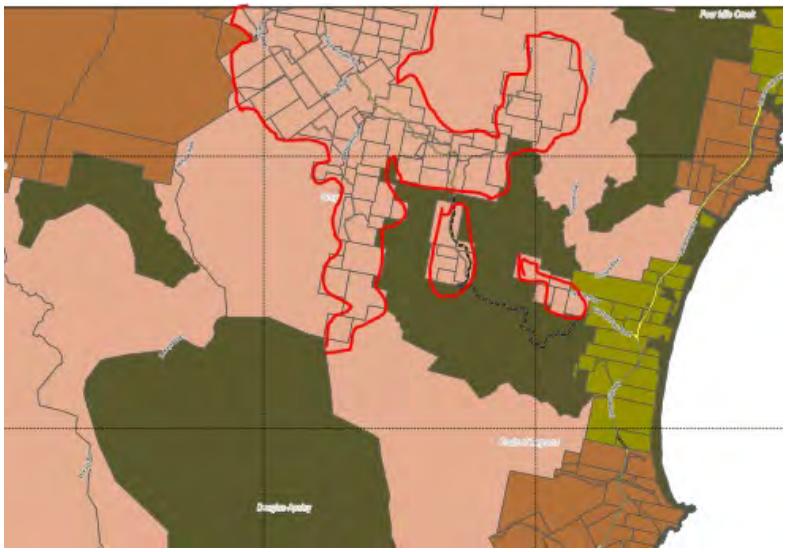
Comment: It is considered that a Landscape Conservation Zone should be applied over a number of titles extending from the bottom of Elephant Pass rd through to Nicholas Range/ Germantown/Dublintown area in recognition of the high scenic and ecological values present and the fact that most titles are used predominantly for lifestyle purposes. The area between the bottom of Elephant Pass through to Nicholas Range/Germantown/Dublintown is an important landscape connection between the coast and the hinterland and contains a diversity of habitats including for the unique Giant and Blind Velvet Worms and other threatened species including Wedge Tailed Eagles, Swift Parrot, Spotted Tailed Quoll. The area is also host to a significant outlier of the EPBC listed Eucalyptus brookeriana forest. Eucalyptus brookeriana has recently been found to be key foraging habitat for Swift Parrots. Threatened plant species include Blechnum cartilagineum, Euphrasia collinus spp deflexifolia, Glycine microphylla amongst others. Other values include a large number of sites listed on the Tasmanian Geoheritage database including Mount Elephant Karst.

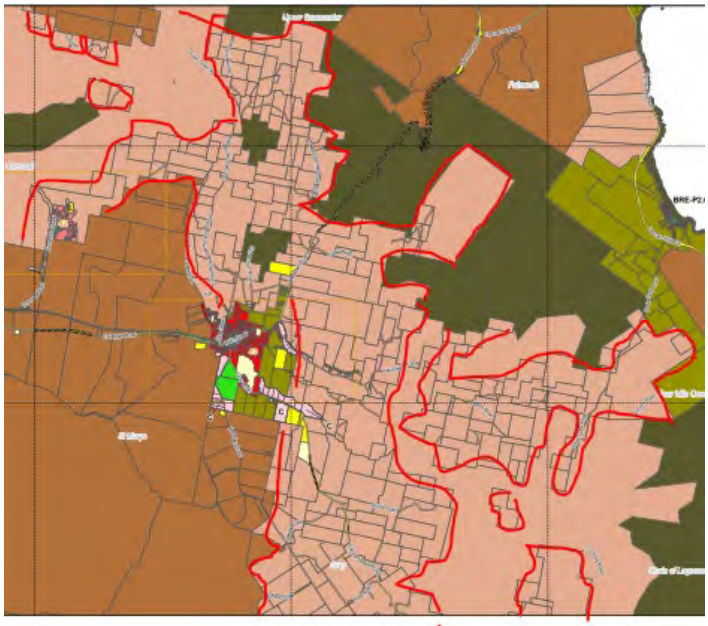
Landscape Conservation Zoning has been applied to a number of coastal titles but there doesn't seem to have been any assessment of titles against the Guideline no 1 Zone Application Guidelines for hinterland properties. It is considered a number of titles in the St Marys region mentioned above meet the LCZ 1 and LCZ 2 (a)(b) and LCZ 3 criteria

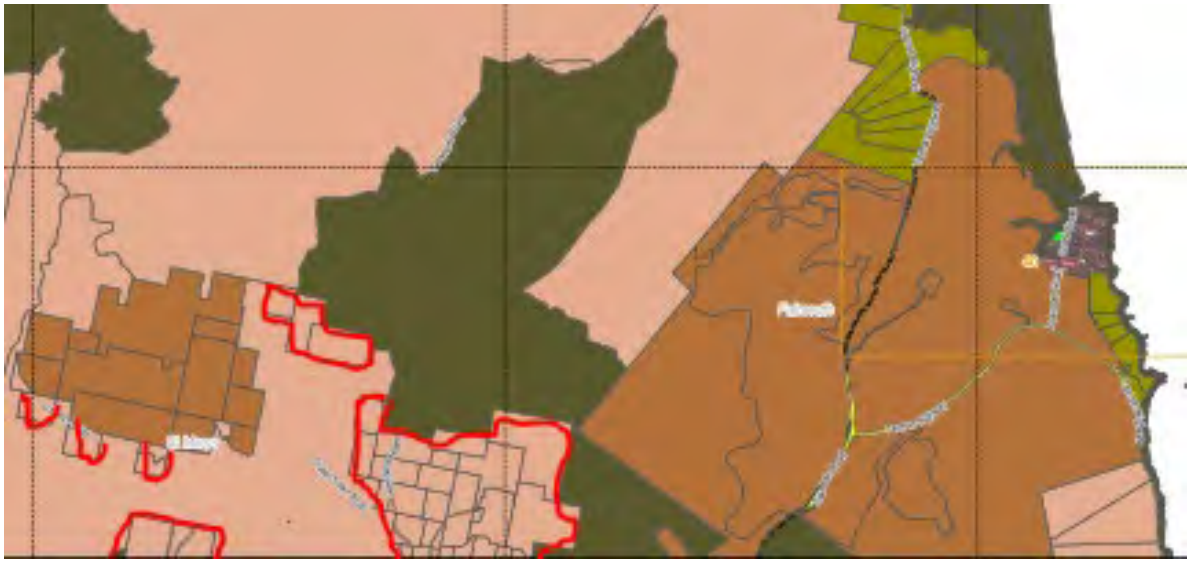
Rural zoning does not reflect the ecological values present in this area or the predominant use which is lifestyle based on protection of scenic and environmental values Guideline no 1 notes under the Rural Zone that: RZ 1 The Rural Zone should be applied to land ... which is not more appropriately included within
the Landscape Conservation Zone or Environmental Management Zone for the protection of specific values.

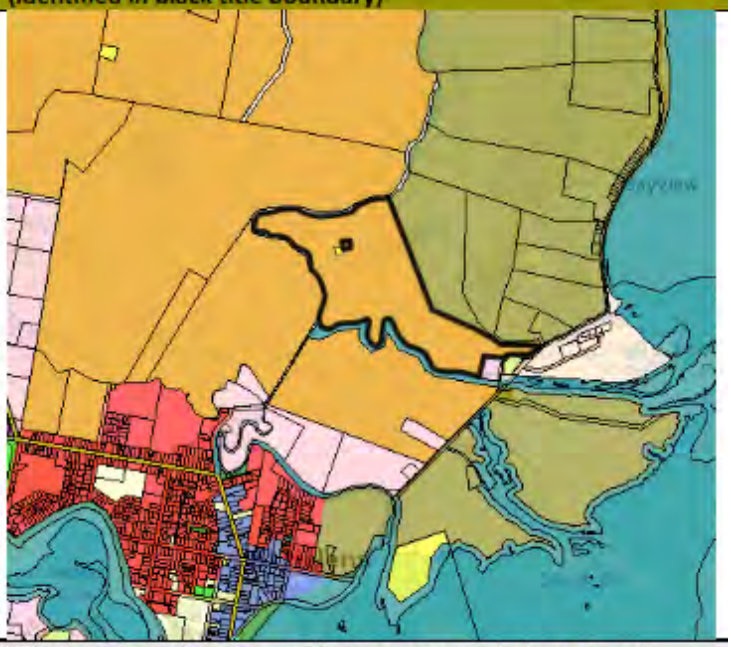
The maps below cover the approximate area in the Chain of Lagoons to Nicholas Range area which we believe requires closer analysis and is in most cases more appropriately zoned Landscape Conservation Zone than Rural Zone.

We also believe that there has been insufficient analysis of private land in areas inland from St Helens such as Goshen, Goulds Country and Weldborough to differentiate between to assess where land containing important conservation and landscape connectivity values should have been zoned Landscape Conservation Zone rather than Rural







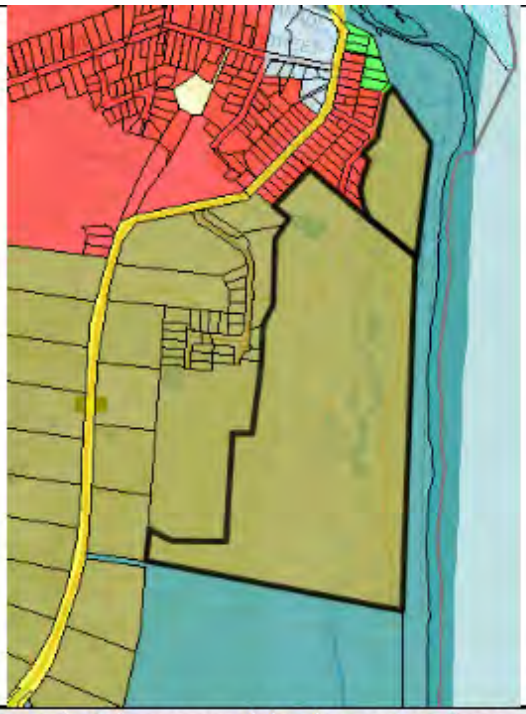
LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT126959/12	RRZ	LCZ	
Justification	Despite the identified title being mapped as Potentially Unconstrained, the AZ is not considered to be the appropriate zone. The site is subject to topographical and environmental constraints. Along with the ELZ land to the north the LCZ is considered the most suitable zone for this land. This application is consistent with AZ 6, LCZ 1, LCZ 2 and LCZ 3. As previously detailed, the title to the south that is also mapped as Potentially Unconstrained, will not transition to the AZ instead the RZ will be applied.		

Comment: Support the LCZ as appropriate zoning.

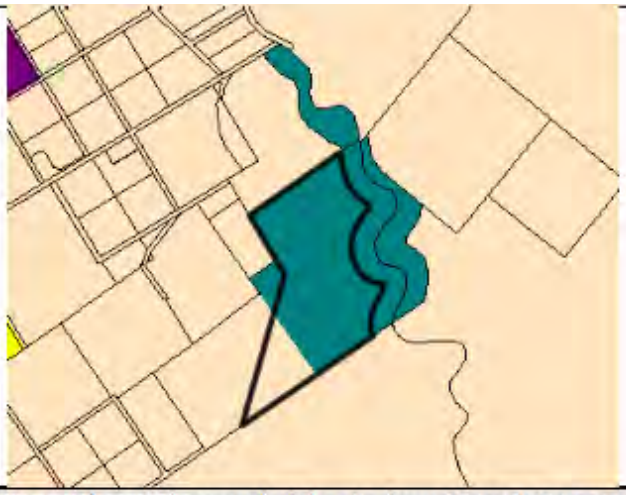
Akaroa CT32902/1	ELZ	LCZ	
Justification	The land highlighted falls under one title and ownership. The majority of this land is not developed, highly vegetated and includes foreshore tidal areas. There is a house and outbuilding located on the most western aspect of the title. The surrounding titles are less constrained and more developed. As described in the LDRZ section of this report these have transitioned from the ELZ to the LDRZ. Given the removal of the ELZ and the environmental values of this title, the LCZ is considered to be most appropriate. This is consistent with LCZ 1, LCZ 2 and LCZ 3.		

Comment: Land identified as numbers 1 and 2 should be zoned as Environmental Management.

Number 1 is primarily threatened Melaleuca ericifolia forest which has not been correctly mapped under TASVEG. Number 2 is EPBC listed community of Saltmarsh. Both number 1 and 2 are subject to sea level rise impacts. Area number 3 should be zoned under the proposed coastal PPZ or EMZ as no further development should be permitted on the title due to major ecological, scenic and sea level rise constraints (see map below of predicted inundation).

Scamander CT176276/920 (partially) and CT18342/1	ELZ	EMZ	
Justification	The identified titles are a result of the approved development application as detailed in the GRZ section of this report. These balance lots currently within the ELZ are to transition to the EMZ similar to adjoining land to the south and other foreshore areas within the municipality. The EMZ along foreshore is considered the most appropriate zone given on-ground features, continuity of zoning and protection environmental values given the removal of ELZ. Zoning consistent with EMZ 1. The EMZ is considered to be more suitable than the LCZ and will prevent further development of the environmentally sensitive foreshore land.		

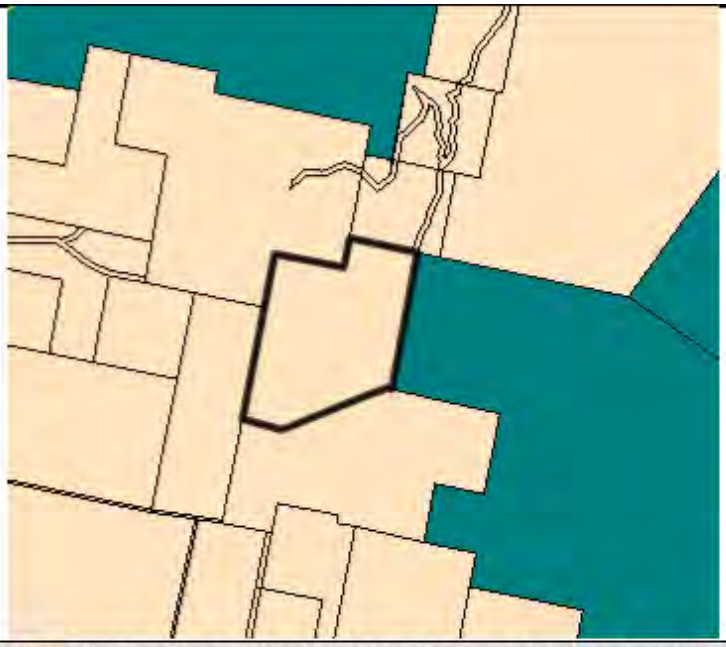
Comment: Support the proposed EMZ zoning. Much of this part of the title is predicted to be subject to sea level rise impacts (see image below) In addition most of the existing vegetation in this part of the title includes high conservation value vegetation communities such as Eucalyptus ovata forest, Melaleuca ericifolia forest and saline wetlands. The land adjoins a Parks and Wildlife Conservation Area to the east and the Winifred Curtis Reserve to the south so has important landscape context.

Fingal 120261/3	RZ	EMZ	
Justification	Rezone the small portion at the southern end of the site from RZ to EMZ to remove split zoning. The rezoning is consistent with EMZ1.		

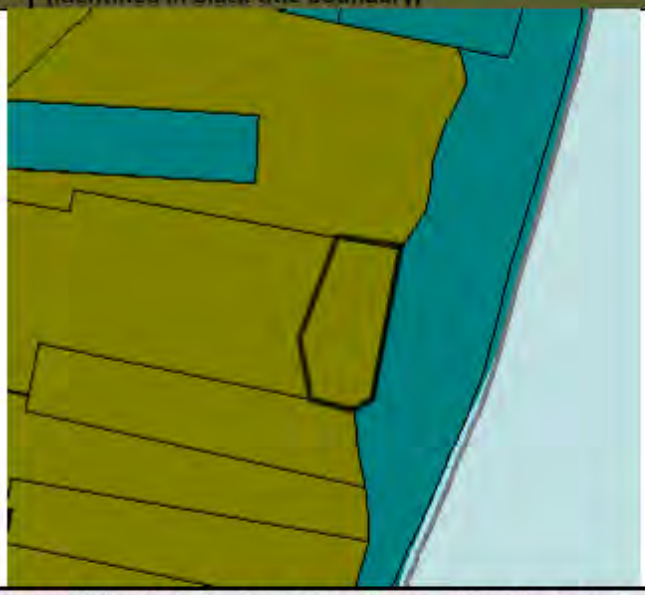
Comment: Support the rezoning

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Ansons River Conservation Area 141690/1, 141694/1, 101081/1, 101080/1	RZ	EMZ	
Justification	Revise the zoning of the Ansons River Conservation Area – land adjoining the western boundary of eastern boundary of folios of Register 141690/1, 141694/1, 101081/1 and 101080/1 and PID 3385241 to Environmental Management. Application is consistent with EMZ1.		

Comment: Support the rezoning. Ansons River is an important freshwater ecosystem in the Break O Day region.

St Marys 127101/1	RZ	EMZ	
Justification	Revise the zoning of folio of the Register 127101/1 to EMZ. To apply the zones consistent with EMZ1.		

Comment: The land has a perpetual conservation covenant on it so EMZ is a suitable zoning

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Stieglitz 50226/1	ELZ	EMZ	
Justification	Revise the zoning of part of folio of the Register 50226/1 containing the Jocks Lagoon Ramsar Site to EMZ with the split-zone boundary delineated by CPR5655. Application of EMZ is consistent with EMZ 1.		

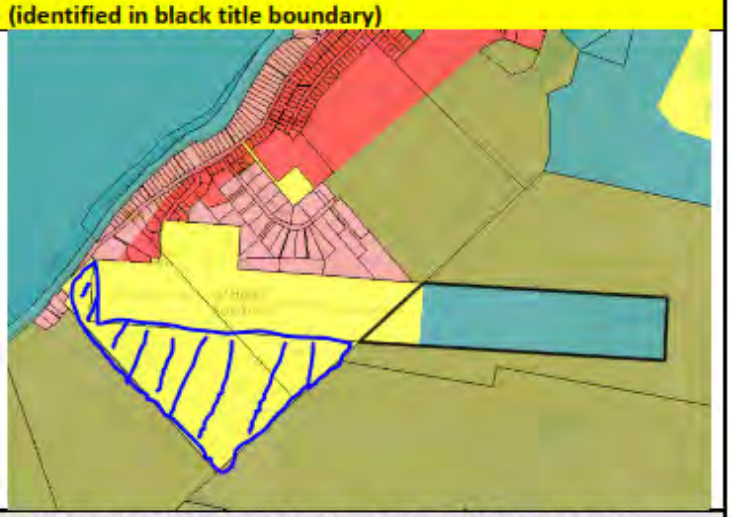
Comment: Jocks Lagoon is a RAMSAR listed wetland so EMZ is a suitable zoning. However in order to properly protect the conservation values of the wetland there needs to be strong restrictions on development anywhere in its catchment.

The CFEV Wetlands overlay on The List (above) identifies the catchment of Jocks Lagoon as having a high level of naturalness and is obviously critical for protecting the water quality entering Jocks Lagoon.

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
Ironhouse Point CT125938/0 & CT125938/9	RRZ	MTZ	
Justification	Strategy identifies that Ironhouse Point White Sand tourist development should be rezoned for tourism. Site includes hotel, residential holiday cottages, brewery, vineyard and a range of recreational facilities. Strategy details - *Rezoning of this land is appropriate, given its current and intended future land use and that it is unlikely to be utilised for a rural land use within its current Rural Resource Zone. However, the inclusion within the Major Tourism zone would be dependent on support from the Tasmanian Planning Commission as the department has indicated a preference that only those sites already containing a major tourism function be included within the Major Tourism zone.* Rezoning is consistent with MTZ 1 and MTZ 2. Adjoining land to the south is proposed to transition to the RZ and will allow continued use of the site for this purpose.		

Comment: Once Major Tourism Zoning is approved the title has very little protection from over development. Our preference would be that the MTZ be scrapped altogether as it is too loose to provide for proper planning controls. As it stands MTZ needs to be very tightly allocated in terms of

having a very limited footprint especially in the coastal zone where there are significant scenic and environmental values. The proposed zoning is too generous and includes land well outtside the current development footprint. The MTZ should not be used to create greenfield sites for property speculation. The map below shows red as being areas that should be excluded from MTZ and blue where MTZ is more in keeping with the current use of the land.

LOCATION Title/PID	IPS ZONE	DRAFT LPS ZONE	REFERENCE (identified in black title boundary)
St Helens CT214209/1	EMZ	UZ	
Justification	Site is currently split zoned UZ and EMZ. Strategy details – *Rezone additional land to utilities should expansion of airstrip be required*. Rezoning is consistent with adjoining zone and Guideline. Rezoning required to ensure future long term use of this Council owned land. The EMZ or a PPZ are not considered appropriate for site.		

Comment: New zoning is not supported. The land has known threatened flora including the EPBC listed Connospermum hookeri. The vegetation is generally in good ecological condition (apart from a few strips used for irrigation purposes) with high botanical diversity characteristic of coastal heathlands and heathy woodlands. It is important for landscape connectivity between St Helens Point and the Scamander Tier area. The proposed zoning does not reflect the natural and landscape values of the land and is a speculative zoning based on the hope rather than reality that the St Helens aerodrome will be used for more than sporadic uses.

The Council has spent considerable sums of money on consultants reports over decades trying to justify expansion of the aerodrome but the reality is St Helens is a small remote community where there is limited need for anything beyond the current infrastructure. At this point there is no justification for the rezoning.

We also support the area identified as hatched blue in the above map being zoned Environmental Management Zone as it contains botanically rich high quality heathland and heathy forest/woodland in good ecological condition with excellent New Holland Mouse habitat and the land also forms part of catchment for the RAMSAR listed Jocks Lagoon wetland.

Both of our suggested retention and addition of EMZ zoning are more in keeping with the Landscape Conservation Zoning that adjoins the Council land and reflects the significant natural and landscape connectivity values present in the St Helens Point area.

LOCATION Title/PID	**IPS ZONE**	**DRAFT LPS ZONE**	**REFERENCE (identified in black title boundary)**
St Helens – north and South of the Golden Fleece Bridge. Crown land Services (DPIPWE)	Port and Marine Zone	Particular Purpose Zone – St Helens Coastal Maritime	
Justification	It is anticipated that the SPP Port and Marine zone was intended to provide for functional ports with State or Regional significance or relevance. The St Helens and surrounds structure plan undertaken by Urbis for Break O Day Council and supported by the State Government identified that the St Helens port: "...will provide economic and recreation opportunities ...will be expanded to include additional marina berths ...will be of a high visual standard befitting its gateway location in the town centre"[1] Additionally, PMZ 3 states The Port and Marine Zone should not be applied to land only intended for small scale or minor port and marine facilities,		

such as boat ramps, or small scale marinas or jetties. " p22 S8a Guidelines. This is more the current and intended scale and character of the St Helens.

Comment: The area in red identified in the image below should be zoned as Open Space as it is primarily used for passive recreation including enjoying the scenery and picnicking. As such this is consistent with Guideline no 1 Zone Purposes 29.1.1 and 29.1.2 as well as OSZ 1 (a) (b).

Our group has established and maintained native landscaping in this area for over 25 years.

Tourists enjoying a picnic on land that should be zoned Open Space

DRAFT LPS WRITTEN DOCUMENT.

(Attachment B)

BRE –P3.0 PPZ St Helens Coastal Maritime

As mentioned in our response to the LPS Supporting Report (Attachment A) there is land proposed to be subject to rezoning and also this PPZ which should be excluded because it more accurately reflects the criteria for Open Space Zoning rather than what is suggested by Council.

Area identified within red boundary should be Open Space Zone consistent with OSZ 1 (a)(b) of Guideline no 1

Tourists picnicking in area which should be zoned Open Space

In addition we note that under BRE-P3.4 Use Table under Tourist Operation that “aviation based operations” are a permitted use. We question how any aviation activity could operate safely in such an area as this scenario has been considered before and rejected on safety and other grounds. Council has previously sought to facilitate a helipad in this location. Our view is that aviation based tourism activities are not appropriate on the St Helens Foreshore and should use the St Helens Aerodrome.

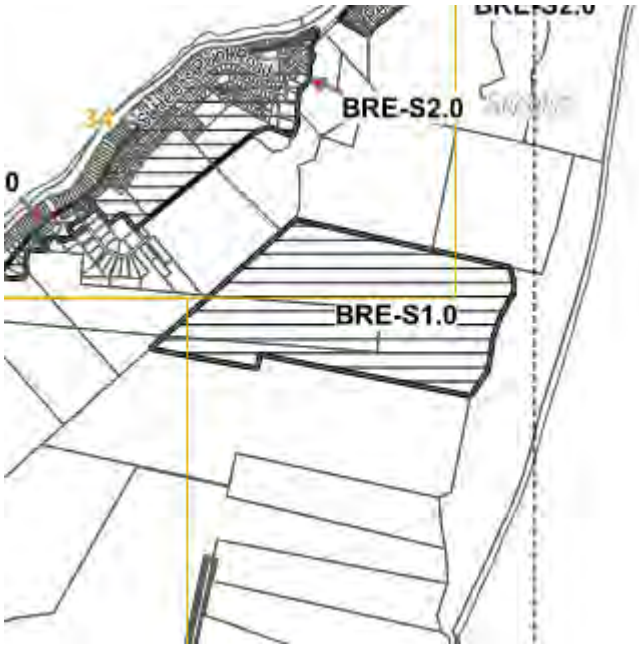
The PPZ also appears to be designed to encourage commercialisation of the foreshore for tourist operations and bulky goods sales. Our view is that the St Helens Foreshore should remain as primarily public open space in combination with boating/ port facilities.

The PPZ does not adequately protect open space or associated amenity such as landscaped areas from development.

Building heights, scale bulk and siting need to be strictly controlled to protect scenic amenity in the area. While the recently constructed building next to the Marine Patrol building may be logistically required its form is not sympathetic to the general visual amenity of the area being considerably bulkier and higher than any other buildings on the foreshore.

There is also a number of provisions related to subdivision in the PPZ. We question why subdivision of the foreshore would be contemplated.

BRE-S1.0 SAP Safeguarding St Helens Aerodrome



The Council has spent a fortune on consultants reports over decades to try and justify expansion of the Aerodrome based on the “build it and they will come” principle. Previous attempts to faciltate direct flights from the mainland of Australia to St Helens have failed and it is in our view time the Council focused on consolidating the existing aerodrome footprint rather than wishful thinking about expansion. There is no justification provided in the report as to why a SAP is necessary and no evidence that a larger aerodrome is required. It is our understanding there have been issues with dealing with the current level of water run off from the site in high rainfall events.

The private land section over which the SAP extends is a high conservation value coastal property with coastal heathland and heathy woodlands and forests in good ecological condition. The land has records for threatened plant species including the EPBC listed Conospermum hookeri. Most of the land is highly suitable habitat for the rare New Holland Mouse. The SAP even extends over areas identified as Melaleuca ericifolia forest which adjoin the RAMSAR listed Jocks Lagoon which is a wetland of international significance.

The SAP is not supported. See more comments in our representation on this issue in the Supporting Report LPS.

BRE-S2.0 SAP Stormwater Management

We welcome the Councils acknowledgement that stormwater management is a problem in a number of settlements in the Break O Day municipality however our view is that the proposed Stormwater SAP does not adequately address the environmental impacts arising from deficient management of stormwater

Please see comments below from Simon Roberts report "Threats of residential development to aquatic natural values in the Break O Day Municipality" regarding the Stormwater Management SAP:

The Break O'Day LPS include a proposed Stormwater Specific Area Plan which has an objective that requires; "*That development provides for adequate stormwater management*." The acceptable solution in this plan is to either (A1) "*be capable of connecting to public stormwater system*" or (P1) "*have regard to*" "*stormwater quality and quantity management targets identified in the State Stormwater Strategy 2010*". The stormwater SAP applies to specific zones within coastal communities that have been identified to have limited stormwater infrastructure, historic flooding, are at risk to due to local topography or have low permeability or erodible soils. All the coastal communities covered by the Stormwater SAP are poorly serviced by the existing infrastructure and the potential for additional environmental impacts from further development of existing properties could be significant. In addition, some of the properties are small may not have sufficient space to absorb additional flows if developed even if appropriate WSUD infrastructure were required.

The Stormwater SAP has been proposed so "*stormwater quality and quantity is managed to protect natural assets, infrastructure and property."* There is no information provided in relation to how it will protect natural assets. The fundamental purpose of the Stormwater SAP appears to be to decrease the impact of additional stormwater flows from development on other infrastructure. The explanatory document provided to support the Stormwater SAP states it has been proposed to "*to protect off site stormwater impacts on both private land and public infrastructure for the benefit of the whole community.*"

A key requirement of both the *State Policy on Water Quality Management 1997* and the *State Stormwater Strategy 2010* are the promotion of source control strategies that treat, store and infiltrate stormwater on-site with an aim of reducing flows and decreasing pollutant concentrations. The *State Policy on Water Quality Management 1997* Clause 33.2 requires that:

> *"State and Local Governments should develop and maintain strategies to encourage the community to reduce stormwater pollution at source."*

Section 3 of this report summarises the results of the North Baker (2009) report into 22 wetlands/lagoons in the municipality of which half were considered under threat from urban impacts, it is highly likely that these threats have increased in the past 11 years. The Stormwater SAP does not reflect the potential impact of stormwater flows either through the existing stormwater infrastructure or through development outside the council stormwater system on natural values. The generation of additional stormwater from new developments being connected to the existing stormwater infrastructure is likely to be detrimental to many of the aquatic assets of the municipality. Additionally extra flows from developments not connected to the stormwater system are also likely to increase pressures on aquatic habitats.

A key objective of a Stormwater SAP should be to reduce the overall quantity and improve the quality of urban stormwater flows to waterbodies as part of a comprehensive stormwater management program that is premised on the identification of important aquatic ecosystem values and the need to avoid or minimise any potential ecological impacts. A priority should be the management of stormwater to reduce overland flow and to increase water quality at source and where this is impractical then as part of a local treatment process incorporated into the council stormwater infrastructure.

Many studies into the effect of urbanisation on aquatic systems have shown that ecological impacts can occur at very low levels of residential development. Overall impacts of new developments on aquatic systems can be much more effectively managed and lead to less cost if these developments are primarily in already serviced areas and are discouraged in unserviced settlements or in cluster developments outside serviced areas.

BRE-P1.8 Tables

BRE-P1.8.1

Add following weeds to Environmental Weeds list on the basis that all of these species have been observed invading native bushland in Break O Day municipality

Acacia retinodes, Acacia saligna, Acacia paradoxa, Kunzea ericoides, Melaleuca armillaris, Grevillea rosmarinifolia**.**

Change name of Sollya heterophylla to Billardiera heterophylla

BRE-Table C6.5 Significant Trees

Locality: Dianas Basin

Property Name and street address: St Helens Point Conservation Area and PID 2275542

Description: Copse of magnificent mature Eucalyptus globulus (Blue Gum) trees which are in close proximity to Tasman Highway and also important Swift Parrot habitat

Botanical name: Eucalyptus globulus

Common name: Tasmanian Blue Gum

Number of trees: 8

17th December 2021

The General Manager
Break O'Day Council
32-34 Georges Bay Esplanade
ST HELENS TAS 7216

By email: admin@bodc.tas.gov.au

Dear Mr Brown,

Representation in response to Draft Break O'Day Local Provisions Schedule

The North East Bioregional Network (**NEBN**) provides the following representation in response to the draft Break O'Day Local Provisions Schedule (**Draft LPS**).

The review conducted of the Draft LPS has focussed on the zone and overlay provisions considering:

- the possible use and development outcomes in the coastal zone;
- the scenic landscape values and protecting the natural attributes of the coast and hinterland in the municipality; and
- if the fundamental principle of 'sustainable development' is achieved through the proposed provisions of the draft LPS.

In summary, the NEBN representation seeks the modification of the Draft LPS to:

1. introduce an additional Specific Area Plan – Coastal Zone to be applied to the land area 1km inland of the High Water Mark (HWM) to:
    - prohibit subdivision in the Landscape Conservation Zone, Rural Zone and Agriculture Zone;
    - prevent inappropriate intensification of development in the Low Density Residential Zone; and
    - limit the use class Visitor Accommodation in the Landscape Conservation Zone, Rural Zone and Agriculture Zone to not give rise to inappropriate coastal development outside of the towns and settlements;

2. increase the spatial extent of the Landscape Conservation Zone, applying it instead of the Rural Zone to the north, south and east of St Marys due to the landscape values and the contiguous native vegetation cover identified;

3. support or modify the proposed zones for the identified properties and areas contained in Attachments A and C;

4. reduce the spatial extent of the land area to which the *BRE-P3.0 Particular Purpose Zone – St Helens Coastal Maritime* is applied as shown on Zone Map 12 of 44;

5. delete the BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area Plan from the *written document* and the *Tasmanian Planning Scheme – Specific Area Plan: Break O'Day Local Provisions Schedule maps;*

6. modify the BRE-S2.0 – Stormwater Management Specific Area Plan in the written document to finetune the proposed controls;

7. apply scenic protection areas in the Code Overlay maps in addition to the scenic road corridor concerning the Scenic Protection Code and add the listings to Table C8.2;

8. increase the spatial extent of the Priority Vegetation Area as shown in the Code Overlay maps concerning the Natural Assets Code;

9. apply the Environmental Management Zone to Future Potential Production Forest instead of the Rural Zone;

10. include listings to Table C6.5 Significant Trees in the written document as can be applied through the Local Historic Heritage Code; and

11. list additional weed species in BRE-P1.8.1 Environmental weeds in the written document.

To support the representation, the following evidence is offered:

Attachment	Report
Attachment A	Support Reporting LPS – Excerpt of the proposed zones
Attachment B	Draft LPS Written Document
Attachment C	Draft LPS Zone Maps Response
Attachment D	North East Bioregional Network Land Use Plan
Attachment E	Protection of coastal natural values in the Break O'Day Municipality
Attachment F	Review of residential development on the ecological health of receiving waters
Attachment G	Threats of residential development to aquatic values in the Break O'Day Municipality
Attachment H	Scenic Protection Report
Attachment I	Draft LPS Written Document and Scenic Protection Areas
Attachment J	Estimated breeding population of resident shorebirds and small terns Break O'Day municipality
Attachment K	Saltmarsh Maps
Attachment L	Priority Vegetation Area Mapping for Break O'Day Municipality
Attachment M	Linking Landscapes – New Reserves for North East Tasmania
Attachment N	Verification of the Heritage Values of ENGO – proposed reserves

The expert reports attached to this representation provide important context and information in support of '*sustainable development*' outcomes. In conjunction with these reports, the proceeding discussion provides the reasons and rationale for the requested changes. The representation demonstrates that the request is in accordance with the LPS Criteria under *section 34 of the Land Use Planning and Approvals Act 1993* (LUPA Act).

Summary of Expert Reports

Attachment D - NEBN Land Use Plan

A Conservation Action Plan for the Break O'Day region which identifies key strategies to maintain ecological processes and genetic diversity as per the requirements of Schedule 1 Part 1 1.(a). The report follows best practice conservation planning methodology using the Conservation Action Plan process. This involves identifying and understanding key landscape scale ecological processes to guide conservation management. A number of Focal Conservation Assets are determined followed by an assessment of their viability, threats to their integrity and resilience and finally strategies to maintain ecological processes.

This document is to our knowledge the only report that specifically addresses the issue of ecological processes and genetic diversity for the Break O'Day area and reinforces the importance of cross tenure landscape scale planning in order to meet the requirements of Schedule 1 of the *Land Use Planning and Approvals Act 1993* (the Act) and relevant state policies such as the *Tasmanian State Coastal Policy 1996* (State Coastal Policy).

Attachment E - Protection of coastal natural values in the Break O'Day Municipality (Nick Fitzgerald 2021)

In this report the values of the coastal environment of Break O'Day are detailed along with risks to coastal ecosystems and species. The report concludes with recommendations to improve biodiversity outcomes through the planning scheme.

Attachment F - Review of impacts of residential development on the ecological health of receiving waters (Simon Roberts 2021)

A comprehensive review of scientific literature related to the impacts of land use change and in particular urbanisation on water quality and aquatic ecosystems.

Attachment G - Threats of residential development to aquatic natural values in the Break O'Day municipality (Simon Roberts 2021)

This report builds on the Review document (Attachment F) and provides an analysis of the threats to the Break O Days coastal aquatic ecosystem values from development. These two reports should be read collectively and provide compelling evidence that development in the coastal zone must be subject to rigorous standards and controls to avoid degrading aquatic values.

Attachment H - Scenic Protection Assessment: North East Tasmania (Geoscene International 2019)

This report is a comprehensive analysis of the scenic values present along the Break O'Day coastline as well as St Marys Pass and Elephant Pass and needs to be read in conjunction with the NEBN Scenic Protection Areas Table document (Attachment I). The Scenic Protection Areas in the NEBN table correlate with the maps on pages 25 to 28 of the Scenic Protection Assessment report.

Attachment I - Scenic Protection Areas

The attached contains the Scenic Protection Area table as proposed by NEBN consistent with the Scenic Protection Report from Geoscene International

Attachment J- Estimated breeding populations of resident shorebirds and small terns Break O'Day Municipality (Eric J. Woehler Birdlife Tasmania 2020)

A recent Birdlife Tasmania report which concludes that shorebird values on the Break O'Day coastline are internationally significant for shorebird conservation.

Attachment K - Saltmarsh Mapping (Scott Foyster/Vishnu Prahalad UTAS 2021)

Mapping of all Saltmarsh locations in the Break O'Day municipality. Saltmarsh is a EPBC listed vegetation community of high conservation value and vulnerable to the impacts of coastal development and sea level rise.

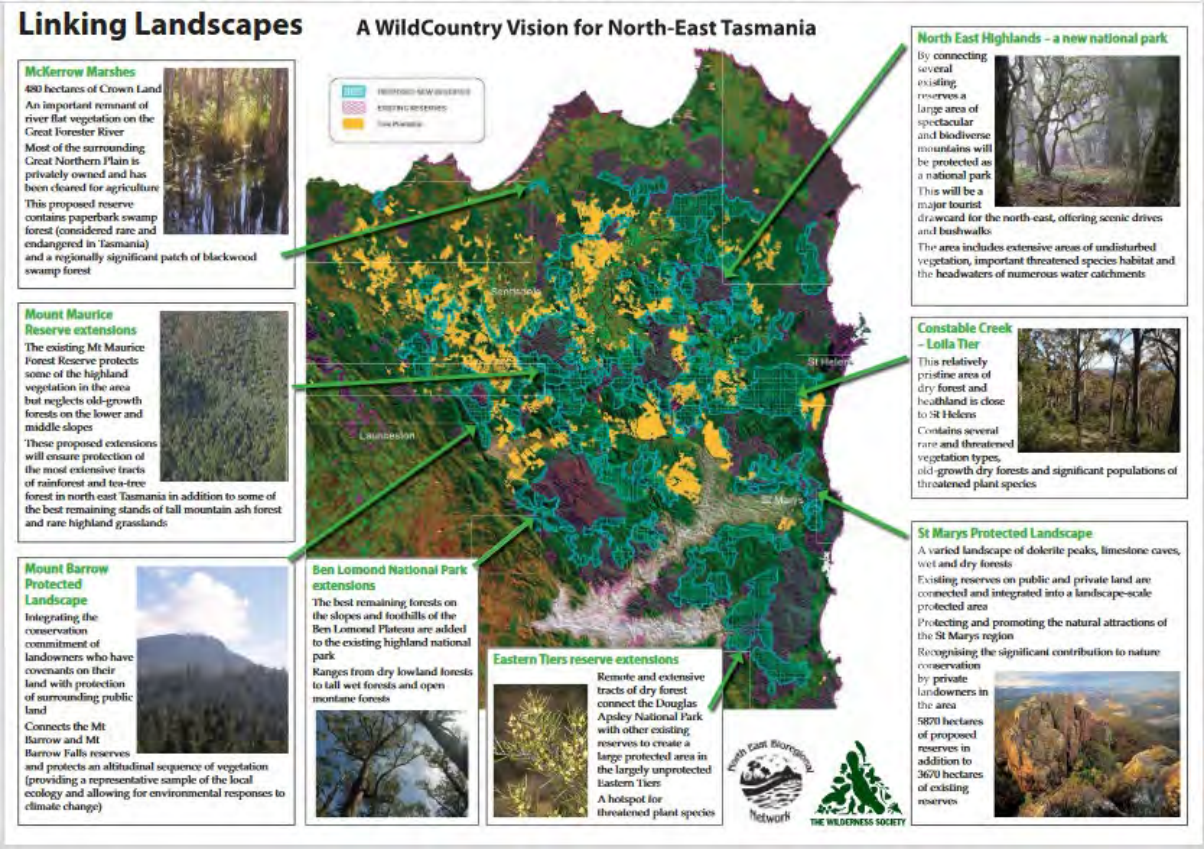
Attachment L- Priority Vegetation Area Mapping for Break O'Day Municipality (Nick Fitzgerald 2021)

This report documents a recommended Priority Vegetation Area overlay for the Natural Assets Code in the new Break O'Day Planning Scheme.

Attachment M

Linking Landscapes- New Reserves for North East Tasmania (September 2007)

This report provides detailed information on the ecological and associated values of all the Future Potential Production Forest (FPPF) land in the Break O'Day municipality. This report along with the Hitchcock report is tendered in support of all FPPF land in the Break O'Day municipality being zoned Environmental Management in recognition of its critical landscape connectivity function, high conservation values and range of other values including scenic beauty, geo conservation, water catchment protection and carbon sinks.



Attachment N

Verification of the Heritage Values of ENGO- proposed reserves-IVG Forest Conservation Report 5A (Hitchcock 2012) This report verifies the scientific rigour of the Linking Landscapes report and acknowledges that "those parcels forming the East Coast Connectivity Corridor have been assessed collectively to have National Heritage significance- one of the more important latitudinally connected tracts of native habitat in Australia". This report needs to be read in conjunction with the Linking Landscapes report and NEBN Land Use Plan to consolidate the importance of landscape connectivity to maintain ecological processes and genetic diversity.

1. SPECIFIC AREA PLAN – COASTAL ZONE

Planning Scheme History

In 2006, a development control was inserted into the *Environmental Protection Zone* and *Natural Resources Zone of the Break O' Day Planning Scheme (the Scheme). The control prohibited all subdivisions from creating new lots within 1km of the High Water Mark"All new lots must be located a minimum of 1km from High Water Mark".*

The (former) Resource Planning and Development Commission (RPDC) approved this provision acknowledging the threat that urban sprawl and coastal ribbon development posed to the Break O'Day coastline. The RPDC noted that ***"Parts of the coastline*** *(of the municipality)* ***captured by this standard are of the highest visual and environmental quality in the State"*** *and determined that this measure would protect the coastline from inappropriate development.*

The RPDC further noted that a managed, planned, and protected coastal zone in the Break O'Day municipality benefits the local community, the region, and the State and has particular qualities unique to the area that are well recognised not only within Tasmania but nationally and internationally.

The Break O'Day coastline is the municipality's greatest asset and requires a high level of planning and management excellence to avoid overdevelopment and degradation of those qualities and values. Examples of the qualities and values referred to include; the orange lichen encrusted granite boulders, turquoise waters, wildflower-rich heathlands and white sandy beaches of the Bay of Fires.

The RPDC also at this same time inserted the following Acceptable Solution with No Performance Criteria regarding Strata Schemes "No lot defined in the *Strata Titles Act 1998* can be created by a strata scheme" in the Environmental Protection Zone and the Natural Resources Zone (Draft amendment 01/03) in the former planning scheme. The RPDC considered "the use of strata in non-urban areas to avoid subdivision standards of the planning scheme" to be a "valid matter" and accordingly prohibited strata in these zones. In 2007 the Break O'Day Council initiated an amendment through the RPDC to revisit the Strata prohibition. In 2008 the RPDC approved strata but only for tourism accommodation not residential use in these zones (noting that tourism visitation to Tasmania has nearly doubled between 2008 and 2018/2019).

The 1km subdivision prohibition was transitioned into the *Break O'Day Interim Planning Scheme 2013* (the Interim Scheme) in the Environmental Living and Rural Resource zones.

In October 2019, a Council community newsletter contained a statement from the current General Manager, John Brown that the Draft LPS would not carry over the subdivision controls. Mr Brown stated that the controls of the Landscape Conservation Zone as per the State Planning Provisions (SPPs) would replace the Interim Scheme subdivision controls. The replacement would result in "the same outcome

or better" in coastal development controls. He also stated that the minimum lot size permitted would be 50ha. The Council provided the same information at the Draft LPS community "drop-in sessions" concerning the Draft LPS.

The statement is incorrect and takes a very different interpretation of proposed provisions of the Landscape Conservation Zone. Subdivision of lots with areas of 20ha within 1km of the HWM will be possible in the Landscape Conservation Zone. The subdivision prohibition would also no longer apply to Rural Zone and Agriculture Zone as applied to the coastal zone.

Additionally the scope of use classes, prohibited in the Environment Living Zone under the Interim Scheme will now be expanded to include, but not limited to, *Resource Development, Sports and Recreation, Tourist Operation, General Retail and Hire* (associated with a Tourist Operation), *Food Services, Community Meeting and Entertainment*. These use classes will be discretionary and provide a permit pathway for consideration.

There is increasing evidence that the density and development controls in the coastal zone through the application of the Landscape Conservation Zone, Rural Zone and Low Density Residential Zone are being undermined without introducing additional controls as these zones provide permit pathways for visitor accommodation, multiple dwellings and subdivision. Additionally, the Low Density Residential Zone applied to settlements in the coastal zone will allow a minimum lot size that will result in the intensification of development that is not sustainable. NEBN submits that the outcomes of the implementation of the Draft LPS, as publicly exhibited, is contrary to the LPS criteria at *section 34 of the Land Use Planning and Approvals Act 1993. (See **Appendix 1** after this letter for examples of multiple units/dwellings/strata undermining density controls in the current Environmental Living Zone.)*

Coastal Zone and Draft LPS

The Break O'Day municipality has a coastline that extends from Cod Bay to the Denison Rivulet Conservation Area, stretching a linear length (including the outer islands) of more than 100 km and includes the 'coastal zone' (refer to Figure 1) as defined in the State Coastal Policy.

The coastal zone in the State Coastal Policy means

> *Under the State Coastal Policy Validation Act 2003, a reference in the State Coastal Policy 1996 to the coastal zone is to be taken as a reference to State waters and to all land to a distance of one kilometre inland from the high-water mark. The Act states that "State waters" has the same meaning as in the Living Marine Resources Management Act 1995.*

The coastal zone incorporates the sensitive natural aquatic environment and contains significant biodiversity values that must be carefully considered in future use and development. The coastal zone protection also becomes more urgent, with the ramifications of climate change yet to be fully realised. The Draft LPS plays a critical role in shaping land use patterns, and the controls are necessary to protect the natural coastal environment as substantiated by the submitted reports to this representation, including:

- *North East Bioregional Network Land Use Plan (refer to Attachment D);*
- *Protection of coastal natural values in the Break O' Day municipality (Attachment E)*
- *Review of residential development on the ecological health of receiving waters (refer to Attachment F)*

- *Threats of residential development to aquatic values in the Break O'Day Municipality (refer to Attachment G).*
- *Shorebird (Attachment J) and Saltmarsh (Attachment K) reports*

Several of the SPPs zones and the proposed three (3) particular purpose zones are applied to the coastal zone. The Draft LPS also introduces two (2) specific area plans, one of which is to manage the quality and quantity of stormwater associated with use and development.

The main urban centres of the municipality, St Helens and Scamander are captured within the coastal zone and apply a typical zoning regime consistent with urbanised areas comprising a mix of residential, commercial, business and industrial activities.

The land areas outside of the settlements in the draft LPS spatially applies a mix of the Environmental Management Zone, Landscape Conservation Zone, Rural Zone, Agriculture Zone and Utilities Zone. The coastal settlements of Binalong Bay, Beaumaris and Falmouth are in the Low Density Residential Zone, with the Landscape Conservation Zone, the Environmental Management Zone or Rural Zone spatially applied to land immediately around the built-up area of the settlements. The land areas beyond the settlements are zoned a mix of Rural, Environmental Management, Landscape Conservation, Agriculture and Utilities.

The NEBN submits that the spatial application of the SPPs zones in combination with the particular purpose zones and the specific area plans does not provide the same level of protection currently afforded by the provisions of the Interim Scheme. While it is recognised that economic growth and development is vital for the community's prosperity, a balance must be struck to ensure that the natural environment is equally protected and enables the principle of 'sustainable development' to be implemented in planning controls. The implementation of these controls is vital for the municipality to continue to prosper as implied by the *Break O'Day Council Strategic Plan 2017-2027*.

The current restriction on subdivision controls has safeguarded the coastal zone from the fragmentation of landholdings and the intensification of use and development, which is in accordance with the outcomes of the State Coastal Policy. Additionally these planning controls are consistent with the *Northern Tasmania Regional Land Use Strategy* (NTRLUS) and the objectives of the Planning and Management System of Tasmania as set out in Schedule 1 of the *Land Use Planning and Approvals Act 1993* (the Act).

The current provisions applying to the coastal zone in the Interim Scheme will be lost through the Tasmanian Planning Scheme and the Draft LPS and if not modified will:

- *provide inadequate subdivision controls in the coastal zone;*
- *facilitate inappropriate intensification of use and development, resulting in increased surface water flows into the natural aquatic environment of the coast; and*
- *impact on biodiversity generally.*

The submission requests that the Draft LPS be substantially modified to meet the LPS criteria set out in section 34 of the Act by:

- introducing a Specific Area Plan to the coastal zone to impose subdivision controls and restrictions on intensification of development; and

- modify the BRE-S2.0 – Stormwater Management Specific Area Plan to limit the area of a site covered by impervious surfaces and avoid and minimise negative ecological impacts arising from stormwater.

State Coastal Policy and Subdivision Controls in the Interim Scheme

Planning authorities and the Tasmanian Planning Commission must create planning schemes that are consistent with Tasmanian State Policies: sections 13 and 13C of the *State Policies and Projects Act 1993*, and 15(2)(c) and 34(2)(d) of the Act.

The Tasmanian State Coastal Policy 1996 (State Coastal Policy) has the following key guiding principles:

1. Natural and cultural values of the coast shall be protected.
2. The coast shall be used and developed in a sustainable manner.
3. Integrated management and protection of the coastal zone is a shared responsibility.

These principles are to guide the outcomes listed elsewhere in the State Coastal Policy. In relation to urban and residential development, the State Coast Policy directs that the following outcomes be achieved:

> 2.4.1. Care will be taken to minimise, or where possible totally avoid, any impact on environmentally sensitive areas from the expansion of urban and residential areas, including the provision of infrastructure for urban and residential areas.
>
> 2.4.2. Urban and residential development in the coastal zone will be based on existing towns and townships. Compact and contained planned urban and residential development will be encouraged in order to avoid ribbon development and unrelated cluster developments along the coast.
>
> 2.4.3. Any urban and residential development in the coastal zone, future and existing, will be identified through designation of areas in planning schemes consistent with the objectives, principles and outcomes of this Policy.

These outcomes are presently given effect through Interim Scheme clauses 14.4.3 A4 of the Environmental Living Zone and 26.4.2 A3 of the Rural Resource Zone.

Clause 14.4.3 A4 of the Environmental Living Zone relevantly provides, *"All new lots must be located a minimum of 1km from High Water Mark".* There are no associated performance criteria for this clause. Clause 26.4.2 A3 of the Rural Resource Zone relevantly provides, *"All new lots must be located a minimum of 1km from High Water Mark, except for those lots that are required for the crown, public authority or a municipality*." There are no associated performance criteria for this clause.

The RPDC decision to introduce these controls acknowledged the threat that urban sprawl and coastal ribbon development posed to the Break O'Day coastline as highlighted earlier in the representation.

NEBN considers the provisions in the Interim Scheme have been vital to ensuring that urban and residential development within the Break O'Day municipality has been limited to existing settlements, towns and townships (consistent with outcome 2.4.2 of the State Coastal Policy) and that the impacts of such developments on environmentally sensitive areas have been avoided or minimised (consistent with outcome 2.4.1 of the State Coastal Policy).

These provisions are also not included in the transitional arrangement declared by the Minister for Planning under Schedule 6 of the Act.

Given the effectiveness of the Interim Scheme provisions at achieving the outcomes of the State Coastal Policy, NEBN is highly concerned that similar protections for the coastal zone are not reflected in the State Planning Provisions (SPPs), or in the Draft LPS.

Northern Tasmania Regional Land Use Strategy

Planning authorities and the Tasmanian Planning Commission must create planning schemes that, as far as practicable, are consistent with regional land use strategies as per 34(2)(e) of the Act.

The Northern Tasmania Regional Land Use Strategy (NTRLUS) is applicable to the municipal area and was declared on 23rd of June 2021 by the Minister for Planning. The revised version of the NTRLUS was amended to include an addendum applying to the preparation of the local provisions schedule where this was submitted to the Tasmanian Planning Commission prior to the Strategy coming into effect.

A2 of this statement states that the provisions contained in Sections D and E2.4 are replaced by the provisions in Part G.

In Part G, the principles for planning for *Natural Environment Areas* should seek to:

- Protect, manage and enhance the region's biodiversity values;
- Protect, manage and enhance regional landscape values that advance the region's liveability, health, lifestyle and economy;
- Protect significant biodiversity values, improve ecological connectivity, and promote improved habitat condition and rehabilitation within biodiversity networks;
- Optimise biodiversity conservation outcomes by locating environmental (and carbon) offsets within identified biodiversity
- networks and other suitable areas, giving priority to the protection or rehabilitation of significant biodiversity values;
- Plan, design, and manage development, infrastructure and activities to protect, manage and advance regional landscape values; and
- Prioritise where, when and how investment can be most effectively targeted to restore and maintain landscape values.

The NTRLUS seeks to enhance the regional landscape values and recognises that this is essential for the community's wellbeing. The principles should also seek to protect the biodiversity values and that development must have regard to manage the impacts of the sensitive coastal environment and protecting native habitat and vegetation cover.

Part E7.0 concerning the Regional Environment Policy is not excluded from consideration in preparing the Draft LPS. The policy and actions of Section E7.2 reaffirm that that use and development controls in the Draft LPS concerning the coastal zone should seek to implement the following:

- CW-PO1
  Protect and improve the ecological integrity of coastal environments.
- CW-A01
  Include appropriate provisions in planning schemes to minimise the clearance of coastal vegetation, particularly in soft sediment coastal environments which will have increased vulnerability to sea level rise, coastal erosion and recession and storm surge events.
- CW-A02
  Manage the expansion and limit further linear expansion within the coastal zone where it is not within the existing settlement pattern.

- CW-PO5
  Protect and manage the ecological health and environmental values of surface and groundwater.
- CW-A04
  Apply planning scheme provisions on land adjoining the coast to: „ Restrict development to minimise long-term risk to life and property and its impact on the coastal process; and „ Require appropriate assessment of the impact of engineering works on coastal processes and to ensure best practice.

The Draft LPS does not uphold these policies and actions of the NTRLUS as referred to above.

Landscape Conservation Zone

It is proposed that land currently within the Environmental Living Zone in the Interim Scheme will now be zoned Landscape Conservation under the SPPs, while the land currently within the Rural Resource Zone of the Interim Scheme will be zoned Rural or Agriculture. However, unlike in the Interim Scheme, the Landscape Conservation, Rural and Agriculture zones of the SPPs provide no express requirement that land within one kilometre (**1km**) of the high-water mark not be subdivided.

In the Table of Changes for the Environmental Living Zone to Landscape Conservation Zone, Break O'Day Council (**Council**) summarised the changes to the subdivision requirements for land currently zoned Environmental Living Zone as it is transitioned to the Landscape Conservation Zone under the SPPs as follows:

> Environmental Living Zone
>
> - Minimum of 40ha to be able to subdivide into 20ha minimum lots
> - Minimum frontage = 4m
> - All new lots must be located 1km from high water mark.
>
> Landscape Conservation Zone
>
> - Minimum 100Ha to be able to subdivide into 50ha minimum lots
> - Minimum frontage = 40m

REMOVED: All new lots must be located a minimum of 1km from the high water mark. The Landscape Conservation Zone subdivision requirements give effect to this limitation.

Council's justification for the removal of the prohibition of subdivisions within the coastal zone on land currently zoned Environmental Living or Rural Resource appears to be that such regulation is unnecessary given other protections within the SPPs. For example, in the Break O'Day Council Draft LPS 2020 Supporting Report (**Draft LPS Report**) Council states (at 3.1.15, p 68):

> Another notable difference is the removal of the subdivision standard within the [Environmental Living Zone] which prohibited new lots within 1km from the HWM. This particular provision is unique to Break O'Day and has not been included in the Tasmania Planning Scheme. The Landscape Conservation Zone subdivision standards along with other code requirements is (sic) considered to adequately protect coastal areas from unsuitable subdivision.

The Draft LPS Report provides no information as to how the new standards and requirements in the relevant zones of the SPPs will protect coastal areas from unsuitable subdivision for the purposes of urban or residential development to the equivalent standard as provided by the Interim Scheme.

There is no evidence to support Council's assertion in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone that subdivision requirements will give effect to the existing limitation currently expressed in cl 14.4.3 A4 of the Interim Scheme. This would require an equivalent provision effectively prohibiting subdivision in the coastal area up to 1km from the high-water mark. Such a provision which is not included in the SPPs. Furthermore, the statement by Break O'Day Council in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone that minimum lot sizes in the Landscape Conservation Zone will be 50ha is misleading. Under clause 22.5.1 P1 of the SPPs, lots of 20ha can be created if they meet performance criteria. Contrary to the statement by the Council in its Table of Changes for the Environmental Living Zone to Landscape Conservation Zone, there is no requirement that the original blocks in the Landscape Conservation Zone be a minimum size of 100ha before subdivision.

The Landscape Conservation Zone subdivision standards make no reference to the coastal zone, and the Council has not demonstrated how the changed zoning provides sufficient protection for coastal areas from unsuitable subdivisions for the purposes of residential or urban development. Several lots with lot areas of more than 40ha offer a permit pathway for subdivision and potentially open opportunity for the fragmentation of landholdings and new development and is contrary to the State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

Meanwhile, the Draft LPS Report and Table of Changes for Rural Resource Zone to Rural Zone or Agriculture Zone make no mention of the removal of the prohibition on subdivisions within 1km of the high-water mark for land currently zoned Rural Resource. There is also no indication in these documents how the protections for the coastal zone would be maintained within the new zones.

There is no minimum lot size prescribed for the Rural Zone, while in the Agriculture Zone the minimum lot size is 1ha, but even then, that restriction only applies in limited circumstances (see clause 21.5.1 P1(b)(ii) of the SPPs). None of the provisions in either the Rural or Agriculture Zones are explicitly aimed at achieving State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

The Rural or Agriculture Zones do contain some restrictions on new residential development, but these tend to rely on the entry of a Part 5 agreements (under section 71 of the LUPA Act) "preventing future Residential use if there is no dwelling on the balance lot" (see clauses 20.5.1 P1(b)(ii) and 21.5.1 P1(c)(ii) of the SPPs). While it is encouraging to see that these Part 5 agreements are recognised in the SPPs as qualifications in the Table of Use for the Rural and Agriculture zones, there is nothing to prevent the Council from simply varying or revoking a Part 5 agreement after a permit for a subdivision has been granted, provided that is done with the consent of the landowner (see section 74(3) of the LUPA Act). This loophole creates a real and significant risk of Rural and Agriculture zoned land being subdivided for residential purposes.

While areas within the Landscape Conservation, Rural or Agriculture zones may be subject to the Natural Assets Code, in NEBN's submission the provisions of this Code are insufficient to achieve the outcomes identified in the State Coastal Policy at 2.4.1-2.4.3 or the NTRLUS policies of CW-P01 and CW-PO5. For example:

- While land may fall within "waterways and coastal protection areas" of the Natural Assets Code, this only refers to an area of 40 metres from the high-water mark of tidal areas (see clause C7.3.1 and Table 3.1 of SPPs), and even then, there is no prohibition on subdivision or residential developments (see clauses C7.6.1 and C7.7.1 of the SPPs). Waterways and coastal

protection areas represent a far smaller area than the 1km from the high-water mark envisaged by the coastal zone of the State Coastal Policy.

- Land within the Landscape Conservation, Rural or Agriculture zones may also be captured by the "future coastal refugia" areas, however again, the extent of these areas are extremely limited, and there is still no prohibition of subdivision or residential development in these areas (see clauses C7.6.1 and C7.7.1 of the SPPs).
- While some land within the Landscape Conservation Zone, Rural or Agriculture zones may fall within the Natural Assets Code due to it being mapped as a "priority vegetation area", the Code does not expressly prohibit its clearance for the purposes of subdivision or residential dwellings (see clauses C7.6.2 and C7.7.2 of the SPPs), and the clearance of vegetation in priority vegetation areas is exempt from the Code where it is located on existing crop or production land irrespective of the proposed purpose of the clearing (see clause C7.4.1(c) of the SPPs), or it is within the Agriculture Zone (see clause C7.2.1(c) of the SPPs).
- The subdivision standards of the Coastal Inundation Code or the Coastal Erosion Code only apply in the areas subject to the coastal inundation or the coastal erosion hazard bands. The planning scheme overlay maps only apply to a fraction of the coastal zone as the bands do not exceed 100m. The subdivision standards of either code will not apply outside of the hazard band.

The Draft LPS Report responds to the State Coastal Policy outcomes 2.4.1- 2.4.3 by stating simply (at p 17) that no residential zones have been expanded or created in the Draft LPS, and that (at p 21) the draft LPS is "on balance" consistent with the Policy. As outlined above, the proposal to rezone land within the Environmental Living and Rural Resource zones of the Interim Scheme to Landscape Conservation Zone, Rural and/or Agriculture is wholly inadequate to protect the coastal zone from ribbon development outside of towns and townships and avoid or minimise adverse impacts of such developments on the sensitive environment of the coastal zone.

General Residential Zone, Low Density Residential Zone, Particular Purpose Zone – Coastal Settlement

Within 1km of the mean high water mark, the following urban residential zones are spatially applied in the coastal zone:

- General Residential;
- Low Density Residential; and
- BRE-P3.0 Particular Purpose Zone – Coastal Settlement.

The spatial application of the General Residential Zone to the main service centres of St Helens and Scamander is generally not contested apart from a few ecologically and or scenically sensitive titles identified in Attachment A and Attachment C. The main service centres should be the focus for future growth in the municipality.

The concerns of the NEBN lies mostly with spatial application of the Low Density Residential Zone as applied to the established residential areas of the small coastal settlements of Binalong Bay, Beaumaris, Falmouth and Stieglitz.

The increasing numbers of residents and tourists respectively living in or visiting Tasmania means that development pressure is rising on land within the coastal zone. In this context there are a number of reasons why the Draft LPS must urgently integrate stricter controls for residential and non-residential

development as well as subdivision especially as it applies within 1km of the HWM. The NEBN contends that the provisions in the Low Density Residential Zone must impose stricter controls in the municipality if it is to maintain the settlement character, provide for residential amenity and protect the environmental assets such as coastal bushland and beaches, waterways and wetlands.

Furthermore, Draft LPS Report notes (pg 84) the deficiencies in the Low Density Residential Zone as the Zone does not satisfactorily control "*further development and densification*" while stormwater problems are also identified in a number of settlements (pg 88-90).

The Draft LPS Report also recognises the need to manage small lots in the coastal zone and has proposed a Particular Purpose Zone – Coastal Settlement. The spatial extent of this Zone, however, is only applied to small land areas in the coastal zone and does not manage the sensitive environmental issues that are equally applicable in the Low Density Residential Zone.

The Low Density Residential Zone imposes a site area for multiple dwellings limiting the number of dwellings that can be constructed on a single lot. Most of the coastal settlements in the municipality are outside the TasWater sewer serviced area and therefore must provide a minimum site area per dwelling of 2500m^2 to comply with clause 10.4.1, A1. Or if an application satisfies clause 10.4.1, P1, then the dwelling site area can be reduced to 2000m^2.

Consequently, roofed buildings can occupy an area of 750m^2 (30% site coverage rule applied to a site area of approximately 2500m^2) if clause 10.4.1, A1 is achieved. Additionally, there are no restrictions imposed to limit impervious surfaces on the site as the term 'site coverage' excludes this consideration (refer to clause 10.4.4). The Car Parking and Sustainable Transport Code also requires internal driveway and manoeuvring areas associated with a Residential Use in the Low Density Residential Zone to be sealed to comply with clause C2.6.1 A1. The BRE-S2.0- Stormwater Management Specific Area Plan also does not offer additional controls to impose to limit on the area of impervious surfaces that may be created as part of a development.

There is also a conflict between the standard for residential density for multiple dwellings (see clause 10.4.1) and the subdivision controls (see clause 10.6.1 – Lot Design). The subdivision standards provide a pathway for the creation minimum lot areas of 1500m^2 or 1200m^2 if clause 10.6.1 P1 is relied upon. The multiple dwelling density is immediately undermined as the subdivision standards allow the creation of smaller lots, leading to intensification of development which is again contrary to the Coastal Policy and NTRLUS.

The Low Density Residential Zone also opens the opportunity for the use class Visitor Accommodation. The use class Visitor Accommodation is not subject to the same use and development standards as the use class Residential (refer to clause 10.3.2 and 10.5.1). Other than site coverage, the Low Density Residential Zone provides no density controls for Visitor Accommodation. If a proposal cannot comply with the clause 10.5.1, A4, it relies on the P4 of the same clause. Reliance on P4 means that the site coverage can exceed 30%.

The effect of this control means that there building densities for Visitor Accommodation could be much higher than that for multiple dwelling development in the Low Density Residential Zone. Increased densities in the coastal zone can have significant detrimental impacts on the coastal environment if stormwater and waste water is increased impacting on the natural aquatic environment.

Therefore, the NEBN calls for stronger development controls for non-residential development and subdivision in the Low Density Residential Zone to mitigate and manage the risk, as required by the outcomes of the State Coastal Policy and NTRLUS.

Landscape Conservation Zone – Visitor Accommodation

The Landscape Conservation Zone can consider use and development for new buildings for Visitor Accommodation (refer to clause 22.3.2). The use class Visitor Accommodation, if approved, can provide a pathway for strata development under the *Strata Titles Act 1998*. While the site coverage (refer to clause 22.4.1) limits development, P1 is not explicit, potentially resulting in a site coverage of more than 400m^2 with no set parameters. While Residential Use in the zone is limited to single dwellings, the Use Class Visitor Accommodation may result in a built form typically found in an urban setting.

The NEBN is concern raised is demonstrated through the use and development outcomes achieved by the implementation of *Planning Directive No.6 – Exemption and Standards for Visitor Accommodation in Planning Schemes (PD6) in the* Interim Scheme.

PD6 illustrates that the provisions are inadequate and have given rise to inappropriate coastal development, providing an avenue for multiple buildings to be constructed on a site for visitor accommodation. The resulting land use pattern is equivalent to a multiple dwelling development typically found in the General Residential Zone or Low Density Residential Zone. Examples of the effects of PD6 is contained in Appendix 1.

The acceptance of the Landscape Conservation Zone without modification in this instance is contrary to the State Coastal Policy outcomes 2.4.1, 2.4.2 or 2.4.3 or the policies and actions of the NTRLUS CW-P01 and CW-PO5.

NEBN recommends that clause 22.3.2 is substituted as it applies to the coastal zone is limited to the use being restricted to a single building for Visitor Accommodation.

Proposal for inclusion of coastal zone Specific Area Plan in draft LPS

In response to this significant gap in the protection offered to the coastal zone under the SPPs and the Draft LPS, NEBN proposes a Specific Area Plan - Coastal Zone (Coastal Zone SAP) be included in the Draft LPS. Put simply, the Coastal Zone SAP seeks to continue the operation of the restrictions that currently exist for the subdivision of land within the Environmental Living or Rural Resource zones as it is transitioned to new zones within the Tasmanian Planning Scheme, namely the Landscape Conservation, Agriculture and Rural zones. Additionally, the Coastal Zone SAP would strengthen the controls to minimise the effects of new development in the coastal zone as it applies to the to the Low Density Residential Zone, the Landscape Conservation Zone, Rural Zone and Agriculture Zone. The proposed Coastal Zone SAP meets the LPS criteria outlined under *section 34 of the LUPA Act* and is a targeted and proportionate response to the problems posed by coastal ribbon development within 1km inland of the HMW.

Coastal Zone SAP

The NEBN requests Coastal Zone SAP spatially apply to the defined coastal zone, 1km inland of the HWM, and that these provisions apply in either addition or substitution to relevant clauses of:

- Low Density Residential Zone;
- Landscape Conservation Zone;
- Rural Zone; and
- Agriculture Zone.

The purpose of the Coastal Zone SAP would be as follows:

- To provide for compatible use and development that is of a scale and intensity that protects and minimises the impact on the coastal environment.
- To maintain the coastal landscape values between settlements.

It is recommended (but not limited to) that the written document introduce the Coastal Zone SAP with the intent to:

- substitute clause 10.3.2 to restrict the use class 'Visitor Accommodation' in the Low Density Residential Zone to limit the number of buildings for this purpose on a site;
- substitute clause 10.4.4, A1 and 10.5.1, A4, imposing a 400m^2 site coverage at the Acceptable Solutions instead of a 30% rule with No Performance Criteria;
- substitute clause 10.6.1 Lot Design to require a minimum lot area of 2500m^2 instead of 1500m^2 and re-draft P1 Performance Criteria that provides for no smaller lots than 2000m^2;
- substitute clauses 20.5.1, 21.5.1 and 22.5.1, prohibiting subdivision 1km of MHW, unless for minor boundary adjustments, consolidation of lots within the same zone or for public use by the Crown, a council or a State authority.
- substitute clause 22.3.2 to limit Visitor Accommodation to a single building; and

Coastal Zone SAP consistent with LPS criteria

Consistent with section 32 of the LUPA Act

The SAP is in accordance with section 32 of the LUPA Act. Section 32(3)(b) of the LUPA Act provides that an LPS may, if permitted to do so by the SPPs, include an SAP. The SPPs (at cl. 5.3) expressly allows for the inclusion of SAPs, such as the Coastal Zone SAP, in an LPS.

The proposed Coastal Zone SAP is appropriate for inclusion in the LPS pursuant to section 32(4) of the LUPA Act as the coastal zone has "particular environmental, economic, social or spatial qualities that require provisions, that are unique to the area of land, to apply to the land in substitution for, or in addition to, or modification of, the provisions of the SPPs". The State Coastal Policy makes clear that the coastal zone is an area of significant environmental benefit and particular spatial qualities that requires particular treatment in planning schemes (see for example, outcome 2.4.3). In NEBN's submission, there is no provision within the SPPs that provides as clear a response to the principles and outcomes of the State Coastal Policy and the NTRLUS.

Furthers LUPA Act objectives

The Coastal Zone SAP furthers the objectives set out in schedule 1 of the LUPA Act as it promotes the sustainable development of natural and physical resources through subdivisions and residential development being located within appropriate zones and preventing ribbon development. The SAP will also assist maintaining the significant ecological processes and genetic diversity located within the coastal zone, by discouraging inappropriate subdivision or development.

Consistent with State Policies

As already outlined, the Coastal Zone SAP is consistent with State Coastal Policy and in particular outcomes 2.4.1 -2.4.3. As we have already outlined, the Coastal Zone SAP is consistent with State Coastal Policy and in particular outcomes 2.4.1 -2.4.3 and it is also aligned with the State Policy on the Protection of Agriculture land 2009 or the State Policy on Water Quality Management 1997.

Consistent with the Regional Land Use Strategy

The Coastal Zone SAP is, as far as practicable, consistent with the Northern Tasmania Regional Land Use Strategy

Consistent with the Northern Tasmania Regional Land Use Strategy

The Coastal Zone SAP is, as far as practicable, consistent with the Northern Tasmania Regional Land Use Strategy as it will carefully balance the outcomes in Part G with Part E7.0.

Has regard to Strategic Plan

The proposed SAP has regard to the Break O'Day Council Strategic Plan 2017 -2027 goal for the environment of ensuring the natural environmental is available for future generations to enjoy as we do. This is because the SAP puts in place necessary regulation to enable "appropriate use and address inappropriate actions" (see Strategic Plan at p 11). The SAP encourages sensible and sustainable development of residential and urban areas within the appropriate zones, and not with the Landscape Conservation, Rural and Agriculture zones (see Strategic Plan at p 11). The SAP is also consistent with the Break O'Day Environment and Natural Resource Management Action Plan 2018-2023 (**Action Plan**) which lays down the detailed framework for the realisation of the Strategic Plan. One of the aims of the Action Plan is (at 1.3.1):

> Native habitat health and integrity is maintained and the threat of extinction for species and communities is reduced.

This is to be achieved through the action:

> Ensure habitat connectivity and integrity in Biodiversity Code and trigger (map); land use zoning strategy maintains habitat connectivity (**e.g. avoids fragmentation by coastal 'ribbon development'**)

The SAP provides a clear mechanism for implementing this action by way of preventing subdivision and the intensification of buildings and developments along the coast.

Consistent with and co-ordinated with any adjacent LPSs

The Coastal Zone SAP will be consistent and coordinated with neighbouring the LPSs for adjacent municipalities and will not give rise to inconsistent development outcomes.

2. Spatial application of the Landscape Conservation Zone instead of the Rural Zone at St Marys and Elephant Pass

   The NEBN seeks to increase the spatial extent of the Landscape Conservation Zone instead of the Rural Zone to the north, south and east of St Marys due to the landscape values identified and the contiguous native vegetation cover. Please refer to Attachment A for the justification with respect to the change sought. The justification is further supported by Attachments D,L,M and N and all provide context in terms of the importance of maintaining ecological processes and genetic diversity through cross tenure landscape scale conservation planning. Attachments H and I indicate important scenic values in the St Marys area.

   NEBN also believes more assessment of properties inland from St Helens such as in the Goshen, Goulds Country, and Weldborough areas should be undertaken to ensure titles with important conservation and landscape connectivity values are not zoned Rural but Landscape Conservation.

3. Proposed Zones for identified properties

The NEBN submits that some of the proposed properties identified in Attachment A are not in accordance with '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*' and an alternative zone should be considered. Please note that in some instances, the NEBN has also supported the zoning, Attachment A.

The NEBN submits that some of the proposed properties identified in Attachment C are not in accordance with the '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*' and an alternative zone and or additional development controls should be considered. In addition, in Attachment C of this representation it is NEBN's contention that all titles with a conservation covenant should be zoned Landscape Conservation Zone to be consistent with '*Guideline 1 Local Provisions Schedule (LPS): zone and code application*'.

4. BRE-P3.0 Particular Purpose Zone – St Helens Coastal Maritime

The NEBN requests that the spatial extent of the BRE-P3.0 PPZ be revised for the reasons identified in Attachment B.

5. Delete BRE-S1.0 Safeguarding St Helens Aerodrome Specific Area

The NEBN requests that the BRE-S1.0 SAP is deleted for the reasons identified in Attachment B.

6. Delete BRE-S2.0 – Stormwater Management Area Plan

The NEBN requests that the BRE-S2.0 SAP is modified to improve the assessment tools provided to reduce the overall quantity and improve the quality of urban stormwater flows to waterbodies as part of a comprehensive stormwater management program that is premised on the identification of important aquatic ecosystem values and the need to avoid or minimise any potential ecological impacts including limiting impervious surfaces on a site as outlined in Attachment B.

7. Scenic Protection Area

The NEBN requests that scenic protection areas in the code overlay maps in addition to the scenic road corridor concerning the Scenic Protection Code is included as per the justification in Attachments H and I.

8. Priority Vegetation Area

The NEBN requests the priority vegetation area shown in the code overlay maps is amended as per the justification in Attachment L.

9. Future Potential Production Forest

The NEBN requests the Environmental Management Zone is applied to the land areas shown as Future Potential Production Forest as per the specific information regarding ecological values provided in Attachments M and N and the broader landscape scale analysis provided in Attachments D and L.

10. Significant Trees

The NEBN requests that the Table C6.5 includes the list of significant trees contained within Attachment B.

11. Environmental Weeds

The NEBN requests that the additional weed species identified Attachment B are included in BRE-P1.8.1.

Conclusion

The NEBN has provided clear evidence, through the submitted reports and representation, demonstrating that the current restrictions on subdivision within the Environmental Living and Rural Resource zones of the Break O'Day Interim Planning Scheme have been effective in the protection of the unique and sensitive environment of the coastal zone.

While Council correctly notes that the current prohibition of subdivision in the Environmental Living and Rural Resource zones are "unique" provisions, this of itself is no justification for the Council not to carry over the provisions to the draft LPS, particularly when the SPPs provide inadequate protection for the coastal zone.

NEBN's proposed Coastal Zone SAP will ensure that the Council continues to properly discharge its obligation to achieve the outcomes under the State Coastal Policy, and its Strategic Plan and Action Plan. But more importantly, including the Coastal Zone SAP in the draft LPS will ensure that future generations will be able to enjoy the coasts of the Break O'Day municipality as we do – unspoilt by ribbon development.

Furthermore, the array of other zoning and code matters raised in this representation must also be carefully considered to ensure that the use and development controls meet the LPS criteria at section 34 of the Act.

Yours sincerely Todd Dudley President North East Bioregional Network

Postal address: 24751 Tasman Highway RSD St Marys 7215 Email: telopea_tas@yahoo.com.au

APPENDIX A

Examples of strata development in the Environmental Living Zone.

(a) 24798 Tasman Highway St Helens DA 027-2017 and DA 186-2020

Figure 1: Example of an existing strata development north of Dianas Basin

Figure 2: Location of the strata development as shown in Figure 1.

Expression of Interest

24798 Tasman Highway St Helens TAS 7216

Vacant land

Property Description

PRIVATE RETREATS...

What a prime opportunity!
Two parcels of land of this size so close to town is very rare!
Consisting of Lot 2. 11.67 ha (28 acres) approx. and Lot 6. 8.967 ha (22 acres) approx. The gently sloping land of both lots has a backdrop of natural bushland with established shade trees, views to the ocean and beyond!
Both lots having an approved building envelope with power available.
Smart use of either or both of these properties could create your private country life style retreat/accommodation opportunity. (STCA) Less than ten minutes' drive from St Helens town centre on Tasmania's Sunny East Coast.

Anyone seeking privacy and seclusion however still close to all facilities. This is for you!
St Helens is the largest town on the sunny Tasmanian East Coast. Complimented with a new hospital, district high school and thriving business CBD including, supermarkets, major bottle shop, many dining and retail options and accommodating the strong mountain bike

network. All only being 2 hours from Launceston and 3 ½ hours from Hobart, coupled with a vibrant and friendly local community has to make it the perfect spot to reside.

Disclaimer: View Real Estate has no reason to doubt the accuracy of the information in this document which has been sourced from means which are considered reliable, however, we cannot guarantee accuracy. Prospective purchasers are advised to carry out their own investigations.

Figure 3: Real Estate advertisement concerning the existing strata development

(b) 46 Franks Street Falmouth DA 043-2019 "Saltwater"

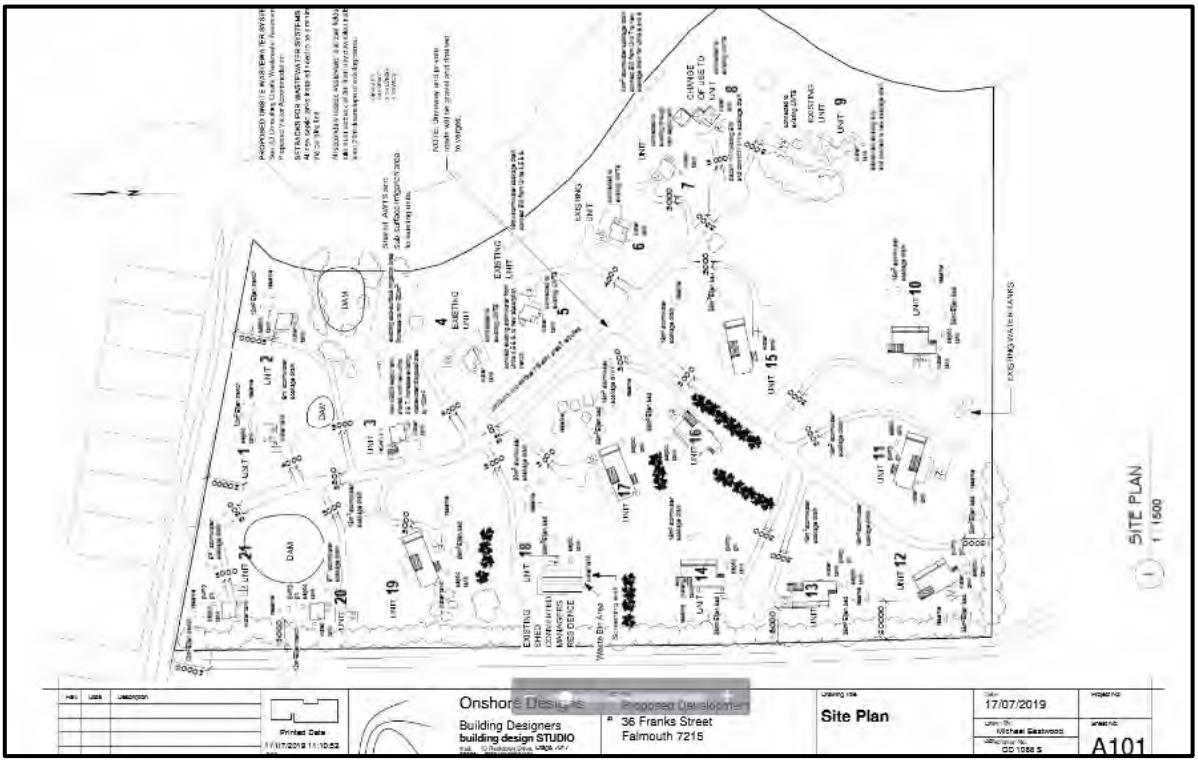


Figure 4: Strata development example at Falmouth

Figure 5: Real Estate advertisement in the shop front window concerning the existing strata development at Falmouth

Figure 6: Aerial view of the strata title development at Falmouth

From:	NE Bioregional Network
To:	Break O Day Office Admin
Subject:	Break O Day LPS representation (2 of 6)
Date:	Friday, 17 December 2021 12:35:54 PM
Attachments:	Attachment C DRAFT LPS ZONE MAPS RESPONSE Final.doc Attachment D LAND USE PLAN.pdf Attachment E Protection of coastal natural values in the Break O Day Municipality (Nick Fitzgerald 2021).pdf

Please find attached our second email re the LPS

Thanks

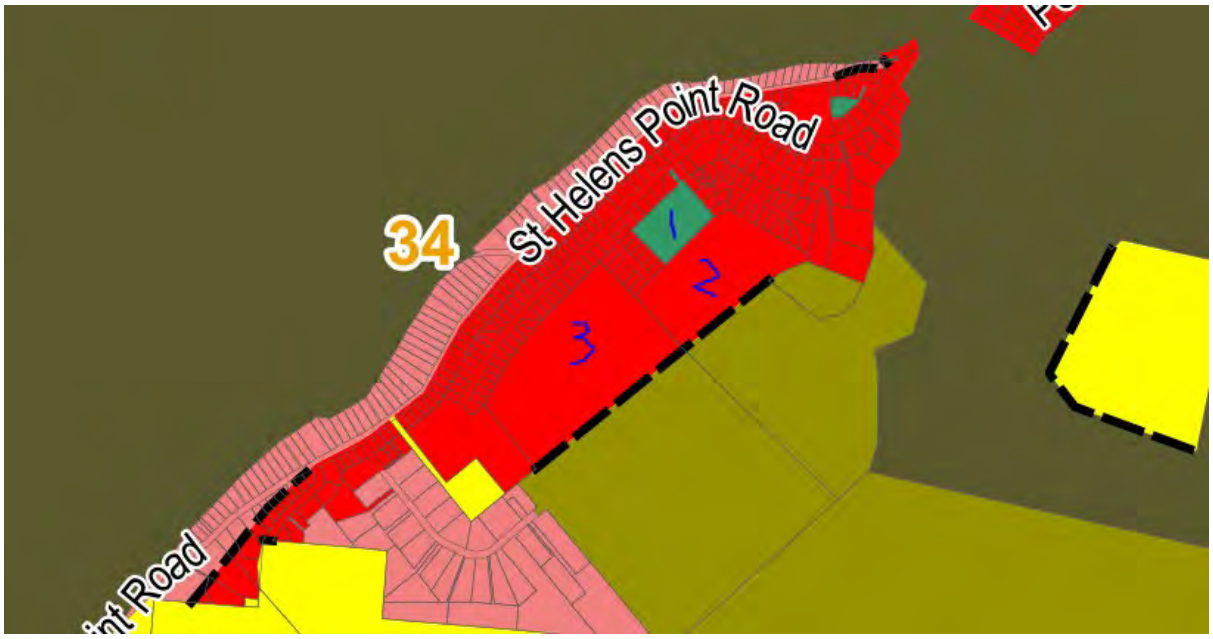
Todd Dudley
President
North East Bioregional Network

Phone (03) 6376 1049
Postal address: 24751 Tasman Hwy, RSD St. Marys 7215

DRAFT LPS ZONE MAPS RESPONSE (Attachment C)

St Helens Area

36 Parnella Drive, 11 Shearwater Avenue, 105 St Helens Point rd



Number 1 ……..36 Parnella Drive. Support Environmental Management zoning. The land has native vegetation in good condition on it including botanically rich understorey in the Eucalyptus amygdalina forest and a patch of Melalueca squarrosa. There are two known threatened plant species present Hibbertia virgata and Acacia ulicifolia. The land adjoins a property with a perpetual conservation covenant on it.

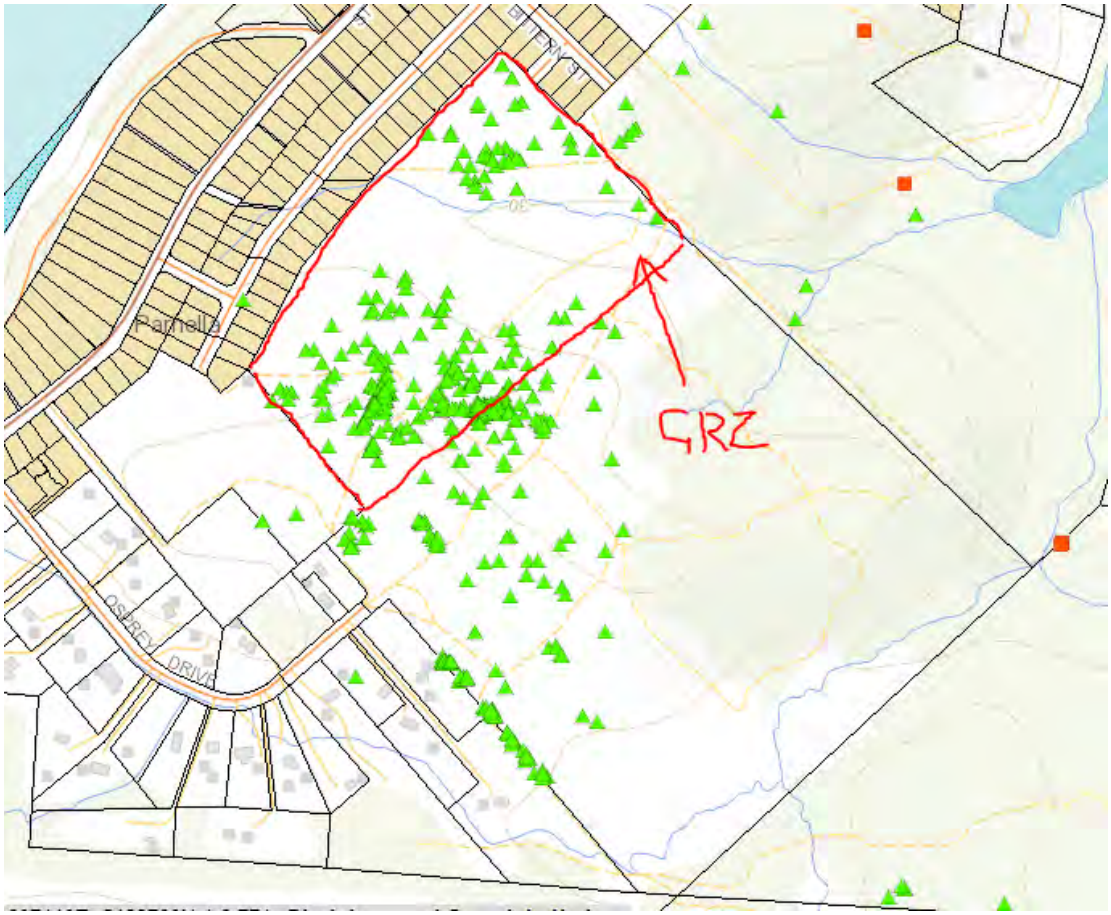
The land was set aside as Public Open Space under a subdivision undertaken on Parnella Drive many years ago. The land should have been but was not transferred to Council as Public Open Space and was subject to an adverse possession claim which was unsuccessful a few years ago. Consistent with Guideline no 1

Number 2……..11 Shearwater Avenue. This land has a permanent conservation covenant placed over it and adjoins the Chimneys Lagoon Conservation Area and most of the title is zoned Landscape Conservation Zone.

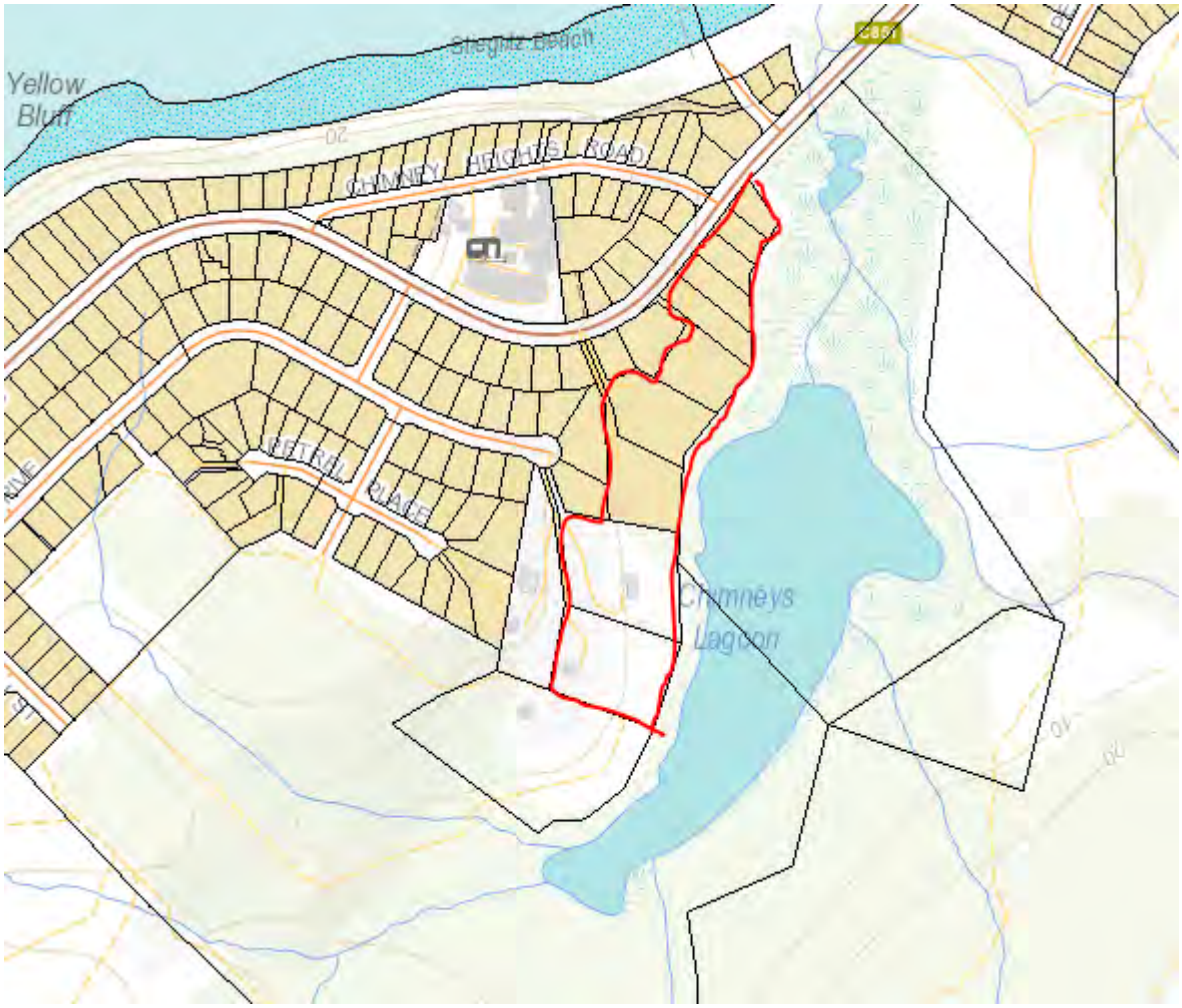
The portion of the title zoned General residential should be rezoned to Landscape Conservation Zone as per LCZ 1 of Guideline no 1

Number 3……105 St Helens Point rd. This land was illegally cleared in 2007. Subsequent surveying of the block revealed some of the largest populations in Tasmania for the EPBC and State listed Conospermum hookeri and State listed Hibbertia virgata as well as other threatened flora such as Acacia ulicifolia and Euphrasia collinus ssp deflexifolia. The land adjoins a covenanted property and forms part of the catchment for Chimneys Lagoon Conservation Area. The 2009 North Barker report Break O Day Coastal Lagoon Assessment noted urban development as being the biggest threat to Chimneys Lagoon. Most of the title is zoned Landscape Conservation Zone. The portion of the title zoned General Residential should be rezoned to Landscape Conservation Zone. This is consistent with Guideline no 1……. LCZ 1 and LCZ 2(a)(b)

Map below. Red represents current part of title zoned General Residential. Green triangles represent threatened flora points mostly Hibbertia virgata and Conospermum hookeri.



Titles adjoining Chimney Lagoon Conservation Area



All of these titles have common boundaries with the Chimneys Lagoon Conservation Area or private land with a conservation covenant on it (11 Shearwater Avenue). General Residential Zoning is not considered appropriate as high density development will impact on the natural values of the wetland and associated high conservation value vegetation including Melaleuca ericifolia forest. The Break O Day Coastal Lagoon Assessment (North Barker 2009) notes that urban development represents a high threat to Chimneys Lagoon and states **"Restrictions on what type and scale of future development should be put in place within a buffer around Chimneys Lagoon to help protect the remaining habitat, the water quality and other natural values in the area".** These titles should be zoned so that high density urban development is not permitted and there is a buffer zone around Chimneys Lagoon. The titles should be zoned Landscape Conservation Zone or alternatively come under the proposed Coastal Settlement PPZ to further the requirements of the State Coastal Policy clauses including but not limited to 1.1.5 and 1.1.9

We support the Landscape Conservation Zoning for 7 Shearwater Avenue whose boundatries adjoin 11 Shearwater Avenue which has conservation covenant over it.

Crown Land adjoining Chimneys Lagoon Conservation Area and St Helens Point Conservation Area

Support Environmental Management Zone allocation. The land has threatened plant species, threatened vegetation community and adjoins two Conservation Areas so is an important landscape connection and buffer.

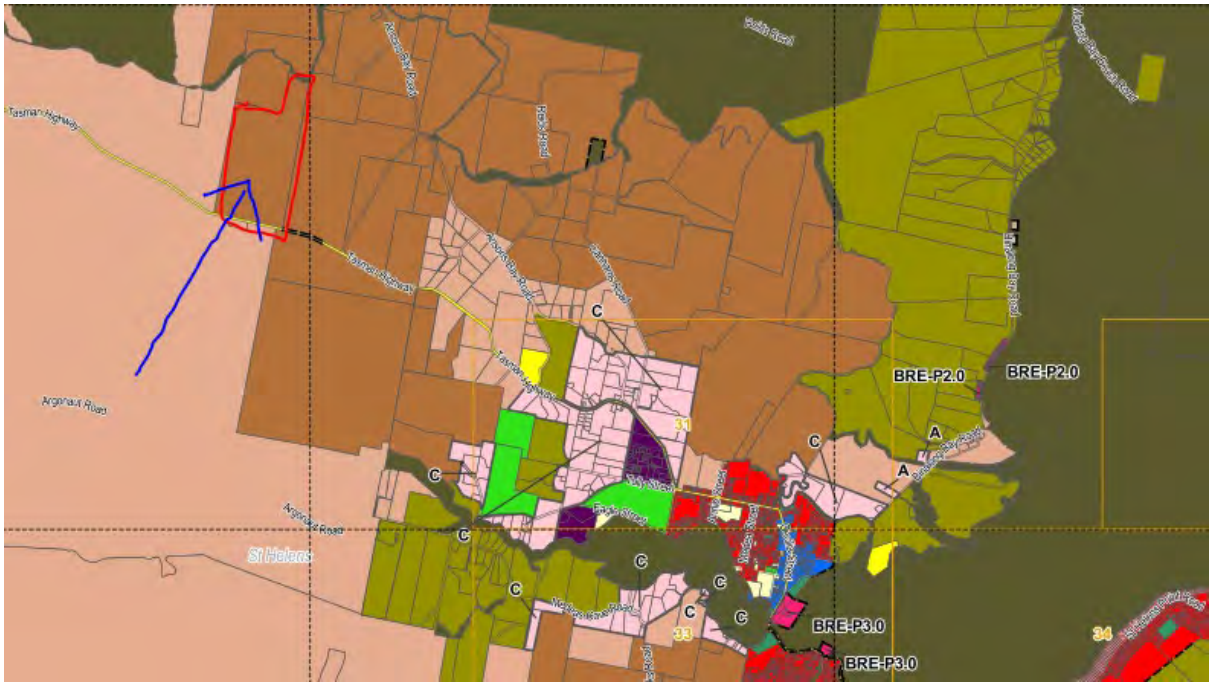
3 Lots Poseidon st St Helens

These titles are proposed to be zoned General Residential. The land is in a scenically and environmentally sensitive area and is densley forested.

The titles adjoin the Boggy Creek Conservation Area which contains threatened vegetation communities including Eucalyptus viminalis/globulus coastal forest and woodland, Melaleuca ericifolia forest and the recently EPBC listed wet Eucalyptus viminalis forest, and form part of the catchment for the Boggy Creek wetland. The vegetation in the gully that runs through these titles most likely also includes threatened forest communities. The Break O Day coastal Lagoon Assessment (North Barker 2009) noted “development within adjacent native vegetation” as a key threat to the Boggy Creek wetalnd and further recommended “planning laws which restrict further development within a defined buffer zone around Boggy Creek Wetland”.

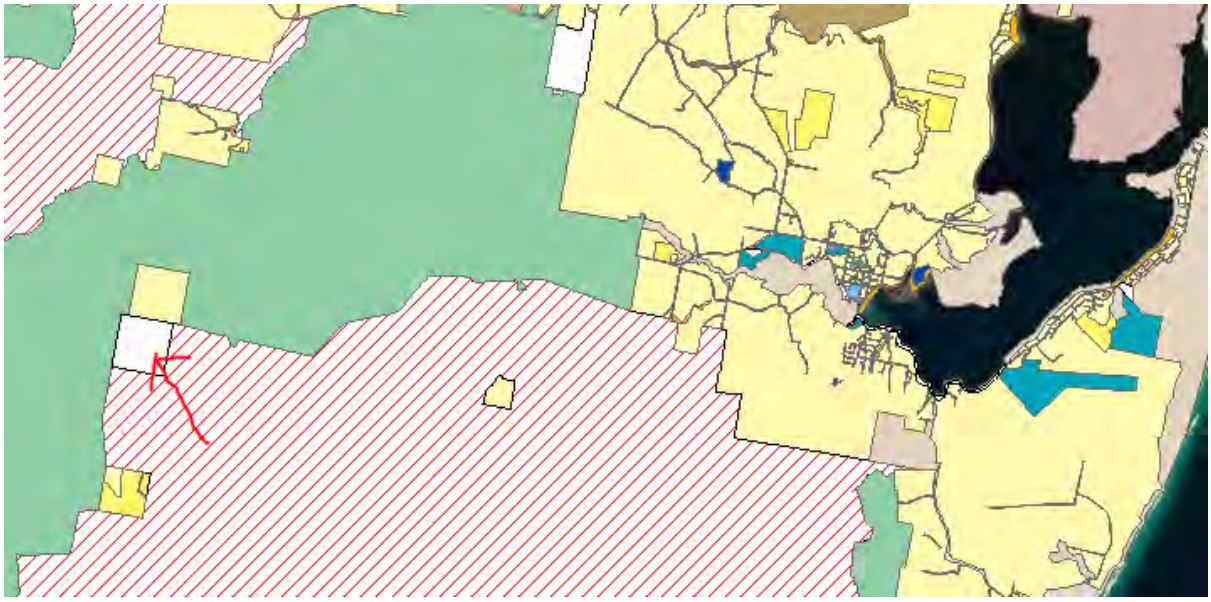
The titles should be zoned Landscape Conservation Zone. This is consistent with Guideline no 1 LCZ 2(b)and LCZ 3 and the State Coastal Policy

PID 6792694 Tasman Highway near St Helens



Large bush block with native forest in good ecological condition including two EPBC listed threatened forest communities. Eucalyptus ovata forest (also Swift Parrot habitat) and wet Eucalyptus viminalis forest. Appropriate zoning for such Crown Land is Environmental Management Zone as per Guideline no 1 EMZ 1 (e)

PID 6791835 inland from St Helens



This land is in good ecological condition, weed free with a diversity of vegetation communities and understorey including Eucalyptus amygdalina/viminalis forest which includes understorey such as Bossiaea pprostrata, Pultenea daphnoides, Lomatia tinctoria, Dillwynia glaberrima, prostrate form of Banksia marginata, Hibbertia procumbens, Pultenea juniperina. There is also threatened Eucalyptus ovata forest with understorey of Hakea nodosa, Leptospermum lanigerum, Melaleuca squarrosa, Leptocarpus tenax and Callistemon viridiflorus.

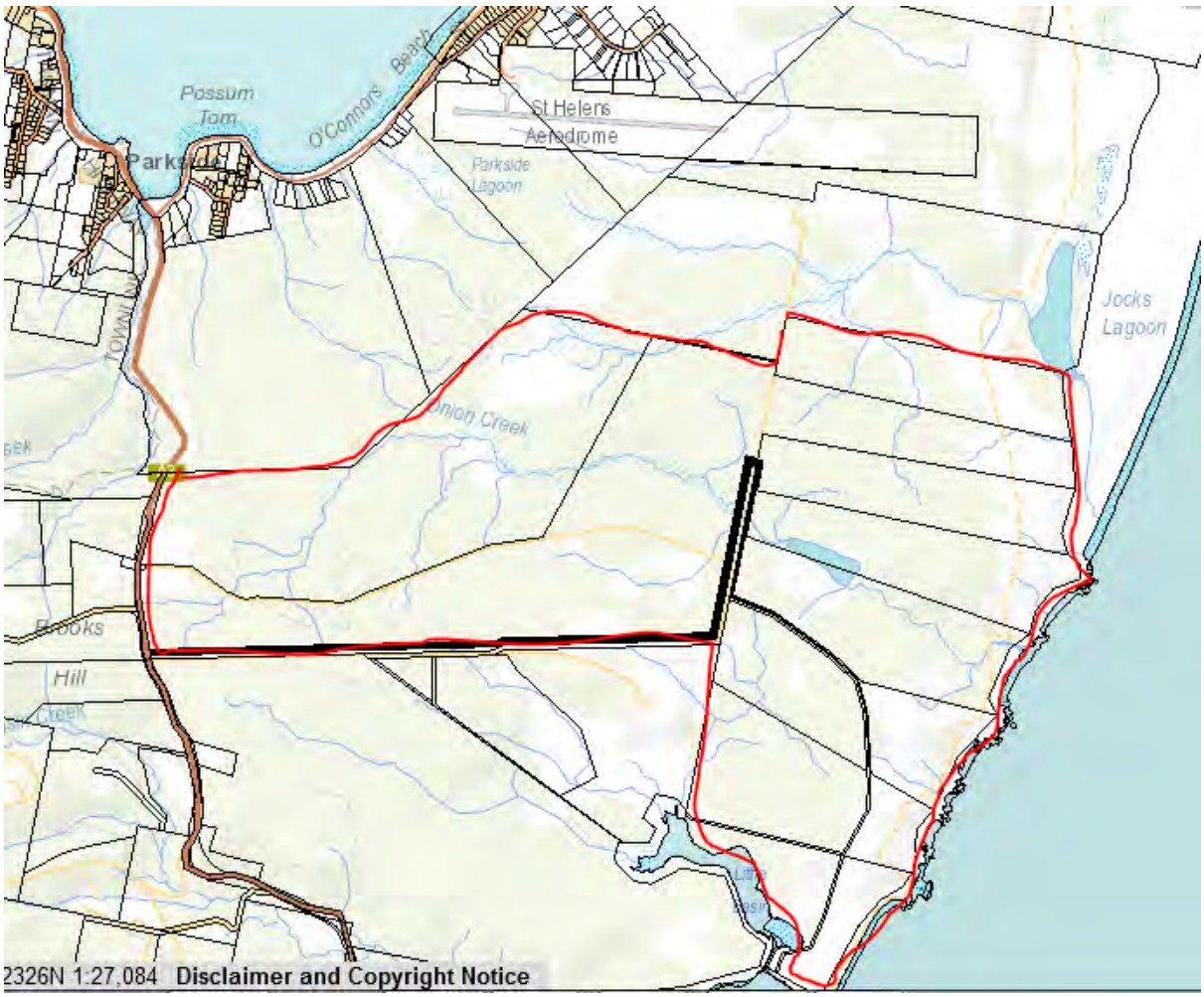
There are also damp/wet area dominated by Hakea nodosa and Melaleuca squarrosa grading into more open areas with Button Grass. Ne part of the block has a number of healthy Grass Trees.

There are numerous orchids on the land. The land is high quality habitat for a range of native fauna species. The land should be zoned Environmental Management as it is Crown Land with high conservation values

Crown Land corner Akaroa Avenue and St Helens Point road

Support Environmental Management zoning. The land has good quality native vegetation on it. It provides important scenic protrection by screening houses from St Helens Point rd. There is also Aboriginal Heritage values present on the title.

PID 9697916 Tasman Highway St Helens

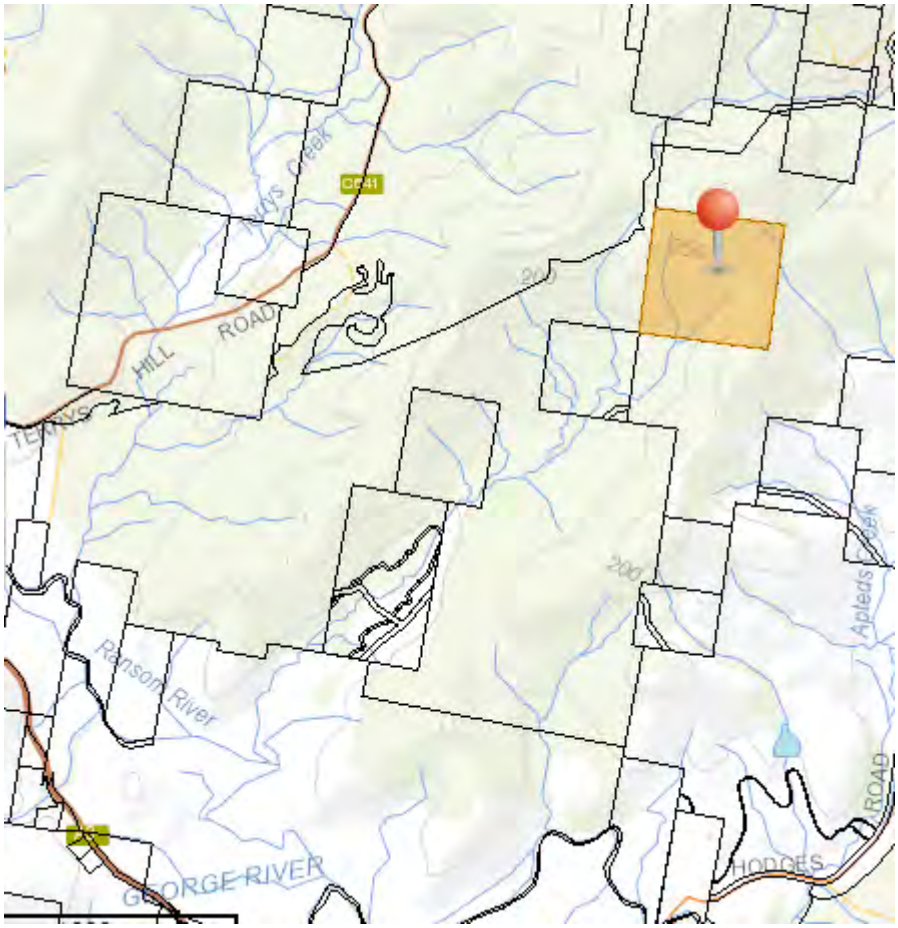


Support Landscape Conservation Zoning and additional NEBN proposed SAP controls within 1k of the coast as the land is extremely valuable for landscape connectivity between St Helens Point and Scamander Tier. There is a mosaic of coastal vegetation and habitat types. Suitable habitat for the New Holland Mouse. Threatened flora species such as the EPBC listed Conospermum hookeri. White bellies Sea Eagle nest. Aboriginal heritage items. Part of the catchment for the RAMSAR listed Jocks Lagoon

50 St Helens Point Road PID 6789372

Support Landscape Conservation Zoning and additional NEBN proposed SAP controls. The land has a important coastal wetland, threatened Eucalyptus ovata and wet Eucalyptus viminalis forest. Adjacent to the Boggy Creek Conservation Area. Important for landscape connectivity between St Helens Point and Scamander Tier. Recent application for rezoning to Rural Living Zone was rejected by the Tasmanian Planning Commission.

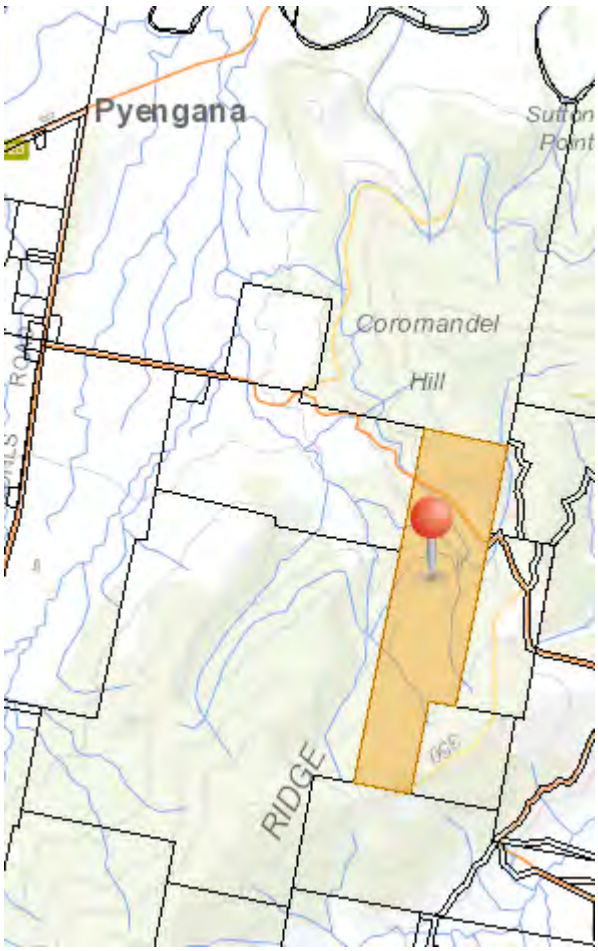
Crown Land PID 2159197 Goshen



This land is an excellent example of wet and dry Eucalyptus obliqua forest.

The title is completely covered in high quality native forest including numerous old growth trees with hollows suitable for species such as the Masked Owl and Yellow Tailed Black Cockatoos. There is also suitable habitat for Giant Velvet Worm and the highly restricted range of the Bornemisszas Stag Beetle. As such the land should be zoned Environmental Management Zone as per Guideline no 1 23.1.1 and EMZ 1 as the land has significant conservation values

Crown Land PID 2159648 Pyengana

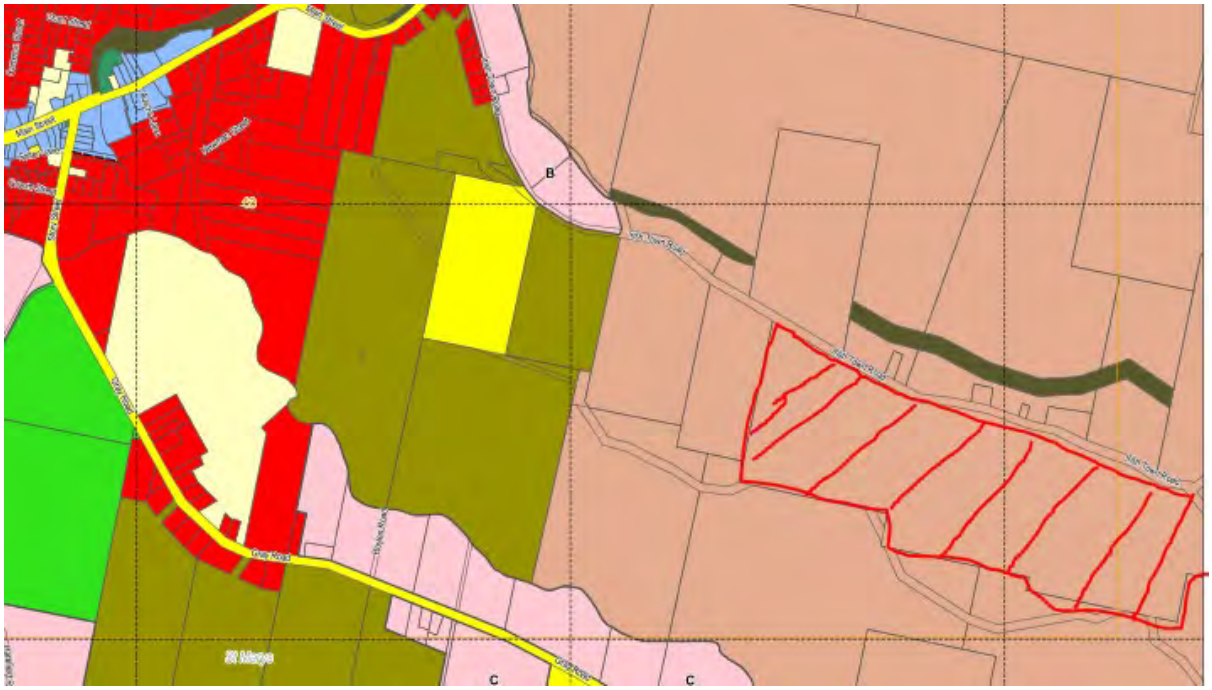


This land is steep and contains damp Eucalyptus obliqua forest in good condition with many old growth trees present. There is a record for Giant Velvet Worm on the title and suitable habitat for Simsons Stag Beetle, Spotted Tailed Quoll and Grey Goshawk. The land is in the upper catchment of the George River and also should be protected to safeguard riparian vegetation and water quality.

The land should be zoned Environmental Management

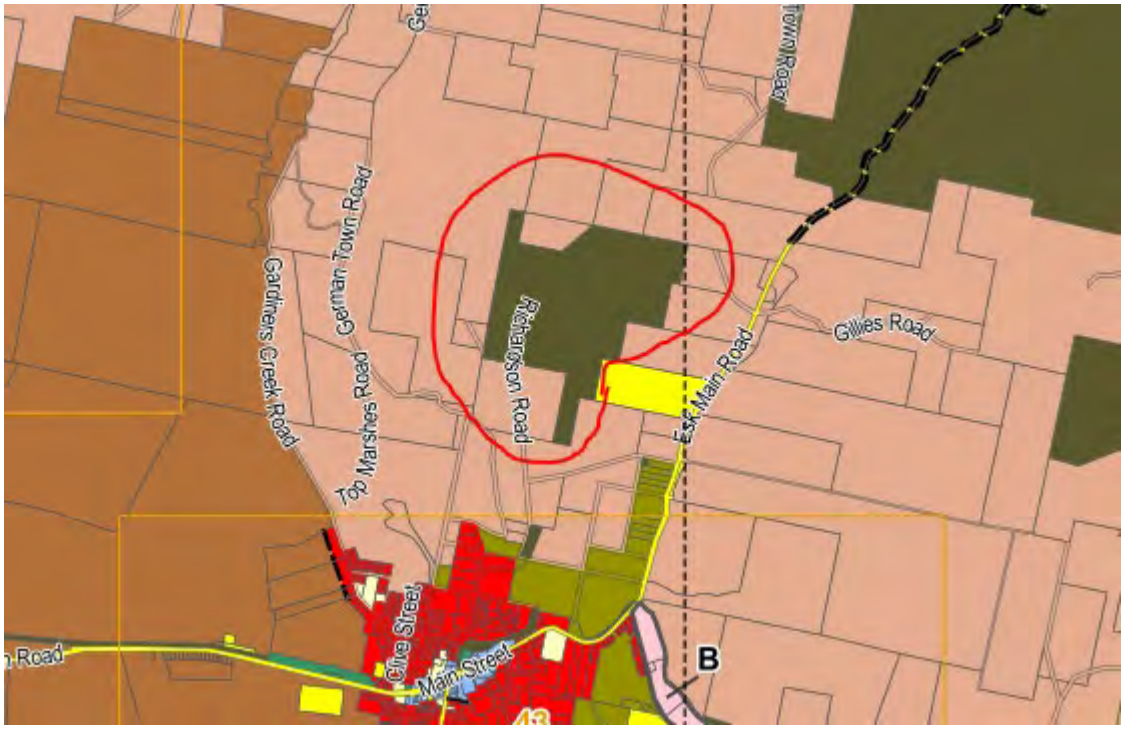
St Marys area

PID 2153182 Irishtown road.



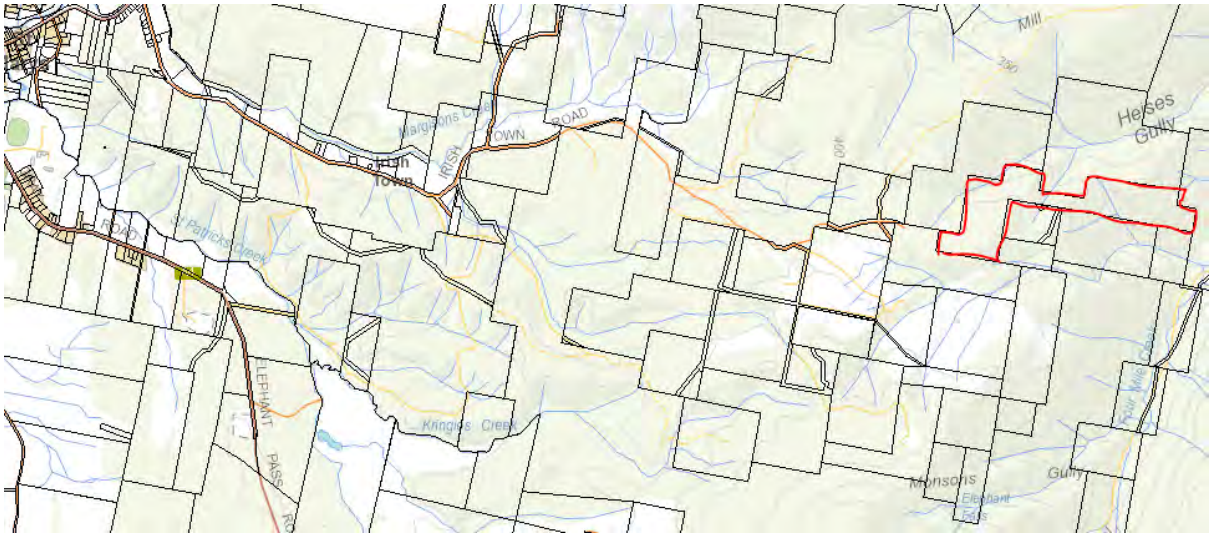
Crown Land Services block with Eucalyptus dalrympleana/amygdalina forest in good ecological condition which contributes to landscape connectivity in the area. Should be zoned Environmental Management Zone

PID 2153297 Newmans road St Marys



Support Environmental Management Zone for this Crown Land block which has high quality dry and wet native forest and habitat for threatened species such as EPBC listed Blind Velvet Worm (recorded as being present on the site), Swift Parrot and both species of Quolls. Important landscape connectivity values including adjoining a property with a conservation covenant on it.

Crown Land PID 2154783 Upper Irishtown road St Marys



This title has a mixof wet, damp and dry Eucalypt forest in good ecological condition . The land is steep and contains known habitat for the Blind Velvet Worm as well as Swift Parrot habitat. Should be zoned Environmental Management Zone as it has threatened species habitat and contributes to landscape connectivity in the area as well as being in the upper catchment for Four Mile Creek.

Binalong Bay area

Crown Land 31 Felmingham st and Future Potential Production Forest at the end of Coffee Drive

This land should be zoned Environmental Management Zone because it contains Eucalypt forest in good ecological condition. There is habitat for Chaostola Skipper Butterfly (Gahnia radula) and Swift Parrot (Eucalyptus globulus) there is also some Eucalyptus amygdalina trees with hollows. Swift Parrots are seen regulalry in the Binalong Bay area and are known to breed in the Humbug Point Nature Recreation Area. There is a Sea Eagles nest within 500 metres of the land in the Humbug Point Nature Recreation Area. Threatened species records on the land includes Desmodium gunnii, Lepidosperma viscidum and Spotted Tailed Quoll. Most of the land is in a catchment for a watercourse (tributary of Skeleton Creek) which runs into the ecologically sensitive and important Skeleton Bay. Urban development would result in poorer quality water entering Skeleton Creek and Skeleton Bay. The land adjoins the Humbug Point Nature Recreation Area.

Low Density Residential Zoning is not appropriate and inconsistent with the State Coastal Policy

Crown Land adjacent to Main rd Binalong Bay

We support Environmental Management zoning.

These three titles all have high conservation values. All three titles adjoin the Humbug Point Nature Recreation Area, serve important functions in maintaining water quality being part of the catchment for Grants Lagoon with watercourses running through all of the titles and are part of wildlife corridors between the coast and hinterland.

The titles have forest communities in good ecological condition and includes threatened Eucalyptus globulus and ovata forest (Swift Parrot habitat). There is good habitat for Chaostola Skipper Butterfly (Gahnia radula).

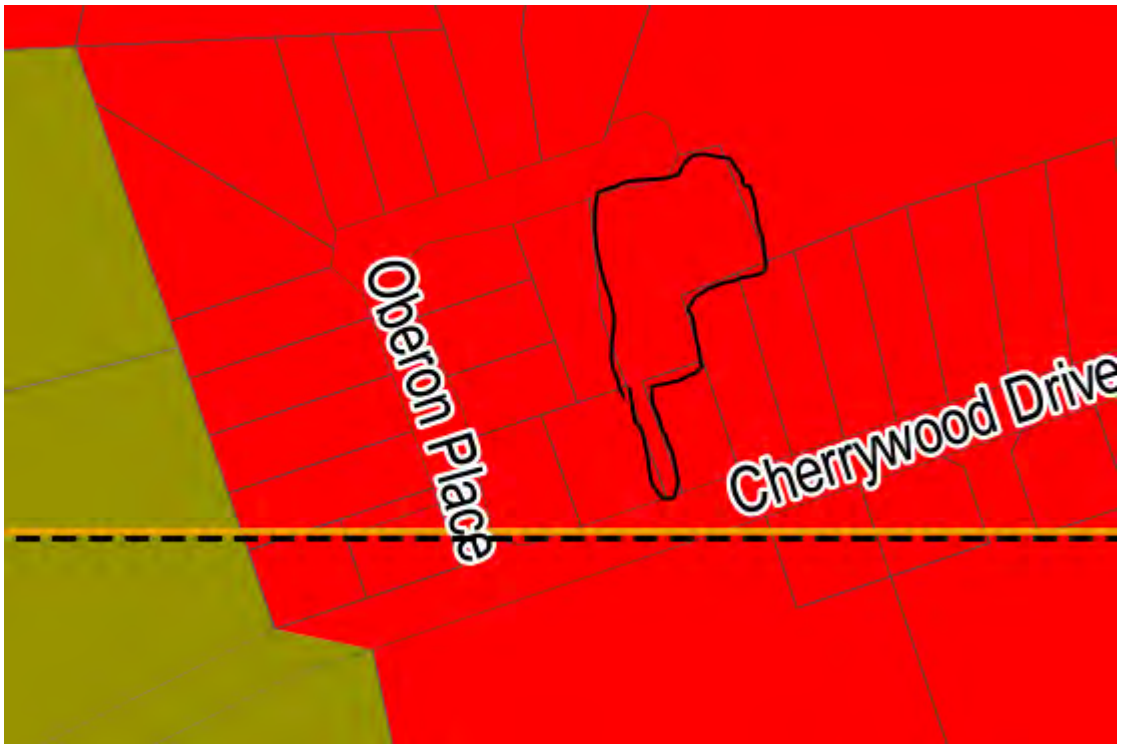
The Break O Day Coastal Lagoon Assessment report (North Barker 2009) notes in relation to Grants Lagoon “It is important that the Crown Land areas that surround this wetland be maintained as natural areas and not be developed for residemtial, industrial or agricultural purposes”.

74 Gardens road Binalong Bay

Support Landscape Conservation Zoning as the site is scenically very sensitive and is an important part of the Grants Lagoon catchment

Scamander Area

PID 2948700 Oberon Place



This land was set aside as Public Open Space under a subdivision plan for Oberon Place. The land is still zoned General Residential. The land should be rezoned to Open Space to reflect the intent registered on its title. The title has a watercourse running through it which has been observed to flood in high rainfall events.

Open Space zoning is consistent with the following Zone application guidelines from Guideline no 1

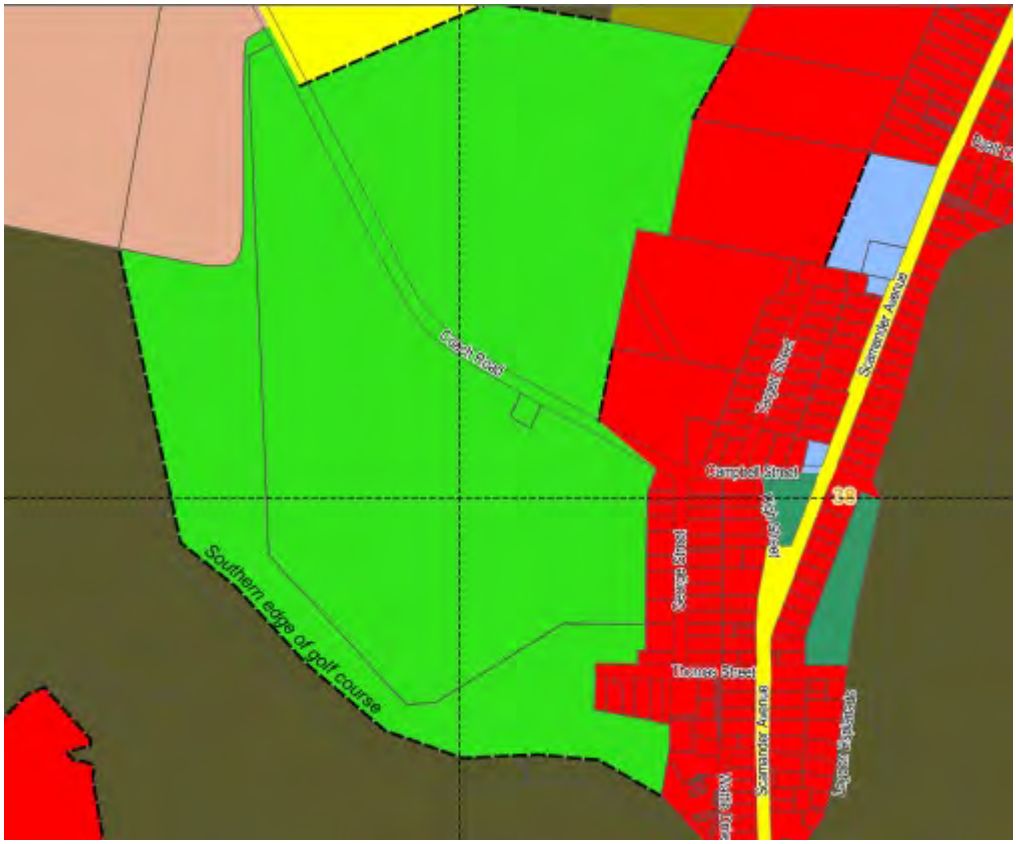
OSZ 1 The Open Space Zone should be applied to land that provides or is intended to provide for the Open Space needs of the community including land identified for:

(a) passive recreational activities

(b) natural or landscape amenity within an urban setting

Crown Land/Local Government land

PID 3413644 (Local Government land) and PID 2162855 (Crown Land)



This map in the Draft LPS Zone Maps report incorrectly identifies the “southern edge of the golf course” when it is in fact running along the edge of the Scamander River until the line heads in a more northerly direction

The area outlined in red is Crown Land which for some reason has been incorporated into the Recreation Zone despite it being all native forest in good ecological condition and mostly very steep and therefore not useable for golf purposes. The land identified in the red outline has significant natural values including threatened vegetation communities of Saltmarsh (EPBC listed) and Eucalyptus globulus forest (also Swift Parrot habitat in a known foraging area). The steep watercourses running through the land provide an important catchment buffer for water flowing into the Scamander River as well as habitat for the Giant Velvet Worm . Two Sea Eagle nests have been recorded in close proximity to the land

The land is also scenically very prominent being highly visible from the Tasman Highway.

The land should be zoned Environmental Management consistent with the zoning accorded to the rest of the Crown Land title of which this has been split zoned for no logical reason. This is in line with the Zone purpose 23.1.1 of Guideline no 1

The areas outlined in blue are Local Government land however also contain native vegetation in good ecological condition are mostly too steep to develop and have similar values in terms of catchment protection. There is a record for Giant Velvet Worm on the boundary of this title.

This land should also be zoned Environmental Management Zone to ensure compatible land use with the Crown Land title and Scamander River catchment protection.

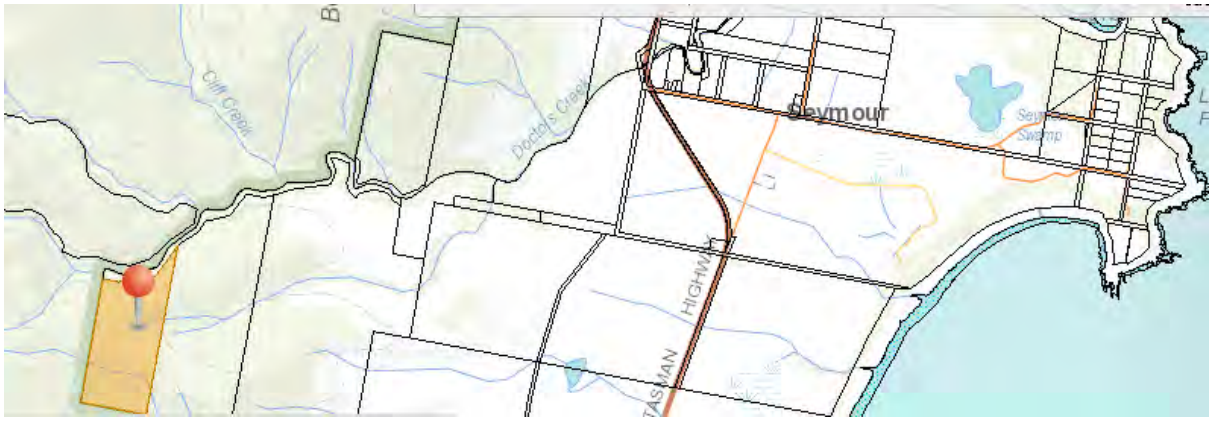
Note contours of the land surrounding golf course

Regarding this part of PID 2162855. The utilities zoning should only apply to the current high impact areas marked with a red line around them. The rest of the area has native forset/bushland that is mostly in good ecological condition. There are some areas that are more disturbed and degraded but none beyond restoration. Some of the important values of the bushland/forest areas include New Holland Mouse habitat, Chaostola Skipper Butterfly habitat and important wildlife corridor between Wrinklers Lagoon and the hinterland (noting pine plantations are being restored to native forest to the west of this land which then connects to the Scamander Regional Reserve managed by Parks and Wildlife). Part of the catchment for Wrinklers Lagoon. The land should be zoned Environmental Management.

The red hatched area on the above map is part of the Crown Land area but zoned General Residential. There is significant areas of private land zoned GRZ in Scamander. This public land should be zoned Environmental Management

SEYMOUR AREA

Crown Land adjacent to Douglas Apsley PID 2155217



The land adjoins the Douglas Apsley National Park and is covered in native forest.

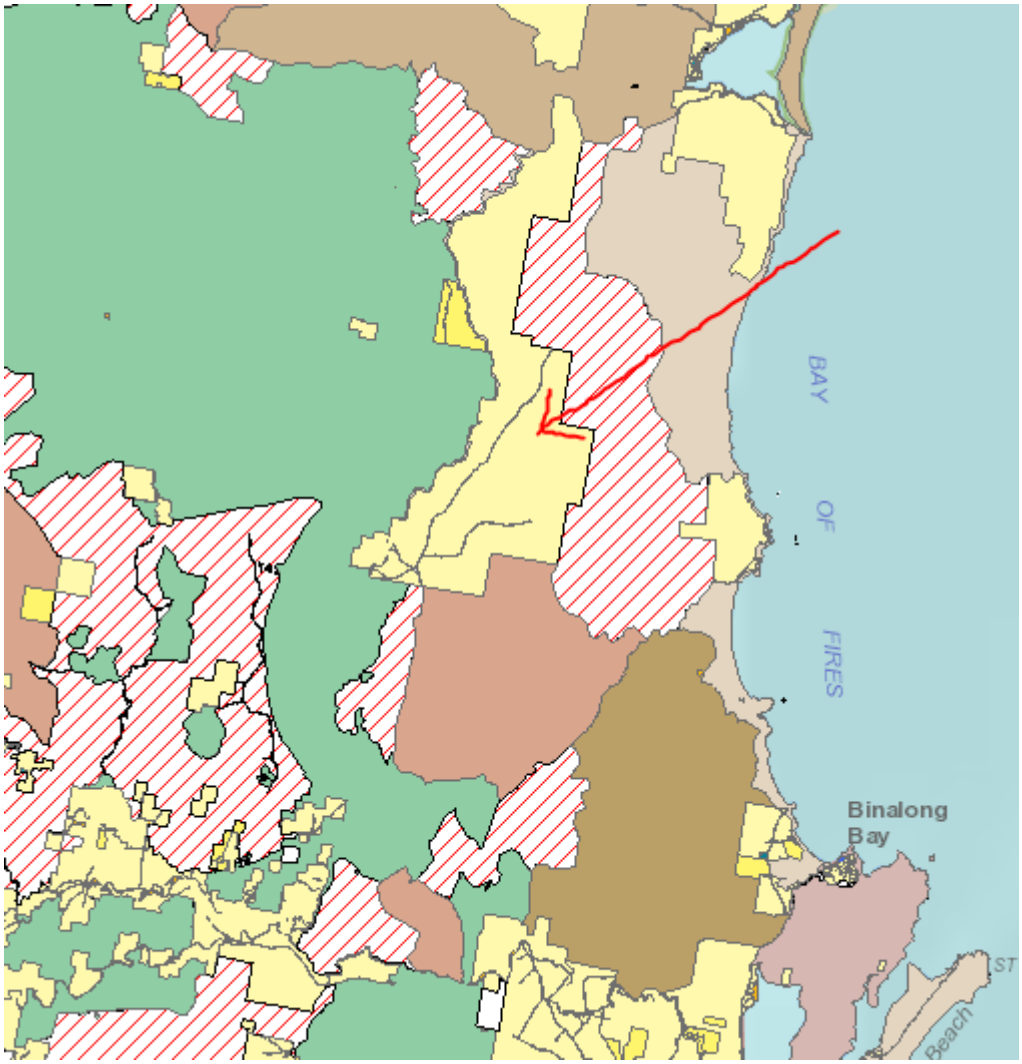
The land also has frontage to and is part of the Doctors Creek catchment which is the main watercourse feeding Templestowe Lagoon (a high conservation value coastal wetland). Contours indicate the title is steep and clearly not suitable for agriculture.

Contours

Vegetation cover. The TASVEg mapping indicates that the vegetation is Eucalyptus amygdalina forest however it is likely the south facing aspects on this land would have wetter forest types on them

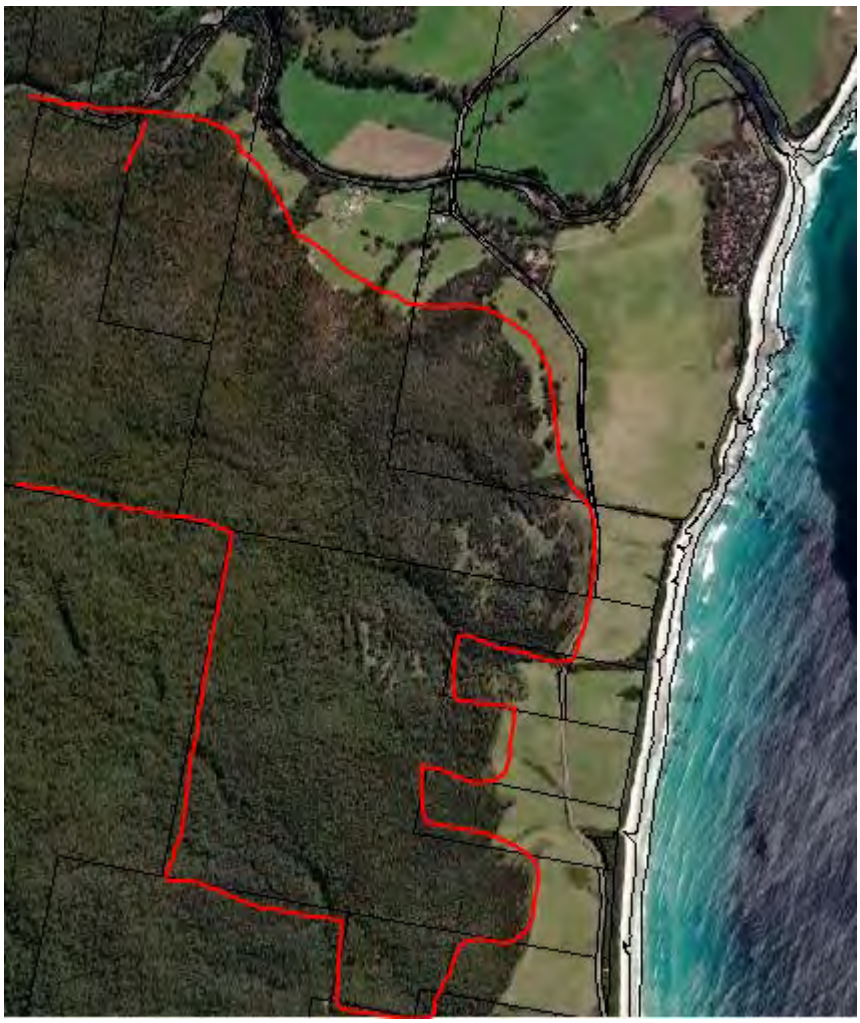
A FEW EXAMPLES OF LAND ZONED AGRICULTURE THAT HAVE CONSERVATION VALUES

ANSONS Bay Rd PID 3140375



This land is zoned Agriculture but also has one of the largest EPBC listed Eucalyptus ovata forest patches left in Tasmania. In such cases high conservation value land should be split zoned to ensure important conservation values are zoned Landscape Conservation Zone and are subject to adequate environmental protections

PID's 6408939, 6408947 Douglas River and Denison Rivulat



Zoned Agriculture. Land is forested and adjoin or provide a buffer for the Douglas Apsley National Park as well as being important components of coastal catchments. Could be split zoned Landscape Conservation/Agriculture to protect natural values

Zoning of land with Conservation Covenants.

All titles which have a conservation covenant on them should be zoned Landscape Conservation Zone. The LPS proposes a range of zones for land with conservation covenants on them including Agriculture and Rural.

The Council has in our view not correctly applied the Guideline no 1 Zone Application Guidelines in relation to land with conservation covenants on them. It appears that there has been no assessment of the Application Guidelines for land that may meet the LCZ criteria on land that is not situated on the coast.

It is our view that all conservation covenats meet the LCZ 1 criteria as the covenants have been put in place because the titles have important nature conservation values

In the Rural Zone the following is stated: RZ 1 The Rural Zone should be applied to land ... which is not more appropriately included within the Landscape Conservation Zone or Environmental Management Zone for the protection of specific values.

It is clear in our view that conservation covenants are more appropriately zoned LCZ than Rural because they have specific natural values requiring protection

Regarding Agricultural zoning the AZ 6 Land identified in the 'Land Potentially Suitable for Agriculture Zone' layer may be considered for alternate zoning if:
(c) for the identification and protection of significant natural values, such as priority vegetation areas as defined in the Natural Assets Code, which require an alternate zoning, such as the Landscape Conservation Zone or Environmental Management Zone;
(e) it can be demonstrated that:
(i) the land has limited or no potential for agricultural use and is not integral to the management of a larger farm holding that will be within the Agriculture Zone;
(ii) there are significant constraints to agricultural use occurring on the land; or
(iii) the Agriculture Zone is otherwise not appropriate for the land.

In our view land with a conservation covenant in proposed Agriculture zones should be zoned LCZ given that the Agriculture Zone is exempt from the Natural Assets Code and thus unsuitable zoning for land with high conservation values. In addition we would also support split zoning where a title includes Agricultural land and non- farming land with a conservation covenant on it being zoned LCZ

North East Bioregional Network

Scamander River and Avenue River catchments from North Sister (photo: Rob Blakers)

Land Use Plan

Potato growing on the fertile soils of Pyengana, photo: Nick Fitzgerald

Forestry and farming in the hills of Pyengana, George River catchment (above), photo: Nick Fitzgerald

Acknowledgements

The contribution of Tasmanian and University of Tasmania experts who participated in the workshops or provided advice is gratefully acknowledged.

This project would not have been possible without the assistance of Nicole Gill, Peter McQuillan, David Keast, Nick Fitzgerald and Simon Branigan.

The structure and layout of this report has been closely modelled on a document produced by the WildEyre team, who are working on a similar project in South Australia. The section 'Assessing threats to the conservation assets' (page 9) is largely based on the WildEyre plan. We thank them for allowing us to use their plan as a basis for our document. For more information: www.wildeyre.com.au

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THE NE TASMANIAN WILDCOUNTRY PROJECT

- using landscape scale ecological processes to guide conservation management

"Sustainable development" is a much-used term in the field of environmental planning. It's written into Tasmanian legislation[1], and few would deny it as an admirable goal. But what does it really mean in practice?

The North East Bioregional Network, in cooperation with the Wilderness Society's WildCountry project, are working together to discover what an "environmentally sustainable" plan for a landscape might actually mean.

WildCountry aims to determine what nature needs to survive and to act on this at the appropriate time scales and spatial scales. Consequently, WildCountry is a long-term vision operating from the regional to the continental scale. WildCountry is a science-based approach to conservation planning, built on the disciplines of landscape ecology and conservation biology to inform a whole of landscape approach to conservation and restoration. It recognizes that we need to consider ecological processes in addition to the more familiar components of biodiversity such as species and communities. Several WildCountry landscape conservation projects are being developed across Australia in collaboration with environmental organisations, government agencies and local community groups.[2]

We believe that to have truly "sustainable development", the needs of the local environment need to be considered at a landscape scale. We believe that it is not enough to create parks and reserves to protect local biodiversity – this can only be one piece of the land management puzzle.

We need to look more broadly at the ecological processes that maintain the health of the local area – fires, floods, capacity for species movement, over micro and macro scales. Much research has recently been done into what these ecological processes might be in Australia, and more specifically, for Tasmania.[3]

Through this process, we hope to identify areas where changes might be made to maximize sustainable land use for Tasmania's north-east.

This is the first version of what we hope will be a useful, evolving document, which links the theory of environmental sustainability to practical, on-ground outcomes that will help to maintain the health and security of Tasmania's north-east for the long-term future. We invite input from interested stakeholders to expand upon and improve this plan as we obtain new information.

CONSERVATION ACTION PLANNING

- a tool to help make sense of environmental complexity

Conservation action planning is a term that was first coined by The Nature Conservancy; it refers to a collection of planning tools and ideas that allow working groups to conceptualise, plan actions and monitoring, implement these actions and monitoring, then analyze the data obtained to adapt the project to improve it as more knowledge becomes available, and share this knowledge with the broader community[1]. This framework has been progressively improved by being put into practice in hundreds of successful environmental management projects internationally.

For this project, we have tried to follow the conservation action planning guidelines outlined in The Nature Conservancy's publication Landscape-scale conservation – *A practitioner's guide*[2]. An advantage of using the conservation action planning (CAP) process is that it is designed for flexibility. Data collected as part of the project is collected in a central database, which can be adapted and updated as new information comes to light.

1 Land Use Planning and Approvals Act 1993.

2. See http://www.wilderness.org.au/campaigns/wildcountry

3 See McQuillan, P.B., Watson, J., Fitzgerald, N.B., Leaman, D. & Obendorf, D. (1999) The importance of ecological processes for terrestrial biodiversity conservation in Tasmania – a review. Pacific Conservation Biology, 15, pp. 171-196.

1 http://conserveonline.org/workspaces/cbdgateway

2.Low, G. (2003) Landscape-scale conservation – a Practitioner's Guide. The Nature Conservancy.

Introduction

Tasmania's north-east is a place of great biodiversity. Internationally renowned for its natural beauty, the land rolls down from forested tiers, through farmland, forest, grassland and heath to the shores of the Tasman Sea. Many plants and animals find their homes here; some are found nowhere else in the world. This land use plan seeks to protect these values, strengthening the landscape, its ecosystems and local communities, to give them the best chance of adapting to a changing world and climate.

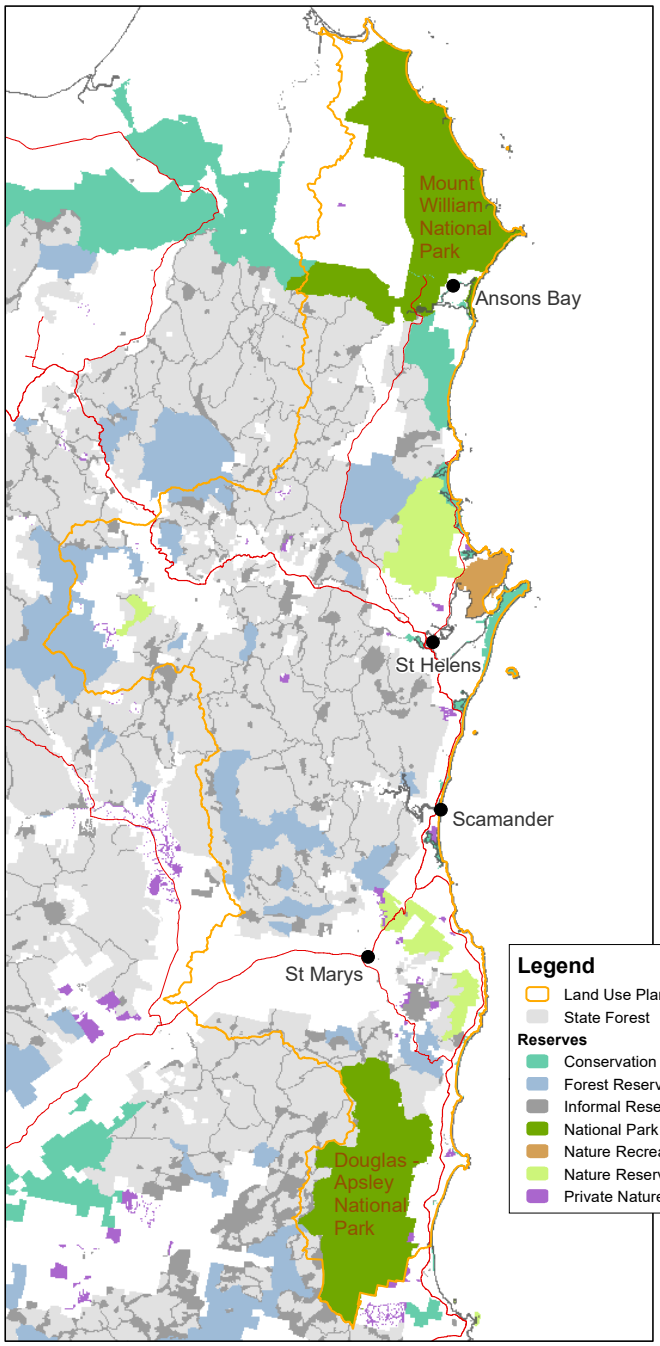
THE PROJECT AREA

The project area covers approximately 215 500 hectares, and takes in the major towns of St Helens, St Marys, and Scamander. It is largely contained within the Break'O'Day Municipality, with smaller sections extending into the adjacent Dorset and Glamorgan-Spring Bay Municipalities. The area supports a broad range of industries, including native and plantation forestry, sheep grazing, dairy farming, cropping, orchards, viticulture and aquaculture. Approximately 31% of the project area is privately owned – some of this area includes covenanted vegetation.

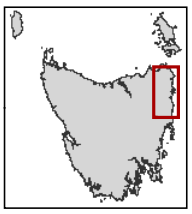
The project area contains the catchments of the Scamander, Douglas, George and Ansons rivers, as well as parts of the Apsley and Break o' Day river catchments. About a third of the project area is formally reserved at some level: formal reserves make up approximately 30% of the study area; informal reserves occupy a further 6%. The Douglas-Apsley National Park and Mt William National Park make up about half of the formally reserved area, or 16% of the entire project area. The Bay of Fires Conservation Area is currently being considered for an upgrade to National Park status.

It is home to a broad range of ecosystems and at least ninety five recognized vegetation communities. Included among these are 17 threatened vegetation communities, and a further seven vegetation communities considered to be of conservation significance; in combination, these vegetation communities cover only about 2% of the project area. The landscape also supports at least 123 threatened flora species, and an area around St Marys is a recognized hotspot of eucalypt biodiversity.

The project area supports at least 32 threatened fauna species, many of which are birds. Within the area are 3 of Tasmania's 43 Important Bird Areas (IBAs), as identified by Birds Australia. These include the Douglas Apsley and St. Helens IBAs, and parts of the Cape Portland IBA.



Land Tenure of North East Coast Land Use Plan Area



Legend

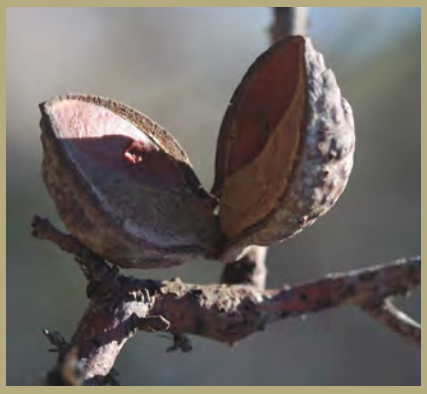
- Land Use Plan area
- State Forest

Reserves

- Conservation Area or Regional Reserve
- Forest Reserve
- Informal Reserve
- National Park
- Nature Recreation Area or Historic Site
- Nature Reserve or State Reserve
- Private Nature Reserve or Conservation Covenant

0 10 20 km

Spatial data from theLIST and TASVEG 2.0 © State of Tasmania



Many native shrubs such as this mountain needlebush (Hakea lissosperma) have woody seed capsules designed to survive fire even if the plant is killed, however too frequent fires can kill the new plants before they mature and produce more seed, photo: Nick Fitzgerald

Oldgrowth blackwood (Acacia melanoxylon) tree in wet eucalypt forest in State Forest at Siamese Ridge, photo: Nick Fitzgerald

UNDERSTANDING ECOLOGICAL PROCESSES

– what are they, and why are they important?

Eight ecological processes have been identified as key to the WildCountry approach to maintenance of healthy country[1]

1. Strongly interactive species
Some species play key regulating roles in the habitats in which they live. This may occur from 'top down', for example, predators such as wedge-tailed eagles control grazing animals such as wallabies; it may also be 'bottom up', with animals such as swift parrots providing critical pollination services. It is important to ensure that such species persist in the landscape in sufficient numbers to perform these roles.

2. Hydro-ecology
The presence and absence of water are critical in Australian ecology. There are important links between water, vegetation and wildlife. For instance, wetlands accumulate nutrients and water and therefore provide rich habitat. Forest vegetation plays a critical role in regulating groundwater.

3. Long distance biological movement
Long distance movement is a key part of the life history of many Tasmanian species. Many birds migrate large distances annually or move about the Tasmanian landscape seeking food. Conserving these species may require the protection of very large areas or critical stepping stones in the landscape.

4. Disturbance regimes
Natural disturbance regimes maintain diversity in many habitats. Fire is one critical source of disturbance, with frequency, spatial pattern and intensity of burns critical for maintenance of some species. Fire regimes across much of Tasmania have been altered in the past two centuries resulting in changes to the pattern and function of ecosystems. Likewise, floods are a natural phenomenon that maintains the health of rivers, floodplains and wetlands.

5. Climate change and variability
Climate is a key environmental determinant, affecting ecological processes at various scales and thus influencing associated species distributions. A better understanding of the likely ecological interactions with climate will aid management decisions both in response to and for mitigation of human-induced climate change.

6. Land / coastal zone fluxes
There is interaction and exchange between terrestrial and marine systems. For instance, rivers transport nutrients and sediments (and pollutants) from far inland to the sea. This affects productivity in the coastal zone. Conversely, seabirds can deposit large amounts of nutrient derived from the ocean on land. Tidal movement interacts with freshwater flows to determine the mixing of fresh and salt water as well as concentrating nutrients in estuaries.

7. Long-term, spatially-extensive evolutionary processes
The creation of new species often involves range expansion of the parent species followed by isolation and differentiation between the two populations. This evolutionary process is usually dependent on habitat continuity, when climatic conditions are suitable, allowing movement over relatively long distances. Destruction or fragmentation of habitat could prevent such processes and lead to local extinctions by inbreeding or random events.

8. Productivity
The living elements of landscapes vary with the quantity and rate of plant growth - 'productivity'. Productivity is dependent on local conditions including rainfall, seasonal climatic patterns and soil characteristics. The uneven distribution of productivity in the landscape – both in time and space – is an important consideration in conservation planning, particularly given the disproportionate loss and degradation of highly productive land compared to less arable land.

STEP 1: SELECTING THE FOCAL CONSERVATION ASSETS

The first step of the conservation action planning process is to choose a selection of environmental assets which, if protected, will ensure the long-term health and sustainability of the project area, and allow the landscape to express healthy broad-scale ecological processes.

These may be coarse-scale land system elements (e.g. rivers), broad vegetation classes (e.g.wet forests), groups of species with similar needs and threats (e.g. shorebirds), or broad-ranging individual species that might not be adequately protected by just conserving certain ecosystems (e.g. Tasmanian devils).

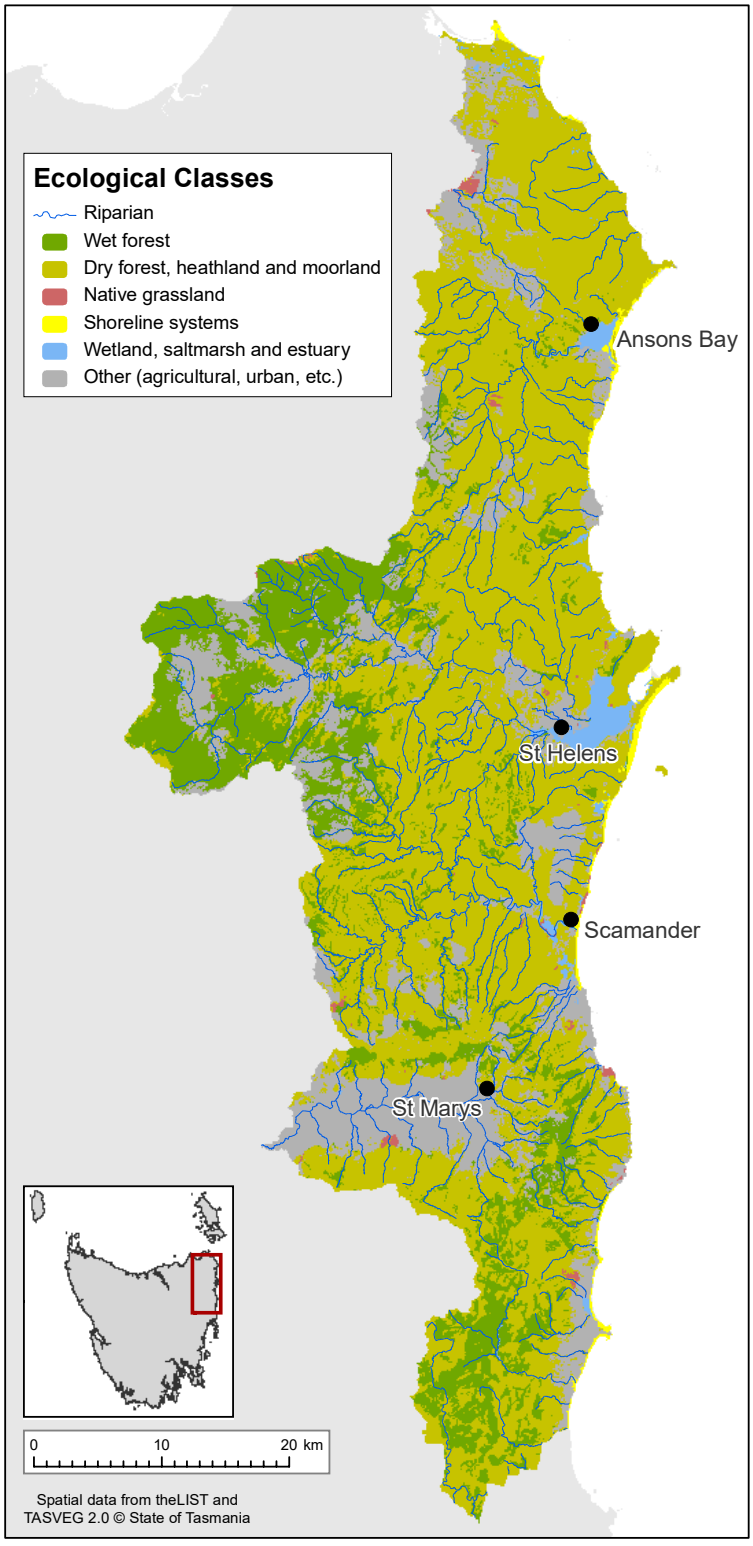
For most projects, it's thought that the biodiversity of the landscapes can and should be limited to eight or fewer focal assets. If carefully chosen, the protection and enhancement of these will also ensure the well-being of a broad variety of smaller nested assets. An example of this might be that the protection and maintenance of healthy functional wetlands (a focal conservation asset) can provide security for many types of migratory birds (a nested asset).

The focal conservation assets for this project were chosen by the North East Bioregional Network's Scientific Working Group, and informed by some consultation with relevant local experts.

It is important to note that while the marine systems of the north-east are a very important facet of the local environment, unfortunately, we did not have the capacity to include them within the scope of this document.

1 http://www.wilderness.org.au/articles/wildcountry-science-a-new-picture-of-the-continent.
Mackey, B. G., Soulé, M. E., Nix, H. A., Recher, H. F., Lesslie, R. G., Williams, J. E., Woinarski, J. C. Z., Hobbs, R. J. and Possingham, H. P., 2007. Applying landscape-ecological principles to regional conservation: the WildCountry project in Australia. Pp. 192-213 in Key topics in Landscape Ecology. ed by J. Wu, and R. J. Hobbs. Cambridge University Press, Cambridge.

Identifing Conservation Assets



Wet forest dominated by Brooker's gum (Eucalyptus brookeriana) is a threatened forest type in Tasmania, it occurs in small patches as at the Nicholas Range in the north-east, photo: Nick Fitzgerald

Wet forests

The wet forests of the north-east are very diverse in composition – they range from short forests dominated by native olive, dogwood and pinkwood, to tall wet eucalypt- dominated forests through to mixed forests where the eucalypts coexist with an understorey of rainforest trees, through to stands of pure rainforest without any eucalypts at all.

These are united in their roles in the local landscape as protectors of water quality and flows and as providers of habitat for a diverse range of species. Large raptors, such as the threatened wedge-tailed eagle, require large tracts of undisturbed tall wet forests to successfully nest and breed. Stag beetles, survivors of the last ice age, sought refuge in the north-eastern rainforests, and today, several species are found nowhere else.

Forests of swamp gum *(Eucalyptus regnans)*, the world's tallest flowering plant, still stand undisturbed in some corners of this region. On the trunks of wet forest trees grow fungi, lichens and bryophytes of myriad shapes and form. And beneath the forests' protective mantle, drop by drop, delicate underground karst systems continue to quietly evolve.

More than twenty distinct vegetation communities have been identified within the wet forests of the north-east. Included among these are the threatened vegetation communities *Eucalyptus viminalis* wet forest and *Eucalyptus brookeriana* wet forest.

Some of the best examples of wet forests within the north-east may be found at the Blue Tier, the Rattler Range, on Mt Elephant, and in the Douglas Apsley National Park.

Significant flora and fauna

Threatened stag beetles *(Hoplogonus bornemisszai, H. simsoni, H. vanderschoori)*
Wedge-tailed eagles *(Aquila audax fleayi)*
Grey goshawks *(Accipter novaehollandiae)*
Spotted-tailed quolls *(Dasyurus maculatus maculatus)*
Giant velvet worms *(Tasmanipatus barretti)*
Slender tree fern (*Cyathea cunninghamii)*

Healthy young Tasmanian devil (Sarcophilus harrisii); oldgrowth dry sclerophyll forest at Mt Pearson, photos: Nick Fitzgerald

Coastal sand dune vegetation at Taylors Beach, Bay of Fires, photo: Nick Fitzgerald

Tasmanian Devil

The Tasmanian devil is the only individual species we have chosen as a focal conservation asset. As well as being an animal which ranges over a broad area and habitat range, Tasmanian devils are highly interactive, playing an important role in the north-east project area, both in their role as scavengers, and as potential predators of introduced pest species such as foxes and cats.

The recent devil facial tumour disease outbreaks have decimated devil numbers state-wide, causing them to be listed as endangered. The disease originated in the north-east and has caused more devastation to devil populations here than elsewhere, resulting in very low population densities and a demographic shift to a younger population with very few mature devils. Without swift, coordinated action, there is a real risk of extinction for devils in the wild, a factor which also convinced us that they would make a good focal conservation asset in their own right

Oldgrowth dry forest dominated by ironbark (Eucalyptus sieberi) at Mount Pearson, photo: Nick Fitzgerald

Dry forests and heathlands

Dry forests and heathlands account for the great bulk of diversity and coverage within our project area – at least forty distinct vegetation types have been identified. The diverse dry forests of the north-east are dominated by a broad range of eucalypt species; their understoreys may be dominated by heathy, scrubby or grassy species. Old dry forests are critical nesting habitat for a variety of mammal and bird species – the masked owl relies on the hollows found in old trees to successfully breed. Dry blue gum (*Eucalyptus globulus*) and black gum (*Eucalyptus ovata*) forests provide critical foraging habitat for the endangered swift parrot, which relies on the energy-rich nectar of these trees.

Local heathlands also provide an important source of food for insects, small birds, reptiles and mammals – they are abuzz with a rich array of native bees, which share this habitat with many native spiders, insects and other invertebrates. Bettongs forage in them for underground fungi, and threatened New Holland Mice hop through them in search of seeds.

Important threatened dry forest communities within this area include Oyster Bay Pine (*Callitris rhomboidea*) forests, blue gum *(Eucalyptus globulus)* forests and woodlands, and black peppermint *(Eucalyptus amygdalina)* forests and woodlands on sandstone. Some of the best examples of dry forests in this area can be seen in the Douglas Apsley National Park, the Constable Creek catchment, around the Bay of Fires region and in the Nicholas Range.

Good examples of heathland communities in this area include buttongrass moorland in the highlands at Mt Victoria, and lowland sedgy heathland and wet heath which occur within a matrix of dry forest in the Bay of Fires and Ansons Bay region.

Significant flora and fauna

Swift parrots *(Lathamus discolor)*
Masked owls *(Tyto novaehollandiae castanops)*
Bettong *(Bettongia gaimardi)*
Glossy grass skink *(Pseudemoia rawlinsoni)*
Oyster Bay pine *(Callitris rhomboidea)*
Grass trees *(Xanthorrhoea species)*
Variable smoke bush *(Conospermum hookeri)*

Bay of Fires near Broadwater Creek lagoon, Hinterland forests visible in background. Photo: Martin Hawes

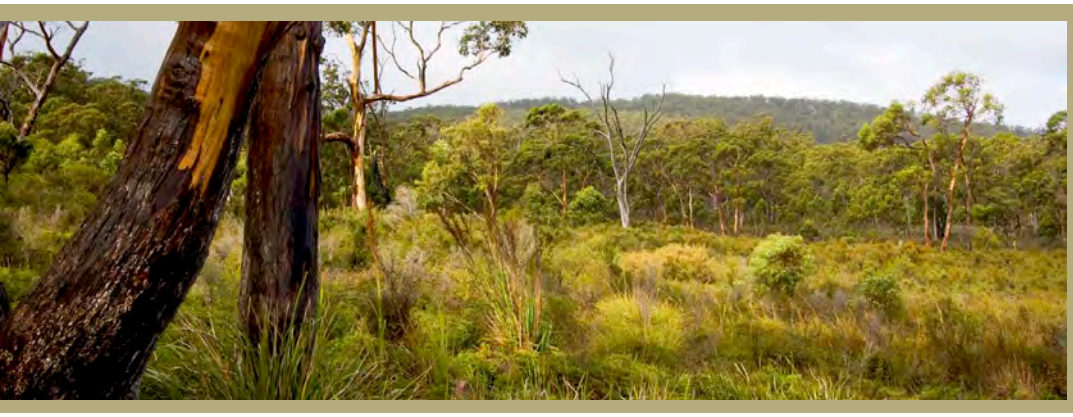
Shoreline systems

Perhaps the most dynamic of the focal conservation assets, the shoreline systems of the project area stretch along about 250 km of coastline. Sandy beaches and rocky shorelines are the mediators between land and sea, protecting one from the other. The shoreline systems are vital habitat for many migratory and resident shorebirds – the Birds Australia nominated Important Bird Areas (IBAs) of St Helens and Cape Portland fall wholly and partially respectively within the project area. White bellied sea eagles soar along the coastline, swooping to snatch fish from coastal waters, and constructing large nests of sticks in tall blue gums. Smaller birds, including the threatened fairy tern, create well-hidden nests on sandy beaches.

The coastal vegetation communities play an especially important role in maintaining shoreline integrity on sections of sandy coastline, especially in light of projected sea level rises. Communities represented in this zone include coastal grasslands and herbfields, and sand dune scrub dominated by coastal wattle *(Acacia longifolia)*. On the stunning granite beaches of the Bay of Fires, dramatic lichen lithoseres daub the rocks a fiery orange, backed by swaying swathes of black sheoak *(Allocasuarina littoralis)* forest, a threatened forest type.

Significant flora and fauna

Fairy terns *(Sterna nereis)*
Little terns *(Sterna albifrons sinensis)*
Sea eagles *(Haliaeetus leucogaster)*
Native spinifex *(Spinifex sericeus)*
Sea bindweed *(Calystegia soldanella)*



Wet heathland fringed by black gum (Eucalyptus ovata) forest at Kates Marsh, Bay of Fires hinterland, photo: Nick Fitzgerald

Estuaries (Black swans (Cygnus atratus) on Georges Bay, the largest estuary in the region, photo: Nick Fitzgerald

Coastal wetlands and estuaries

Coastal wetlands and estuaries provide a bridge between riparian and coastal systems, often providing habitat for species common to one or both of these systems. Local wetlands host unique arrays of freshwater algae, microscopic plants that form the basis of the wetland food chains. The wetlands support many insect species, including a range of dragon and damsel flies endemic to the area, some of whom will become food for the endangered green and gold frog, Tasmania's largest frog. A complex suite of migratory and resident birds rely on the north-east's coastal wetlands and estuaries for food and habitat, including the endangered eastern curlew, which probes through the mud with its long curved bill, and the unmistakable great crested grebe, which cruises the deeper waters, with its shock of head feathers and low crooning moan. Fish spawn in the estuaries, which act as nurseries for the local saltwater fish populations.

Important terrestrial vegetation communities associated with the north-east's coastal wetlands and estuaries include Melaleuca ericifolia swamp forest and succulent saline herbfields (saltmarsh).

Important wetlands within the area include Jocks, Windmill and Moriarty lagoons at Stieglitz, Sloop Lagoon and Big Lagoon in the Bay of Fires. Significant estuaries within the area include those at Ansons Bay, Georges Bay, and the Scamander River estuary.

Significant flora and fauna

Fairy terns *(Sterna nereis)*
Little terns *(Sterna albifrons sinensis)*
Sea eagles *(Haliaeetus leucogaster)*
Native spinifex *(Spinifex sericeus)*
Sea bindweed *(Calystegia soldanella)*

Native grasslands dominated by kangaroo grass (Themeda triandra) are a listed as Critically Endangered under Commonwealth legislation, photo: Nick Fitzgerald

Grasslands

Tasmanian native grasslands have been reduced to approximately 1% of their pre-European coverage across the State. Although the coverage of native grasslands within the project area is not large they have been chosen as a focal conservation asset for their value as habitat for a diverse range of threatened species and communities. Lowland grasslands are also important to local graziers.

Grasslands often lack the profile of more dramatic forests and woodlands, but they are alive with activity. Marsupials such as wombats and bandicoots are prominent members of the grassland fauna, but they also support an astonishing array of insects, including native grasshoppers, bees and butterflies, and beneath the ground, native earthworms quietly make their way through the soil. Grasslands are also home to a variety of native ant species, upon which the echidna depends for its survival.

Highland Poa grasslands are a threatened community which occurs at the Blue Tier. There is limited highland habitat within the project area and this is reflected in the small extent of this community in the area. Lowland grasslands are more extensive, particularly coastal grasslands. Some of the best examples of lowland native grasslands within the north-east may be found at Four Mile Creek, where they occur on private land.

Significant flora and fauna

New Holland mouse *(Pseudomys novaehollandiae)*
Wombats *(Vombatus ursinus)*
Eastern-barred bandicoot *(Perameles gunnii gunnii)*
Chocolate lilies *(Arthropodium strictum)*

The Douglas River is one of the most pristine waterways in north-east Tasmania, Photo: Nick Fitzgerald

Riparian systems

Rivers are the arteries through which the lifeblood of the landscape courses. The water they carry brings life from the upper catchments down through the floodplains to the wetlands and estuaries below. Wetlands rely on them for an influx of critical nutrients and sediments that sustain their flora and fauna. In heavily modified landscapes, narrow strips of riparian vegetation provide shelter for fauna moving between patches of vegetation, adding connectivity to the landscape.
As well as providing a critical link between far-separated parts of the catchment, riparian systems are important habitat in themselves.

They shelter threatened fish, such as the Australian grayling, as well as more common, ecologically important species, such as the platypus. Riparian scrub and coast paperbark *(Melaleuca ericifolia)* swamp forest are threatened vegetation communities associated with river habitats. One of Australia's rarest plants, Davies' waxflower *(Phebalium daviesii*), occurs only in riparian habitat on the George River.

Healthy Tasmanian rivers are complex in physical structure and bordered by intact native vegetation. Their habits are often meandering, and they maintain a good diversity of in-stream habitat, often provided by an "untidy" assemblage of logs and boulders, which allows them to shelter a broad range of aquatic invertebrates and larger animals.

Good intact riparian systems within the region can be found in the Douglas River, the upper reaches of the Scamander and Avenue rivers, Constable Creek, and the upper catchment of the Ransom River at the Blue Tier.

Significant flora and fauna

Australian grayling *(Prototroctes maraena)*
Freshwater crayfish *(Astacopsis franklinii)*
Platypus *(Ornithorhynchus anatinus)*
River boronia *(Boronia gunnii)*
Davies' waxflower *(Phebalium daviesii)*

With a very small population on the banks of the George River, the critically endagnered Davies' waxflower (Pheballium daviesii) is one of the rarest plants in Australia, photo: Nick Fitzgerald

The grey goshawk (Accipiter novaehollandiae) is an endangered bird of prey which nests in riparian wet forest around the Blue Tier, photo David Watts.

'Threatened Species in north-east Tasmania'

Over 150 rare and threatened species have been recorded from the project area. These are species that are offically listed under the Tasmanian Threatened Species Protection Act and/or the Commonwealth Environment Protection and Biodiversity Conservation Act. These Acts provide some legislative protection for the listed species by controlling actions that impact on the species. Recovery Plans have been prepared and implemented for a small number of threatened species.

Species are listed from lowest to highest level of risk of extinction according to the *Tasmanian Threatened Species Protection Act 1995.*

Species with * attached to them are included as part of the: *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* not the *Tasmanian Threatened Species Protection Act 1995.*

Species with ** attached to them are listed as threatened species in both *Tasmanian Threatened Species Protection Act 1995* and *Commonwealth Environment Protection and Biodiversity Conservation Act 1999.*

Tasmanian smoke bush (Conospermum hookeri)
Photo: Naomi Lawrence

RARE FLORA

dagger wattle *Acacia siculiformis*
juniper wattle *Acacia ulicifolia*
swamp wallaby grass *Amphibromus neesii*
slender aphelia *Aphelia gracilis*
chocolate lily *Arthropodium strictum*
grassy woodruff *Asperula minima*
water woodruff *Asperula subsimplex*
tall wallaby grass *Austrodanthonia induta*
crested spear grass *Austrostipa blackii*
knotty spear grass *Austrostipa nodosa*
jointed twig rush *Baumea articulata*
slender twig rush *Baumea gunnii*
gristle fern *Blechnum cartilagineum*
spiny bossiaea *Bossiaea obcordata*
spreading brachyloma *Brachyloma depressum*
forest daisy *Brachyscome sieberi var. gunnii*
blue grass lily *Caesia calliantha*
daddy longlegs *Caladenia filamentosa*
tiny fingers *Caladenia pusilla*
sea bindweed *Calystegia soldanella*
mountain sedge *Carex gunniana*
thick twistsedge *Caustis pentandra*
scarce centrolepis *Centrolepis strigosa subsp. pulvinata*
tiny midge orchid *Corunastylis nuda*
Australian hound's tongue *Cynoglossum australe*
large gnat orchid *Cyrtostylis robusta*
Apsley bent grass *Deyeuxia apsleyensis*
trickery bent grass *Deyeuxia decipiens*
heath bent grass *Deyeuxia densa*
scarlet sundew *Drosera glanduligera*
Barbers gum *Eucalyptus barberi*
eastern eyebright *Euphrasia collina subsp. deflexifolia*
spiny bushpea *Eutaxia microphylla var. microphylla*
small mudmat *Glossostigma elatinoides*
broom wheel fruit *Gyrostemon thesioides*
twiggy guinea flower *Hibbertia virgata*
cane holy grass *Hierochloe rariflora*
glossy hovea *Hovea corrickiae*
hill hovea *Hovea tasmannica*
harsh groundfern *Hypolepis muelleri*
plain quillwort *Isoetes drummondii*
tall quillwort *Isoetes elatior*
gentle rush *Juncus amabilis*
small-awn blowngrass *Lachnagrostis billardierei subsp. tenuiseta*
shade peppercress *Lepidium pseudotasmanicum*
stout rapier sedge *Lepidosperma forsythii*
twisting rapier sedge *Lepidosperma tortuosum*
sticky sword sedge *Lepidosperma viscidum*
austral trefoil *Lotus australis*
Cranbrook or warty paperbark *Melaleuca pustulata*
yellow onion orchid *Microtidium atratum*
Hooker's or crimsontip daisybush *Olearia hookeri*
Lichen *Parmelina whinrayi*
hot rock fern *Pellaea calidirupium*
tiny mitrewort *Phyllangium distylis*
pygmy clubmoss *Phylloglossum drummondii*
curved rice flower *Pimelea curviflora*
yellow rice flower *Pimelea flava subsp. flava*
shade plantain *Plantago debilis*
soft poa grass *Poa mollis*
tree pomaderris *Pomaderris intermedia*
narrow leaf pomaderris *Pomaderris phylicifolia subsp. phylicifolia*
superb or cobra greenhood *Pterostylis grandiflora*
zig zag bog sedge *Schoenus brevifolius*
brock knawel *Scleranthus brockiei*
dwaft scullcap *Scutellaria humilis*
swamp fireweed *Senecio psilocarpus*
forest groundsel *Senecio velleioides*
rush lily *Sowerbaea juncea*
salt couch *Sporobolus virginicus*
soft Furneaux spyridium *Spyridium parvifolium var. molle*
Australian dusty miller *Spyridium parvifolium var. parvifolium*
rayless starwort *Stellaria multiflora*
swamp triggerplant *Stylidium beaugleholei*
small trigger plant *Stylidium despectum*
tiny trigger plant *Stylidium perpusillum*
forest germander *Teucrium corymbosum*
mauve-tufted sun orchid *Thelymitra malvina*
tiny arrow grass *Triglochin minutissimum*
trithuria *Trithuria submersa*
yellow bladderwort *Utricularia australis*
pink bladderwort *Utricularia tenella*
trailing speedwell *Veronica plebeia*
erect marsh flower *Villarsia exaltata*
Cunningham's violet *Viola cunninghamii*
white alpine everlasting *Xerochrysum bicolor*
swamp everlasting *Xerochrysum palustre*
pink zieria *Zieria veronicea subsp. veronicea*

RARE FAUNA

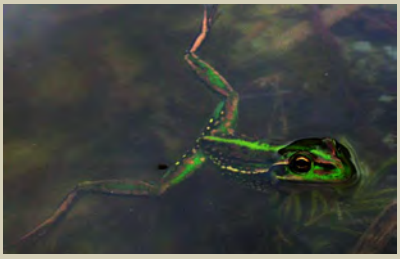
Hydrobiid snail (Terrys Creek) *Beddomeia tasmanica*
Spotted-tailed quoll *Dasyurus maculatus subsp. maculatus*
Caddisfly (St. Colomba Falls) *Hydrobiosella sagitta*
Glossy grass skink *Pseudemoia rawlinsoni*
Giant velvet worm *Tasmanipatus barretti*

VULNERABLE FLORA

water woodruff *Asperula subsimplex*
dolerite spleenwort *Asplenium trichomanes subsp. trichomanes*
Gunn's or river boronia** *Boronia gunnii*
tailed spider orchid** *Caladenia caudata*
South Esk pine *Callitris oblonga subsp. oblonga*
Tasmanian smoke bush** *Conospermum hookeri*
skirted treefern *Cyathea Xmarcescens*
slender tick trefoil *Desmodium gunnii*
great heath *Epacris grandis*
small leaf glycine *Glycine microphylla*
lesser guinea flower *Hibbertia calycina*
wiry mitrewort *Phyllangium divergens*
small leaf pomaderris *Pomaderris elachophylla*
roundleaf mint bush *Prostanthera rotundifolia*
grassland greenhood** *Pterostylis ziegeleri*
swamp fireweed* *Senecio psilocarpus*
small leaf spyridium *Spyridium lawrencei*
clubmoss bush pea *Stonesiella selaginoides*
yellow rush lily *Tricoryne elatior*
threatened grass tree** *Xanthorrhoea aff. bracteata*
sand grass tree** *Xanthorrhoea arenaria*
shiny grass tree *Xanthorrhoea bracteata*
swamp everlasting* *Xerochrysum palustre*

Assessing Landscape Health

The health of the landscape within the project area is determined by the viability of each of its individual conservation assets. The health of each asset is determined by looking at their size, condition and their context in the landscape.



The green and gold frog (Litoria raniformis) is Tasmania's largest and most endangered frog, photo: Nick Fitzgerald

VULNERABLE FAUNA

Dwarf galaxia** *Galaxiella pusilla*
White-bellied sea eagle *Haliaeetus leucogaster*
Green and gold frog *Litoria raniformis*
Crested grebe *Podiceps cristatus*
Australian grayling** *Prototroctes maraena*
Fairy tern *Sterna nereis subsp. nereis*
White-fronted tern *Sterna striata*

ENDANGERED FLORA

Tasmanian bertya** *Bertya tasmanica subsp. tasmanica*
blacktongue finger *orchid Caladenia congesta*
South Esk pine* *Callitris oblonga subsp. oblonga*
bristly rockfern *Cheilanthes distans*
slender treefern *Cyathea cunninghamii*
South Esk heath** *Epacris apsleyensis*
great heath* *Epacris grandis*
border heath *Epacris limbata*
yellow eyebright *Euphrasia scabra*
basalt peppercress** *Lepidium hyssopifolium*
Davies' wax flower *Phebalium daviesii*
ferny panax *Polyscias sp. Douglas-Denison*
snug greenhood** *Pterostylis atriola*
fairy fanflower *Scaevola aemula*
small leaf spyridium* *Spyridium lawrencei*
threadcress *Stenopetalum lineare*
clubmoss bush pea* *Stonesiella selaginoides*
rabbit-ears *Thelymitra antennifera*
shiny grass tree* *Xanthorrhoea bracteata*

ENDANGERED FAUNA

Grey goshawk *Accipiter novaehollandiae*
Wedge-tailed eagle** *Aquila audax subsp. fleayi*
Wandering albatross *Diomedea exulans*
Bornemizza's stag beetle *Hoplogonus bornemisszai*
Swift parrot** *Lathamus discolor*
Southern elephant seal *Mirounga leonina*
Eastern curlew *Numenius madagascariensis*
New Holland Mouse *Pseudomys novaehollandiae*
Tasmanian devil** *Sarcophilus harrisii*
Little tern *Sterna nereis subsp. nereis*
Blind velvet worm** *Tasmanipatus anophthalmus*
Masked owl *Tyto novaehollandiae subsp. castanops*

CRITICAL

border heath* *Epacris limbata*
Davies' wax flower * *Phebalium daviesii*

STEP 2: DETERMINING THE VIABILITY OF THE CONSERVATION ASSETS

Once conservation assets for the area have been identified, the next step is to do a rapid assessment of the viability of these conservation assets.

These assessments were derived using a combination of expert consultation and interrogation of publicly available databases.
An abbreviated summary of these results is below.
Explanations of the rankings may be seen below:

Poor – allowing the factor to remain in this condition for an extended period of time will make restoration practically impossible.

Fair – outside its range of acceptable variation, requires intervention, if unchecked is prone to serious degradation.

Good – Functioning within its range of acceptable variation, may require some intervention.

Very good – functioning at an ecologically desirable status, requires little intervention.

No.	Focal conservation asset	Focal conservation asset viability
1.	Tasmanian Devil	Poor
2.	Wet forests	Good
3.	Dry forests and heathlands	Good
4.	Grasslands	Fair
5.	Riparian systems	Good
6.	Coastal wetlands and estuaries	Fair
7.	Shoreline systems	Fair
Overall project area viability:		Fair

Root-rot disease (Phytophthora cinnamomi) is killing native plants such as grasstrees (Xanthorrhoea australis) in many parts of the north-east, photo: Nick Fitzgerald

(Above) Devil facial tumour disease is a contagious cancer which is invariably fatal;
(Above right) Extensive areas of mature giant ash (Eucalyptus regnans) forest have been converted to eucalypt plantations, photos: Nick Fitzgerald

High priority threats

The conservation action planning process identified high priority threats to biodiversity across the project area, and then examined the impact of each of these threats on the focal conservation assets (see table).

On a regional scale, the highest ranking threats included:

• **Historical land clearing** – which has left many ecosystems much reduced in coverage, and hence fragmented and vulnerable to other impacts,

• **Weeds –** which threaten all systems by depriving native species of food and habitat, and in some cases transform the physical geomorphology of the ecosystem,

• **Climate change** – especially for wetlands which are already affected by long-term drying, but also more broadly an impact on all ecosystems as local weather patterns change,

• **Sea level rise** – especially for coastal wetlands and estuaries and shoreline systems, where habitat for many species will be gradually submerged or destroyed,

• **Coastal development** – especially for coastal wetlands and estuaries and shoreline systems, where habitat for many species is either converted or negatively impacted by the development, and

• **Inappropriate recreational use** – particularly within shoreline systems, where birds are greatly threatened by off-road vehicles, unwary pedestrians and dogs; coastal vegetation is also sensitive to recreational impacts.

The conservation assets most at risk from threatening processes were:

• Shoreline systems

• Coastal wetlands and estuaries

STEP 3: ASSESSING THE THREATS TO THE CONSERVATION ASSETS

The third step in the conservation planning process is to identify high priority threats to the conservation asset. This is a two-phase process. The first phase involves an assessment of the key stresses to the conservation assets. Stresses are directly related to the key ecological attributes (refer step 2) and includes factors such as inappropriate fire regimes, reduced native species diversity, reduced water quality, habitat fragmentation, etc.

Stresses are ranked from very high to low based on:

1) the severity of damage where it occurs (i.e. destroys or eliminates the conservation asset, seriously degrades, moderately degrades or slightly impairs); and

2) the scope of the damage (i.e. very wide-spread, widespread; localised, very localised).
The second phase involves the identification and ranking of the source of stresses (i.e. the direct threats). For example, the source of stress for reduced species diversity is generally grazing pressure (stock, rabbits and wallabies) and the source of stress relating to inappropriate hydrological regimes may be excessive water extraction.

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Sources of stress are ranked from very high to low based on:

1) the contribution of the source to the stress (i.e. very large contributor, large contributor, moderate contributor, small contributor); and
2) the irreversibility of the stress caused by the source (not reversible, reversible but not practically affordable, reversible with reasonable commitment of resources, easily reversible at low cost).

Once the stresses and sources are ranked according to the above criteria, a summary rating for each threat is generated. This results in the threats summary table (refer to threats table opposite) that allocates a ranking for each threat from very high to low, both in terms of the threat to the individual conservation assets and to the collective impact of the threat across the landscape.

Identifying High Priority Threats

The landscapes of the north-east and the ecological processes which sustain them are threatened by a range of human activities. Some may be limited in distribution, but highly destructive; others may be broad ranging but with minimal impact. Identifying threats to the landscape and their relative impacts is critical to allow land managers to develop effective conservation strategies.

Threats	Tasmanian devil	Wet forests	Dry forests & heathlands	Grasslands	Shoreline systems	Coastal wetlands & estuaries	Riparian systems	Summary Threat Rating
Agriculture and viticulture	-	-	Medium	-	-	Medium	Medium	MEDIUM
Climate change	-	High	High	High	High	Very High	High	VERY HIGH
Coastal development	-	-	Medium	-	High	High	-	HIGH
Dam construction & water extraction	-	-	-	-	-	Medium	Medium	MEDIUM
Devil facial tumour disease	High	-	-	-	-	-	-	MEDIUM
Feral animals (cats, foxes, rabbits)	Low	Low	Medium	-	Medium	Low	-	MEDIUM
Feral aquatic species (inc. trout)	-	-	-	-	-	Low	Medium	LOW
Historical land clearing	High	High	High	High	High	High	-	VERY HIGH
Inappropriate fire management	-	Medium	Medium	Medium	-	-	-	MEDIUM
Incompatible recreational use	-	Low	Low	-	High	Low	Low	MEDIUM
Native forest logging	Medium	Medium	Medium	-	-	Medium	Medium	MEDIUM
Phytophthora	-	-	Medium	-	-	-	-	LOW
Plantation forestry	Medium	Medium	Medium	-	-	Medium	Medium	MEDIUM
Sea level rise	-	-	-	-	High	Very High	-	HIGH
Sheep and cattle grazing	-	-	Low	Medium	-	Low	Low	LOW
Water-borne pathogens	-	-	-	-	-	Medium	Low	LOW
Weeds	-	Medium	Medium	Medium	High	Medium	Medium	HIGH
Overall threat status	HIGH	HIGH	HIGH	HIGH	VERY HIGH	VERY HIGH	HIGH	VERY HIGH

The fairy tern (Sterna nereis subsp. nereis) is listed as vulnerable and nests on sandy beaches where it is at risk from sea level rise and from human recreation, photo: © Valeria Ruoppolo and Eric Woehler, Birds Tasmania

Skyline Tier Restoration Project

Native bush is being restored on the site of a former pine plantation at Skyline Tier near Scamander.

The North East Bioregional Network is actively engaged in ecological restoration following harvesting of the pine plantation by removing pines that have regenerated from seed and those that have invaded adjacent native bush. A diverse variety of native flora is regenerating on the site, including several threatened species.

Remnant patches of two threatened forest types, blue gum forest and black gum forest, have benefited from weed control.

The project improves habitat for threatened fauna, catchment protection and landscape connectivity.

This site at Skyline Tier is being rehabilitated to native forest following the harvesting of a pine plantation planted in the 1960-70s, photo: Nick Fitzgerald

STEP 4: DEVELOPING CONSERVATION STRATEGIES

The next step of the planning process for the north-east should be to develop strategies that will protect and enhance landscape-scale ecological processes and, thereby, the landscape itself.

As the project advances, these strategies should be further fleshed out following the SMART model for Conservation Action Planning; that is, objectives should be Specific, Measurable, Actionable, Realistic and Time-bound. Specific actions should also be complemented by a formal monitoring and evaluation program, to ensure that when undertaken, actions are having the expected and desired effect.

There are many good documents and strategies written for this region which focus on the protection of specific species and ecosystems, or on the mitigation of individual threats (e.g. weeds). In considering conservation strategies for the north-east, we have focused on those actions which we believe will promote the maintenance of ecological processes across the landscape. As such, as we considered how threats would impinge on ecological processes for each focal conservation asset we have drawn out strategies which relate directly to local key ecological processes.

STRATEGIES FOR MAINTENANCE OF ECOLOGICAL PROCESSES IN THE N.E

Broad strategies

Strategy 1: Develop and implement catchment scale management plans which actively address ecological processes.

Effective catchment management planning can be a successful tool to address broad scale ecological processes.

Such plans should specifically address issues of landscape scale connectivity and associated ecological processes, especially in light of climate change issues.

Strategy 2: Frame planning legislation to actively address issues of landscape scale connectivity

The Linking Landscapes project identified a range of areas on public land which could be considered in future planning for landscape connectivity specifically for the north-east.

Planning schemes and associated legislation at a State and municipal level will need to reflect the current science being developed regarding biodiversity adaptation in response to climate change, including the importance of landscape scale connectivity.

Strongly interactive species

Strategy 3: Improved implementation of threatened species recovery plans for highly interactive species

Within the context of the north-east, these species could include Tasmanian devils, quolls, bettongs and birds of prey.

Developing Conservation Strategies and Objectives

Once threats to assets have been identified, specific strategies and objectives need to be developed to guide on-ground actions that will achieve real landscape-scale conservation outcomes.

Strategy 4: Research and implementation of measures to restore Tasmanian devil populations.

This may include disease control measures, establishment of fenced disease-free populations or reintroduction of the species to the north-east from insurance populations. Any such works should be done in consultation with and to support works already being undertaken by the Save the Tasmanian Devil Project.

Strategy 5: Pro-active management of feral trout populations

Trout should not be introduced to any new waterbodies within the area. Trials might also be undertaken to remove trout from sections of rivers where they impact upon native threatened fish species.

Strategy 6: Increased investment in the strategic management of feral terrestrial animal species

Species of particular concern include cats and foxes.

Strategy 7: Increased investment in the strategic management of weeds, and soil and water borne pathogens

-Funding for local environmental weed management officers has been obtained by many councils in the southern NRM region, who have had great success in controlling environmentally significant feral plant populations. A similar model of local weed management should be considered within this region.

-General works hygiene training programs to teach people how to prevent the spread of weeds and soil- and water-borne pathogens on dirty equipment have also been developed in the south, and might be extended to this region.

-Implement a set of regionally consistent on-the-job hygiene protocols, and resource their enforcement.

-No new tracks or roads should be permitted in areas identified as Phytophthora management areas.

-Tracks should be closed and rehabilitated in areas where they are no longer required, to prevent the spread of weeds, soil and water-borne diseases.

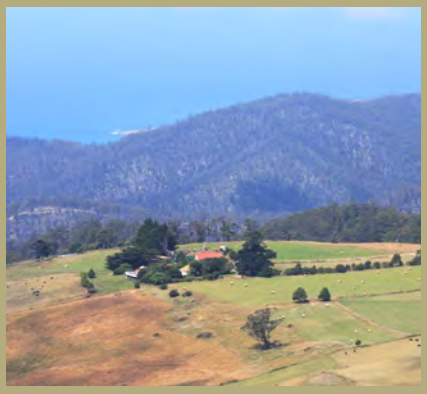
Hydroecology

Strategy 8: Develop and implement targeted restoration programs to normalize hydroecological processes

Aspects of such a program could include;
-targeted broad-scale restoration of riparian vegetation,

-strategic restoration of plantations, modeled on those already being trialled by the North East Bioregional Network at Skyline Tier near Scamander.

Any such programs should be complemented by a monitoring program charting the changing condition of local watercourses as the projects progress. Such monitoring programs could be modeled on successful local programs such as the Waterwatch-driven monitoring of condition of streams on the Blue Tier using aquatic macroinvertebrates and the SIGNAL system.



Farmland and protected bushland near St Marys overlooking the East Coast, photo: Nick Fitzgerald.

North East Tasmania Land Trust

Many conservation values occur on private land. Purchasing land for conservation is an effective means of protecting biodiversity, particularly when it is done in a strategic manner to complement conservation on public land. The not-for-profit North East Land Trust works in partnership with the statewide Tasmanian Land Conservancy to protect valuable natural places in the north east by purchasing and managing land of ecological value.

www.netlandtrust.org.au
www.tasland.org.au

A guided walk provides interpretation of the natural heritage of forests on the slopes of the Blue Tier, photo: Nick Fitzgerald

Long distance biological movement

Strategy 9: Develop and implement regional plans to actively promote long-distance biological movement

This could occur as part of the ecologically focused catchment management process and would probably best be driven at a local level. Examination of projects undertaken elsewhere in Tasmania to improve landscape connectivity (e.g.; the Biolinks project undertaken by Huon and Kingborough councils) may provide some guidance for development and implementation. Such a process should also incorporate research and planning tools being developed by the Tasmanian government regarding climate change, refugia and connectivity issues.

Strategy 10: Restore connectivity within riparian systems

This would involve;
-reducing anthropogenic barriers to longitudinal (e.g. dams and weirs) and lateral (e.g. river and floodplain) connectedness of riverine systems,

-actively managing for hydrological regimes that maintain ecological and physical processes,

-active management of riparian vegetation, in recognition of its importance in buffering, providing nutrients and habitat and influencing geomorphology of river systems

Strategy 11: Development and implementation of regional migratory birds protection programs

Any such programs should be developed in consultation with relevant expert bodies (e.g. Birds Tasmania, DPIPWE), and focus on local migratory species such as the swift parrot, and migratory shorebirds.

Swift parrot protection measures might include:

-targeted covenanting of mature eucalypt forests on private land, and reservation of it on public lands within the swift parrots' range to ensure nesting habitat remains available. Mature *Eucalyptus obliqua* and *Eucalyptus amygdalina* forests, although not threatened communities, are considered to provide a high percentage of nesting hollows for this purpose,

-targeted restoration of blue gum forest within the swift parrot's range.

Measures to improve the protection of migratory and resident coastal birds might include:

-active management to protect and improve condition of key estuarine, wetland and coastal habitats for migratory shorebirds and waterbirds,

-designation of 'no-go' zones on beaches and employment of enforcement officers to ensure that shorebirds are left undisturbed during mating and breeding season.

Pasture in the upper catchment of the Break O' Day River near St Marys with the Nicholas Range in the background, photo: Nick Fitzgerald

Ecologically appropriate disturbance regimes

Strategy 12: Develop a regional strategy to ensure planned burns are conducted to maintain ecological health

It is recognized that the primary focus of planned burning in asset protection zones will be for fuel reduction, however most of the project area does not require fuel reduction and therefore burning should be based entirely on ecological principles.
Where possible, such burns should be done on a tenure-blind basis, i.e. according to ecological need rather than land management authority, and should be coordinated by a group containing members representing all major landuses. This would allow local plans for burning to be integrated into a regional strategy.

Areas of high conservation value should be given priority when planning burns and may require detailed local-scale planning to ensure an appropriate variety of fire regimes (including maintaining unburnt areas) are implemented to maintain the full range of ecological values.

Climate change and variability

Strategy 13: Actively consider climate change issues in landscape-scale planning

The field of climate change research is complex and constantly evolving. There are many state and national strategies and plans which focus on these issues within a Tasmanian context. Within the north-east, strategies to better allow ecosystems to adapt to climate change might include:

-planning for landward retreat of coastal ecosystems,

-maintaining and restoring connectivity within the landscape, and protecting identified climate refugia to allow ecological migration in response to climate change,

-improving ecological resilience by targeted restoration and buffering of fragmented and degraded landscapes.

Land/coastal zone fluxes

Strategy 14: Development and implementation of a strategic coastal weed control program

Regional planning should be informed by statewide plans such as the Tasmanian Beach Weeds Strategy and the Strategy for the Management of Rice Grass (Spartina anglica) in Tasmania.

Special focus in this area might be given to ensuring that the areas where rice grass has been removed remain free of rice grass.. Also, monitoring and control of key transformer species, such as sea spurge, and in some sensitive locations, possibly marram grass, should also be undertaken.

Strategy 15: Explicit consideration of coastal zone fluxes to be considered in any future proposed coastal engineering.

Strategy 16: Restrict future coastal development to established urban envelopes.

This requires implementation through local government planning schemes and/or the State Coastal Policy.

Long-term, spatially extensive evolutionary processes

Strategy 17: Identify climate refugia within the landscape and provide them with formal protection

Strategy 18: Protect local eucalypt genetic diversity by actively managing gene-flow from exotic eucalypts

Mechanisms for achieving this may include:

-using local native tree species for plantations in preference to *Eucalyptus nitens*,

-ensuring adequate buffers to prevent gene flow between native eucalypts and E. nitens.

Productivity

Strategy 19: Regional conservation planning and associated incentives to achieve representation of vegetation communities across different land systems

Several Tasmanian projects are working on this area at present, and the results of these projects should be used to inform future planning activities.

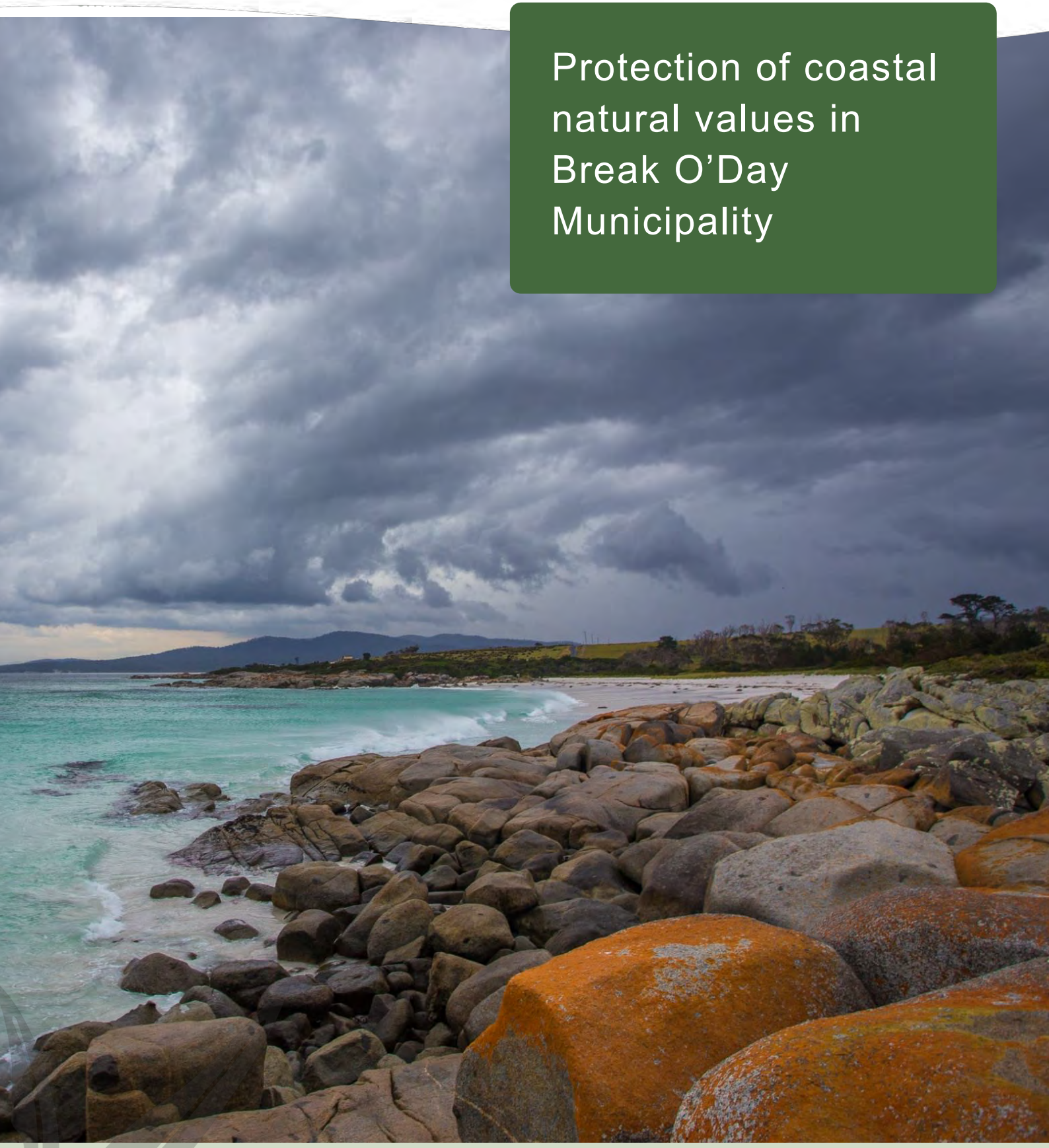
Strategy 19: Restoration of native vegetation communities that have been extensively cleared or fragmented

Strategic restoration of native vegetation should target parts of the landscape that have been heavily modified, particularly on fertile soils, such as floodplains, riparian zones and areas surrounding estuaries.

www.northeastbioregionalnetwork.org.au
www.wilderness.org.au

enviro-dynamics

Protection of coastal natural values in Break O'Day Municipality



Client: North East Bioregional Network
Prepared by: Dr Nick Fitzgerald

10 December 2021

Contents

Introduction

The new Tasmanian Planning Scheme requires local councils to develop Local Provision Schedules (LPSs) which will apply the State Planning Provisions (SPP) at the municipal level. These LPSs including land use zoning and codes.

In the Break O'Day Interim Planning Scheme 2013, the provisions for subdivision of land within the Environmental Living Zone (14.4.3) include the Acceptable Solution: *A4 All new lots must be located a minimum of 1km from High Water Mark*. Similarly, in the Rural Resource Zone (26.4.2) there is the Acceptable Solution: *A3 All new lots must be located a minimum of 1km from High Water Mark, except for those lots that are required for the crown, public authority or a municipality*.

Since this provision, introduced in 2005, is unique to the Environmental Living Zone and Rural Resource Zone and these zones do not exist in the new Tasmanian Planning Scheme framework (Tasmanian Government 2018), this restriction on subdivision within 1 km of the coastline may no longer be in effect when the new state-wide planning scheme is adopted.

Coastal ecosystems such as lagoons, saltmarshes and beaches are closely connected to more inland (sub-coastal) ecosystems. For example, lagoons and wetlands are heavily reliant on the upstream catchment area. Managing the coastal fringe in isolation risks fragmentation and degradation of these ecosystems, particularly where development pressure is concentrated near the coast.

Consequently, the 'coastal zone' is defined here as extending from the coastal high-water mark up to 1 km inland. This is consistent with the definition in the State Coastal Policy (1996) and the area subject to the subdivision restrictions in the *Break O' Day Interim Planning Scheme 2013*. The Municipal Management Plan notes that the 1 km coastal zone definition provided by council has limitations and therefore additionally considered areas below high tide level, significant factors outside the 1 km zone and effects of rising sea levels (TCG 2015). For example, saltmarsh occurs in a coastal environment at Medeas Cove near St Helens yet is outside the 1 km coastal zone under this definition.

The coastal zone has high levels of biodiversity and a high concentration of natural values such as threatened species, migratory species and threatened communities. In many coastal areas, these natural values are under severe pressure from human development. Modification of natural vegetation and waterways for agriculture, residential areas, infrastructure and tourism is often concentrated in the coastal zone, with consequent impacts on biodiversity and landscape values.

The Tasmanian State Coastal Policy (Tasmanian Government 1996) aims to promote the sustainable development and use of the coastal zone, guided by three main principles:

- Natural and cultural values of the coast shall be protected.
- The coast shall be used and developed in a sustainable manner.
- Integrated management and protection of the coastal zone is a shared responsibility.

While this Policy is more than 20 years old, it is increasingly relevant as the current and future impacts of climate change, including sea level rise, become more evident. Local government strategic and operational planning is crucial to implementing the sustainable development outcomes identified in the Policy.

Appropriate management and protection of the coastal zone is mostly determined by local government planning processes. While State and Commonwealth legislation largely focusses on protection of threatened species and communities and management of protected areas, local

government is particularly important for maintaining the integrity and resilience of natural values in the face of human development and climate change.

This short report considers some of the environmental issues and future risks associated with management of the coastal zone in Break O' Day.

Environmental values of the coastal zone

The coastal zone includes a variety of geology and landforms, a mild climate, waterways and lagoons which accumulate water and nutrients from upper catchments and a strong oceanic influence on climate and geomorphology. This combination of factors leads to a rich and diverse environment with flora and fauna adapted to specific environments such as forest, heathland, wetland, riparian, coastal and marine all occurring within the coastal zone. The concentration of water, nutrients and biodiversity from marine and coastal systems that occurs in coastal environments such as estuaries, lagoons and shorelines supports diverse and highly productive ecosystems. It is no coincidence that indigenous heritage sites often coincide with these areas of rich biodiversity and are concentrated in the coastal zone.

Fauna species with high conservation significance include the endangered new holland mouse (*Pseudomys novaehollandiae*), which is reliant on good condition heathlands and heathy woodlands. The majority of breeding habitat in the municipality for the critically endangered swift parrot (*Lathamus discolor*) occurs in the coastal zone. In total, 34 out of the 50 threatened fauna species recorded within the Break O' Day municipality are known from the coastal zone (DPIPWE Natural Values Atlas data). The coastal zone is also important for threatened plants, with 67 threatened flora species recorded in the Natural Values Atlas database.

Many wetlands occur in the coastal zone (Figure 1) and have high conservation values, including some recognised under the Register of the National Estate and the Ramsar Convention, that are vulnerable to hydrological changes in addition to threats such as weeds (DPIW 2008; Morgan & Povey 2009; NBES 2009).

Figure 1 – Coastal wetland at Hendersons Lagoon, Scamander.

Environmental risks of the coastal zone

Threats to coastal environmental values include sea level rise, coastal erosion, weed invasion, impacts of feral animals, inappropriate fire regimes and habitat loss. The primary cause of habitat loss is land clearing and fragmentation, which in the coastal zone is largely driven by subdivision for residential and tourism accommodation development.

Sea level rise

Projections for sea level rise in Break O'Day suggest that 0.39–0.73 m is likely by 2100, with a 'maximum possible' rise of around 1.0 m (McInnes et al. 2016). The areas most affected by sea level rise will be low-lying soft sediments such as the fringes of estuaries and lagoons, including residential zones at St Helens and Ansons Bay (LISTmap 2019). Most of the Break O'Day coastline is mapped as high for coastal erosion hazard (Lacey 2016).

In addition to the infrastructure impacts of rising sea levels there will be significant impacts on natural ecosystems (STCA 2013). Saltmarshes, which are a listed threatened ecological community under Commonwealth legislation, are particularly susceptible to sea level rise since they occur on flat low-lying land close to the high tide level. To adapt to even small rises in sea levels, saltmarshes will need to migrate inland. This migration may be inhibited by barriers such as roads, levee banks and urban areas. For example, the largest areas of saltmarsh in Break O' Day are adjacent to the St Helens urban area.

Acid sulfate soils

Acid sulfate soils can cause environmental and economic problems if disturbed (DPIPWE 2009). Modelling suggests there is a high risk of acid sulfate soils occurring in some coastal parts of Break O'Day municipality, particularly estuarine areas at St Helens, Scamander and Falmouth (LISTmap 2019).

Vegetation degradation

Coastal vegetation condition in the Break O Day municipality is variable and ranges in status from being in excellent to poor ecological quality. In response to this, planning scheme provisions and standards should aim to halt further development impacts on good quality coastal bushland and habitat and encourage ecological restoration of sites subject to degradation from threats such as weeds, feral animals, urban runoff, erosion and disturbance and fragmentation associated with coastal development including landclearing.

For example, coastal heathlands (Figure 2) and heathy woodlands are botanically rich vegetation communities which include numerous threatened plant species and are very susceptible to degradation as a result of coastal development or poor land management practices.

Coastal vegetation viability mapping (from 2006) shows significant sections of the Break O'Day coastline have native vegetation which requires management to address issues such as weeds, disturbance and fragmentation (LISTmap 2019). With pressures on coastal vegetation (such as land clearing, sea level rise, soil erosion and weed invasion) generally expected to increase, often with positive feedbacks as vegetation deteriorates, the protection and restoration of remaining coastal vegetation is important for the coastal environment as a whole.

Figure 2 – Coastal heathland at the Bay of Fires.

Coastal development

Coastal sprawl, including from tourism developments, subdivision and associated roads and services, leads to the fragmentation and degradation of coastal ecosystems. Habitat loss and disruption of ecological processes leads to a decline in ecological resilience, or self-repair capacity, which is particularly important as climate change impacts the environment (Kenchington *et al.* 2012).

A Tasmanian government report, *Vulnerability of Tasmania's natural environment to climate change* (DPIPWE 2010), states: "Coastlines that are subject to development have a lower capacity to adapt to changes in sea level, because they are no longer in their natural state of being dynamic and highly mobile".

The settlements of Scamander and Beaumaris are an example of coastal ribbon development, extending over a distance of around 11 km. Likewise, ribbon development is evident along almost the entire eastern shoreline of Georges Bay, from St Helens township to Akaroa (Figure 3). Avoiding coastal ribbon development is a key aim of planning guidelines in NSW (Coastal Council 2003) and in Southern Tasmania (STCA 2013). Apart from the direct impacts on the coastal environment, ribbon development also reduces the connectivity between coastal and inland environments, creating a barrier to movement of flora, fauna and vegetation.

Consolidating growth in existing settlements is a strategy to avoid the impacts associated with ribbon development. This is consistent with the State Coastal Policy, which aims to avoid ribbon and cluster developments by identifying areas where urban and residential development are suitable, consistent with the objectives, principles and outcomes of the Policy (Tasmanian Government 1996). Vegetation clearing for bushfire mitigation on residential land leads to loss of significant native vegetation and habitat where lot sizes are small (e.g. south of Scamander); residential lots must be much larger than 2 ha in order to retain a significant proportion of native vegetation in bushland areas (TCG 2015). Approval of residential or tourism development in areas that are mainly

characterised by native vegetation cover also leads to increased pressure for more fuel reduction burning on adjoining properties whether they be private land or public reserves.

Most of the impacts observed on wetlands in the municipality are related to development and include land clearing in the catchment, alterations to water inflows from water extraction and regulation, water outflows modified by construction of bridges and culverts, installation of drains and water quality impacts from surrounding land uses (NBES 2009). Consequent changes in water levels and sediment budgets lead to alteration of vegetation and fauna habitat within wetland systems. Apart from storm water and waste water from urban development, water quality impacts such as nutrient, chemical and sediment inputs are also derived from agricultural land uses.

Figure 3 – Ribbon development from St Helens on the left to Akaroa in the top right of this satellite image of Georges Bay.

Opportunities for improving biodiversity outcomes in the planning system

The planning scheme provides multiple opportunities for managing the significant biodiversity values of the coastal zone. The include appropriate zoning, such as Landscape Conservation Zone, to recognise and protect areas with significant values, and Residential Zones consolidating existing settlements to avoid ribbon development. Residential development in bushland areas needs to have minimum lot sizes much larger than the typical size of bushfire hazard management areas to avoid substantial cumulative impacts of land clearing and vegetation modification.

The incremental loss of habitat and of connectivity for wildlife in the landscape are major impacts of residential development and expansion of infrastructure. These risks can be mitigated by considering habitat retention and connectivity in the application of zones, for example including areas of Landscape Conservation Zone or Open Space Zone along waterways and elsewhere amongst Residential and other zones.

The existing restriction on subdivision within 1 km of the high-water mark in the Environmental Living Zone and Rural Resource Zone is a useful mechanism to maintain environmental values while allowing low intensity development. This could be translated into the new planning scheme using another mechanism such as a Specific Area Plan.

Planning permits for subdivision and residential and commercial developments could include conditions such as a requirement for a Vegetation Management Plan (including weed management) and for containment of cats and dogs. These simple measures would have significant environmental outcomes in areas with biodiversity values. Fire management is important for ecological outcomes as well as asset protection. In many cases both outcomes can be achieved but this will often require strategic planning across multiple land parcels. Subdivision permits in bushland areas could require development and implementation of a bushfire management plan for the entire site.

Conclusion

Local government planning schemes provide the primary mechanism for regulating development and protecting environmental values in the coastal zone. Restricting urban and residential development to existing settlements, particularly serviced settlements, is the best practice approach to strategic planning in the coastal zone. This approach can be implemented by strategic planning to prioritise development within serviced settlements (i.e. Scamander and St Helens), limiting densification in unserviced settlements including residential and tourism accomodation and restricting residential and tourism development outside serviced and unserviced settlements.

The existing restriction on subdivision within 1 km of the high-water mark in the Environmental Living Zone and Rural Resource Zone could be implemented in the new Break O'Day planning scheme, for example through a Specific Area Plan applied to zones where residential development is permitted. Given the limitations of the 1 km definition of the coastal zone, which does not capture all coastal values and threats, it would be appropriate to extend the coastal zone to the drainage divide (coast to skyline) for small near-coastal catchments.

A Specific Area Plan to prohibit subdivision in the coastal zone would help to protect the unique and vulnerable scenic and ecological values of the coast. Furthermore, it is necessary to fulfil the State Coastal Policy restriction on ribbon development.

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From:	NE Bioregional Network
To:	Break O Day Office Admin
Subject:	Break O Day LPS representation (3 of)
Date:	Friday, 17 December 2021 12:37:34 PM
Attachments:	Attachment F Review of impacts of residential development on receiving waters.docx Attachment G Threats of residential development to aquatic natural values in the Break O'Day Municipality.docx Attachment H Scenic Protection Report.pdf Attachment I DRAFT LPS WRITTEN DOCUMENT Scenic Protection Areas.doc

Attached is third email regarding Break O Day LPS representation

Thanks

Todd Dudley
President
North East Bioregional Network

Phone (03) 6376 1049
Postal address: 24751 Tasman Hwy, RSD St. Marys 7215

Review of impacts of residential development on the ecological health of receiving waters

Simon Roberts Nov 2021

1. Introduction

This report reviews the current understanding of the impact of residential development on the ecological health of receiving waters. Most of the literature on the effect of urbanisation has focused on impacts at the stream level as this is the most common surface water directly impacted by changes in land use. Many factors contribute to the quality of a stream and how it is affected by residential development. Fundamentally, stream ecological function is controlled by five variables: climate, geology, soils, land use, and vegetation. These variables directly affect two of the key drivers of change in stream function of discharge and sediment load, which in turn has an impact on the hydrology, morphology and ecology of the stream (Brabec et al., 2002). Of these variables, land use and vegetation are generally the only ones that can be controlled through land use planning and are therefore often the focus of studies examining degradation, protection or rehabilitation of streams.

Studies in the late twentieth century tried to define thresholds of urban development (defined by different measures of urbanisation; see below) where ecological impacts occur. Many of these studies concluded that degradation occurred in a continuous rather than at a defined threshold, although there can be distinct break points and for many indicators a maximum level of impact at low or intermediate levels of land use change. Additionally, the concept of degradation at a particular site in a catchment fails to incorporate potential cumulative or synergistic impacts within a catchment that may be missed by studying a single site at the end of a sub-catchment.

More recent studies have examining the ecological impact of increasing urbanisation on the aquatic values of waterways by examining physical and biological changes in catchments across urban to rural gradients. A common feature of these studies is that biological effects are often observed in streams at very low levels of urban development within catchments. Determining the exact mechanisms of degradation is often confounded by the many correlated landscape changes that disrupt the natural biological and geomorphic processes in streams in urbanising catchments. Key drivers of change have been identified as decreased vegetation cover, a reduction in organic material supply, increased impervious areas, more efficient delivery of stormwater to waterways, increased overland flows, increased catchment erosion and increased nutrients and toxicants (Grimm et al., 2008; Sheldon et al., 2012). Additionally it is also recognised that restoration of these values in previously impacted catchments is often complex and expensive (Hughes et al., 2014; Prosser et al., 2015; Urrutiaguer et al., n.d.) even at low levels of development (Walsh et al., 2015).

Urbanisation exerts a disproportionately large influence compared to most other land use changes on steam function (Paul & Meyer, 2001). Degradation of stream ecological function is driven by increased frequency and magnitude of storm flows, increased total flow, reduced dry-weather flows, changes to riparian and in-stream habitat and increased loads of nutrients and toxicants (Paul & Meyer, 2001; Roy et al., 2009; Urrutiaguer, 2016; Walsh, Roy, et al., 2005). All of the principal

mechanisms by which land use influences stream ecosystems identified by Allan, (2004) in Table 1 are associated with changes driven by urbanisation.

TABLE 1. Principal mechanisms by which land-use activities influence stream ecosystems. (From Allan 2004.)

Environmental factor	***Effect***
Sedimentation	Increases turbidity, scouring, and abrasion; impairs substrate suitability for periphyton and biofilm production; decreases primary production and food quality causing bottom-up effects through food webs; in-filling of interstitial habitat harms crevice-occupying invertebrates and gravel-spawning fishes; coats gills and respiratory surfaces; reduces stream depth heterogeneity leading to decrease in pool species
Nutrient enrichment	Increases autotrophic biomass and production, resulting in changes to assemblage composition, including proliferation of filamentous algae, particularly if light also increases; accelerates litter breakdown rates and may cause decrease in dissolved oxygen and shift from sensitive species to more tolerant, often nonnative species
Contaminant pollution	Increases heavy metals, synthetics, and toxic organics in suspension, associated with sediments, and in tissues; increases deformities; increases mortality rates and impacts to abundance, drift, and emergence in invertebrates; depresses growth, reproduction, condition, and survival among fishes; disrupts endocrine system; physical avoidance
Hydrologic alteration	Alters runoff–evapotranspiration balance, causing increases in flood magnitude and frequency, and often lowers base flow; contributes to altered channel dynamics, including increased erosion from channel and surroundings and less-frequent overbank flooding; runoff more efficiently transports nutrients, sediments, and contaminants, thus further degrading instream habitat. Strong effects from impervious surfaces and stormwater conveyance in urban catchments and from drainage systems and soil compaction in agricultural catchments
Riparian clearing/ canopy opening	Reduces shading, causing increases in stream temperatures, light penetration, and plant growth; decreases bank stability, inputs of litter and wood, and removal of nutrients and contaminants; reduces sediment trapping and increases bank and channel erosion; alters quantity and character of dissolved organic carbon reaching streams; lowers retention of benthic organic matter owing to loss of direct input and retention structures; alters trophic structure
Loss of large Woody debris	Reduces substrate for feeding, attachment, and cover; causes loss of sediment and organic material storage; reduces energy dissipation; alters flow hydraulics and therefore distribution of habitats; reduces bank stability; influences invertebrate and fish diversity and community function

2. Measures of urbanisation

In order to study effects on of urbanisation on waterways a measurement of urbanisation intensity is required. It seems logical that a good measure of urbanisation would be residential density, however there is a general pattern of higher amounts of impervious area per residence as urban density decreases (National Research Council, 2009). Where aquatic ecological impact is concerned the percentage impervious cover in a catchment is commonly used as impervious surfaces (local and regional roads, shops, sheds, driveways and utilities) are the main source of increased runoff, which is implicated in many of the direct biotic and abiotic effects on stream function (Arnold & Gibbons, 1996). The proportion of T**otal Impervious** (T**I**) area in a catchment is frequently highly correlated with ecological impacts (Taylor et al., 2004). However some studies have shown that areas of impervious surface directly connected (via pipes or channels), referred to as **Effective Impervious** (**EI**) provides a better fit to some parameters (Hatt et al., 2004). A more sophisticated measure, **Attenuated Impervious** (**AI**) combines both the directly connected surfaces and weights none connected surfaces or ends of pipes according to their distance from the stream. A proxy for directly connected impervious (EI) that is sometimes used is road density, expressed as kilometres of road per square kilometre of land (km/km_2) and is considered appropriate as roads are often the main component of EI (Hopkins et al., 2015; National Research Council, 2009).

3. Hydrology

Urbanisation alters the hydrological function of streams in a number of ways (Hopkins et al., 2015; Vietz et al., 2014). The most common affect is larger and more frequent runoff generated flows primarily from the replacement of previously pervious landscapes (forest and grasslands) with impervious urban surfaces that are in close proximity (<50m) or directly connected to streams. These increased runoff events from urban infrastructure (buildings, driveways, local roads) lead to more frequent and higher peak flows that can modify the stream channel either through the delivery of increased sediment loads or through scouring and transport downstream. Increased flows even after small rainfall events can have profound effects on the water balance of catchments by reducing the amount of water that would have infiltrated into the local groundwater leading to reduced base flows during dry periods. Residential development in forested catchments also leads to a reduction in forest area, through clearing for housing and sheds, bushfire mitigation and increased road access. Replacement of forest cover with grassland or urban infrastructure reduces the rate of transpiration and increases the likelihood of surface flows through reduced interception by vegetation. Removal of streamside vegetation can also lead to bank instability and increased incision of the channel that lowers the groundwater level of the riparian zone.

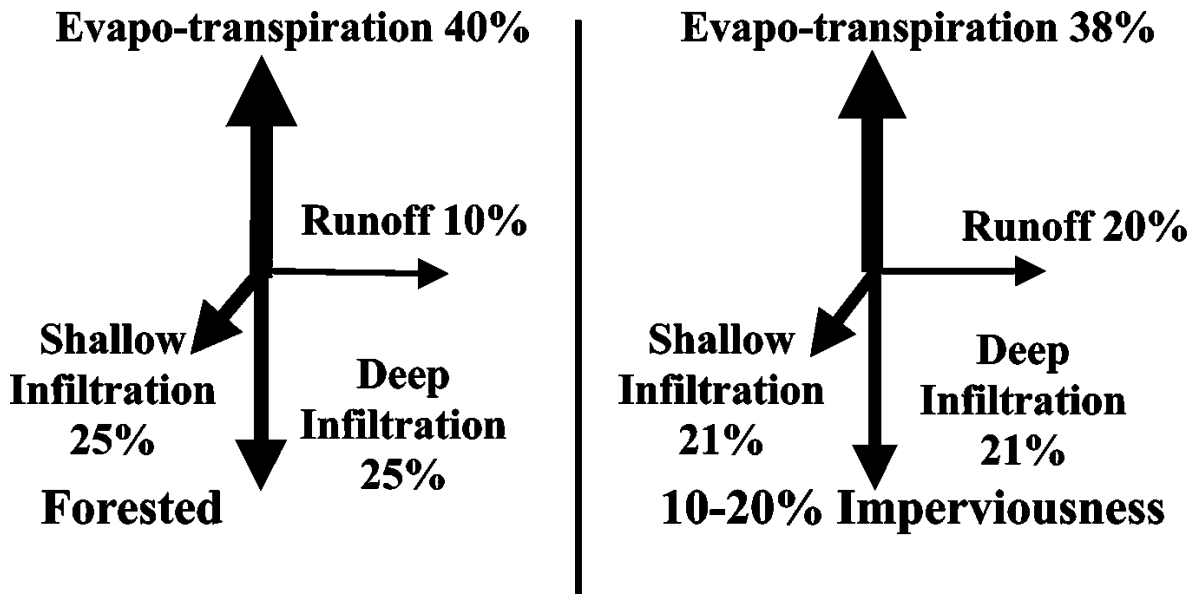

Figure 1. Changes in hydrologic flows with increasing impervious surface cover in urbanizing catchments (after Arnold & Gibbons 1996).

A number of studies have shown linear increases in both the magnitude and frequency of high flow events as the proportion of impervious cover increases in a catchment. Hopkins et al (2015) reported linear increases in high flow events with shorter duration across 8 of 9 urban gradients ranging from 0% to 60% impervious cover in the USA. In Australian cities the volume of runoff is typically 5-10 times the pre-urban volumes (Walsh et al., 2010). Arnold & Gibbens (1996) estimated a doubling in total stream flow with an increase in impervious surfaces from 0% to 20%.(Figure 1). Vietz et al. (2014) studied the effect of increased flow events on geomorphology of streams and estimated that an increase from 0% to 2% EI would increase the duration of discharges likely to transport sediments by 12% in a Melbourne stream. Similarly Vietz et al. (2014) found that urbanisation significantly

impacts a number of geomorphic attributes of streams (presence of bars/benches, bank instability and presence of large wood) at EI values <2% which is equivalent to TI of 4-5%. They concluded that measurable geomorphic change occurs at very low levels of EI (0-3%) and that stream management of degradation should focus on stormwater drainage (Vietz et al., 2014). One study found that a small increase in EI to >3% led to streams being almost entirely scoured to bedrock or clay (Sammonds et al. (2014) cited in (Vietz et al., 2016)).

4. Nutrient cycling

Urbanisation rapidly leads to increased loads of nutrients (primarily nitrogen and phosphorus) that are often drivers of eutrophication in fresh and saline waters (Hatt et al., 2004; Lintern et al., 2018; Taylor et al., 2004). Increased nitrogen loads are derived from increased depositional sources associated with urban land use (fertilizers and atmospheric deposition, domestic animal manure (Bettez & Groffman, 2013; Lintern et al., 2018)) which can be efficiently delivered to streams by storm flows through pipes and channels. Septic tanks deliver most of their nitrogen output as soluble nitrate (NO_3) primarily to groundwater which can be delivered to streams through sub-surface flows (Hatt et al., 2004; Walsh & Kunapo, 2009).

Reduced forest and shrub cover leads to decreased assimilation by vegetation and lower levels of supply of wood and organic carbon to streams (Lammers & Bledsoe, 2017). Reduced in stream carbon cycling can decrease nitrogen (and soluble phosphorus) retention times in the terrestrial and aquatic environment (Grimm et al., 2005). Urban derived hydrological and geomorphic changes (less ground water supply and channel incision) can also disrupt groundwater and flowing water interactions in both the riparian and hyporheic zones of the stream which can decrease the natural loss of nitrogen as N_2 gas through denitrification (Lammers & Bledsoe, 2017; McClain et al., 2003).

Increased soluble phosphorus concentrations in streams come from diffuse and point sources associated with urban land use (septics, sewage treatment plants, fertilizers and organic contaminants such as animal wastes). Reduced riparian vegetation decreases in-stream organic carbon which can decrease phosphorus assimilation (Lammers & Bledsoe, 2017). In many Australian soils phosphorus is a limiting nutrient for plant growth, increased phosphorus supply from urban sources generally promotes weeds which are more adapted to higher nutrient soils (Buchanan, 1989). A large amount of terrestrial and aquatic phosphorus is bound to soil and sediments particles, mostly fine sand, clays and silts (Houshmand et al., 2014) and is typically mobilised to streams from increased erosion of pre-existing upland sources (Lovett et al., 2007). The increased power of storm flows in the stream channel also leads to mobilisation of bank and bed sediment which can have high concentrations of particulate phosphorus (Lammers & Bledsoe, 2017). Most of this particulate phosphorus is delivered to aggrading sections of the stream system or downstream receiving waters (lake, estuary and marine ecosystems).

A large scale study in the Melbourne region measured concentrations (at base flow and during storm events) of a number of nutrients and analysed their distribution in relation to TI (range: 0.1% to 49%) and EI (Hatt et al., 2004; Taylor et al., 2004). These studies only used catchments where land use was either urban or forested land and so removed confounding results that may have been driven by other land use such as industry, agriculture or horticulture. Median concentrations of total phosphorus (particulate and soluble) doubled and soluble phosphate quadrupled (~0.003 to 0.012

mg/L^{-1}) with increases in TI. Further analysis of the this data using step wise regressions indicated that soluble phosphate concentrations were best fitted to EI and that a value of 5% EI represented a break point where concentrations tended to stabilise (Walsh, Roy, et al., 2005). Nitrogen showed a different pattern with dissolved inorganic nitrogen (NO_3, NO_2 and NH_3 combined) and total nitrogen rising with septic tank density (0 to 141 septics/km^2) with highest septic densities between 4-12% TI and very few below 2% TI and above 30% TI as piped sewer systems became more common. Median dissolved inorganic nitrogen concentrations showed a 5 fold increase (0.3 to 1.8 mg/L^{-1}) with increased septic tank density, total nitrogen followed the same trend and doubled in concentration from ~0.8 to 2 mg/L^{-1}. Nearly the entire rise in total nitrogen and dissolved inorganic nitrogen concentration occurred in the range of 0-3.9% TI and 0-0.4% EI.

Although the concentration of nutrients is relevant to in-stream biological function (in particular algal or bacterial production) the sum of concentration and flow (defined as the load) determines the amount of nutrients delivered to downstream habitats. In the Melbourne study there was an increase in load per unit area of catchment as TI and IE increased. Loads of suspended solids, total phosphorus, total nitrogen, soluble phosphate and dissolved inorganic nitrogen increased by around 10 times as TI increased from 0.1 to 49% (Hatt et al., 2004). This data shows that although nutrient concentrations may drop under very high urban densities this may be a consequence of runoff increasing faster than the source of nutrients. An important implication of these results is that with decreased concentrations but higher efficiency of downstream transport nutrients are much less likely to be assimilated or processed in the stream leading to higher loads delivered to downstream water bodies.

5. Pollutants

Urban land use has long been associated with a range of pollutants in surface runoff (Weeks, 1982). Urban drainage from impervious areas has been shown to commonly contain a mixture of oil, grease, polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyl (PCB) and heavy metals (Allinson et al., 2014). Many of these pollutants are considered as toxicants but heavy metals and PAHs are of greatest concern because of their biological toxicity, persistence in the environment and potential for bio-accumulation. Another group of toxicants of emerging concern are micro-pollutants including pesticides, herbicides, hormones, pharmaceuticals and personal care products which can be biologically active at very low concentrations (Allinson et al., 2014). Many of the hydrological changes associated with urbanisation also increase the efficiency of delivery of these pollutants to streams and downstream receiving waters.

A final area of concern is the contamination of waterways with potential human pathogens sourced from urban infrastructure (primarily septic tanks but also domestic animals). Levels of *E. coli* are used as a tracer for warm blooded animal faecal contamination of water. In developing catchments septic tank density is considered the main potential risk of human faecal contamination. Additional factors that may determine the level of risk are the proximity of the septic tank to a waterway or the integrity and level of maintenance of the septic tank (Walsh & Kunapo, 2009).

6. Algal biomass and composition

As for nutrients benthic algal biomass increased by approximately tenfold (3 to 30 mg/m^2)with increasing TI and EI in the Melbourne study (Taylor et al., 2004). The increase in algal biomass was postulated to be primarily driven by release of filamentous green algae from phosphorus limitation through increased PO_4 concentrations in runoff (Taylor et al., 2004). Further analysis of this data indicated that maximum algal biomass was attained at between 2% and 5% EI depending on season (Walsh, Fletcher, et al., 2005).

Examination of benthic diatom species/taxa across the Melbourne urban gradient showed a clear distinction between sites above and below 1% EI in compositional structure (Newall & Walsh, 2005). European diatom derived indices of water quality showed a strong negative correlation with urbanisation indicating that diatom species/taxa composition was responding to degradation in general water quality (electrical conductivity, temperature, suspended sediments), similarly two other diatom indices designed to detect nutrient enrichment also showed a strong negative relationship with urbanisation (Newall & Walsh, 2005). Overall changes in both the biomass and composition of benthic algae was postulated to be driven by a combination of changes in salinity (measured as electrical conductivity median range across all sites 70-700 μS cm^{-1} with a break point in diatom composition at ~300 μS cm^{-1}) and increased supply of soluble phosphorus through frequent small flow storm events (Newall & Walsh, 2005; Taylor et al., 2004).

7. Macroinvertebates

Macroinvertebrates species have a central ecological role in many stream ecosystems and may be vital for the "health" of whole river networks (Clarke et al., 2008; Urrutiaguer, 2016). Many studies have shown a decrease in invertebrate diversity and abundance across urban gradients (Paul & Meyer, 2001) and this group of organisms has been considered as one of the most useful for comparing inter-regional responses to urban land use (Walsh, Roy, et al., 2005). In Australia the response of invertebrate communities to urban effects has been extensively used as surrogate for aquatic condition and in particular the SIGNAL score (Stream Invertebrate Grade Number –Average Level) has been used for many decades in the Melbourne region (Urrutiaguer, 2016). Typical responses of invertebrates to urban stress are a loss of taxa sensitive to disturbance and an increase of taxa typical of highly urbanised streams (Walsh et al., 2007).

Two studies of urban and forested land effects around Melbourne have shown rapid decreases in invertebrate diversity at very low levels of impervious cover, with very few sensitive species occurring at levels of TI of 4% in the Yarra River (Walsh et al., 2007) and 6-15% EI in small streams of the Melbourne region (Walsh et al., 2004). A more detailed study of both species and families of macro invertebrates from 572 sites across the Melbourne region (Walsh & Webb, 2016) used a more refined measure of effective impervious which weights the effect of the impervious area by the distance to the nearest stream or drain and is termed **Attenuated Impervious (AI)** (Walsh & Kunapo, 2009). Walsh and Webb (2016) showed a decline in 51 of the 60 families recorded with increasing AI, with 24 families showing a steep decline and their probability of occurrence reducing to near zero at AI values of 3%, three of these families were not found at AI values >1%. A further 6 families showed a steep decline to low or intermediate probability of occurrence at 3% AI. A comparison of the effect of AI on genera/species versus families (figure 2) showed a much greater impact on genera/species

at AI levels above 2.5% with 11 out of 60 families (18%) never recorded at AI >2.5% compared to 296 of 477 (62%) of genera/species (Walsh & Webb, 2016). The sharp decline in the probability of occurrence in whole families of invertebrates at AI values of <1% suggest a lack of resistance to small levels of urban stormwater stress (Walsh & Webb, 2016) with the results indicating that the lowest level of AI that at which a decline in the SIGNAL score could be inferred was 0.1 to 0.3% (equivalent to 1000-3000m^2 of directly connected impervious area per km^2). A comparison of the effect of AI versus **Attenuated Forest Cover (AF)** showed that intact riparian forest can marginally reduce the impact of AI for a small number of families that are tolerant to some level of urban impact, indicating that retaining riparian buffers is only likely to have a small effect on family occurrence if urban-stormwater derived stress is not addressed (Walsh & Webb, 2016).

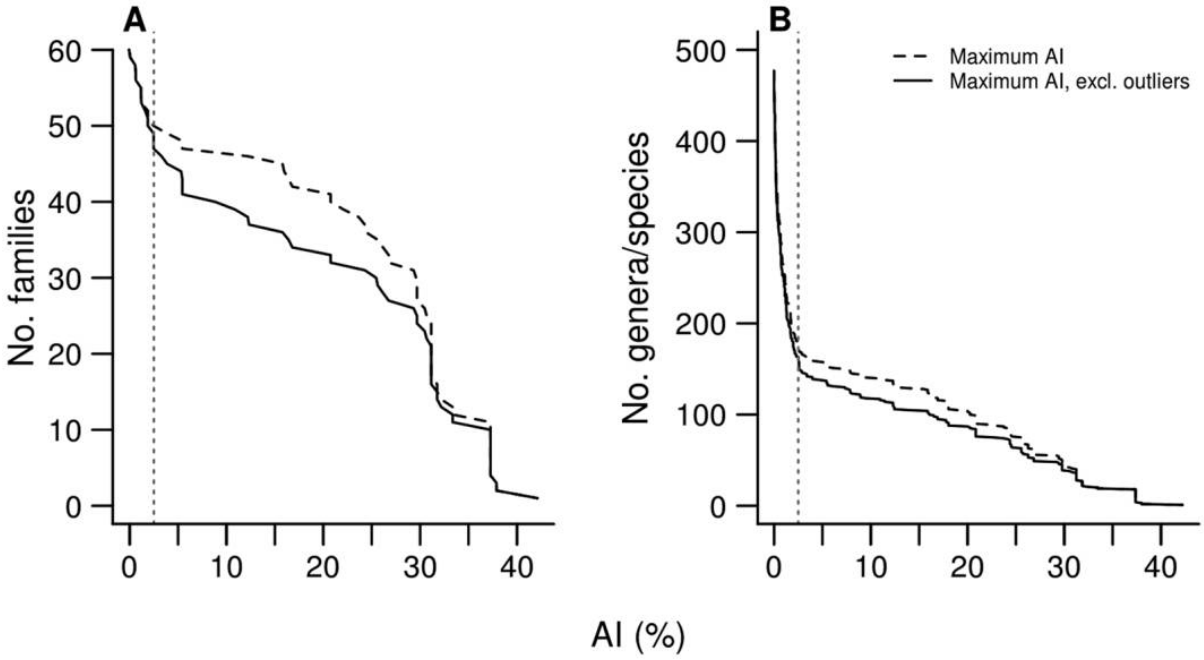

Figure 2. (Figure 7 of (Walsh & Webb, 2016)) Plots of the cumulative number (no.) of taxa that occur up to a particular value of attenuated imperviousness (AI) for family-level records (A) and the same records identified to genus or species (B). Data are for taxa recorded in the Melbourne region from the 60 families modeled in our study including data from additional locations (Fig. S1C). In each plot, taxon occurrences are ordered by the maximum AI value from which they have been recorded (maximum) and the maximum AI value ≤ 1.5× the interquartile range (maximum excluding [excl.] outliers). The plots show that most families were collected from streams with >2.5% AI (dotted vertical line), but that most genera/species were not recorded from streams with >2.5% AI.

8. Indicators of stream ecological condition

A number of water column and stream bed physical, chemical and biological indictors are commonly used to assess stream "health". Many of these indicators have been chosen due to their association with primary drivers to ecological degradation in running waters (Table 2). Increased values of abiotic indicators that typically increase with reductions in ecological values are; nitrate (NO_3), ammonia (NH_4), Total Nitrogen (TN), phosphate (PO_4), total phosphate (TP); dissolved organic carbon (DOC); total suspended solids (TSS); electrical conductivity (EC) and temperature (^oC). Increases in the water column concentration of all of the nutrients (NO_3, NH_4, TN, PO_4 and TP) as well as DOC and TSS generally lead to greater loads of these elements being delivered downstream waters.

Commonly used biotic indicators that often increase in association with decreased ecological function are algal biomass both in the water column and on the stream bed. More sophisticated biotic indicators of biological diversity are benthic algal species composition (Newall & Walsh, 2005) and the presence or absence of macroinvertebrates at the family and order level (Gooderham & Tsyrlin, 2002). All of these indicators have been shown to vary in response to ecological stress and in many cases indicator variables have been selected due to their high sensitivity to impacts of urbanisation (e.g. SIGNAL, the Stream Invertebrate Grade Number –Average Level) (Stewardson et al., 2010).

TABLE 2. The primary threats to streams and rivers. (Modified from (Allan & Ibañez Castillo, 2009).)

	Proximate causes	**Abiotic effects**	**Biotic effects**
Habitat alteration	Land-use change including deforestation, urban development	Loss of natural flow variability, altered habitat. Reduced habitat and substrate complexity, lower base flows Altered energy inputs, increased delivery of sediments and contaminants, flashy flows	Reduced dispersal and migration, changes to water quality and assemblage composition. Reduction in biological diversity favoring highly tolerant species. Changes in assemblage composition, altered trophic dynamics, can facilitate invasions
Invasive species	Aquaculture, sports fishing, pet trade, ornamental plants	Some invasive species modify habitat, otherwise minor	Declines in native biota, biotic homogenization, can result in strong ecosystem-level effects
Contaminants	Nutrient enrichment from agriculture, municipal wastes, urban deposition, atmospheric deposition, waste disposal, organic toxins.	Increased N and P, altered nutrient ratios. Reduced pH. Increased trace metal concentrations (e.g., Hg, Cu, Zn, Pb, Cd). Organic toxins Increased levels of PCB, endocrine disruptors, some pesticides	Increased productivity, algal blooms, altered assemblage composition Physiological and food chain effects Toxic effects through biomagnification Physiological and toxic effects

At higher trophic levels indicators such as the ratio of the sensitive coho salmon to the more tolerant cutthroat trout have been used as indicators of urban stress with in the USA (Kennen et al., 2005; National Research Council, 2009). Similarly the likelihood of encountering male, female or immature platypus in the Melbourne region has been used to indicate urban stress (Martin et al., 2014).

In the USA the Index of Biological Integrity (IBI) is a integrated quantitative measure that has be used to distinguish among a range of aquatic conditions (poor through excellent). It uses a range of data including invertebrate species richness and composition, trophic composition, and fish abundance and condition but also incorporates professional judgment based on the relative sensitivity of each of these parameters to stressors (National Research Council, 2009). IBI indices have been developed for a number of USA states and are used to detect the effect of non point source stressors to

ecosystems that may not be detected by reliance on water quality or a more limited biological indicator alone (Kennen et al., 2005). Figure 1 shows the significant relationship (P <0.0001) between the North Carolina IBI and percent urban land use.

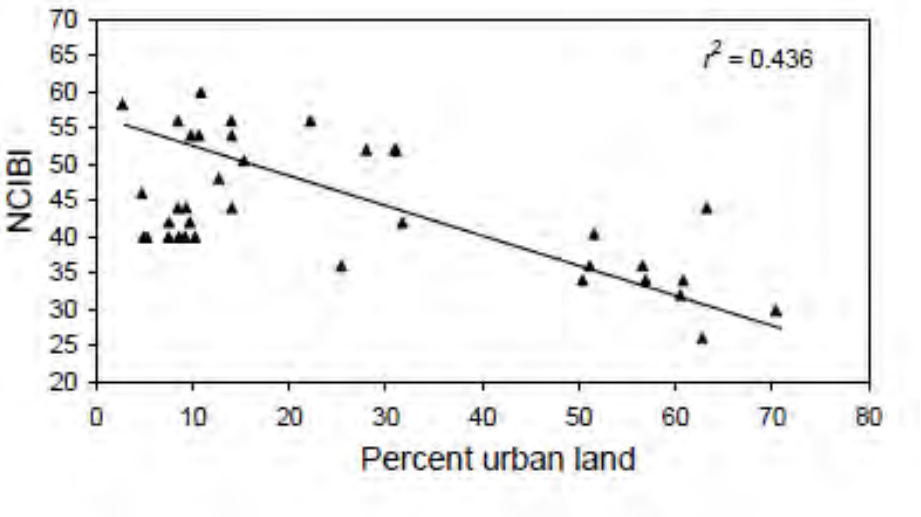

Figure 1. (from (Kennen et al., 2005)) Regression relation between percent urban land and the North Carolina index of biotic integrity (NCIBI).

9. Summary of impacts on steam ecological function of low urban density

Studies in Australia have shown that biological indicators (algal biomass, macroinvertebrate biodiversity and platypus numbers) show steep declines from 0% to <10% TI. Similarly A broad scale study in Connecticut showed that all catchments with TI >12% failed a macro invertebrate index for stream health (Figure 3). Results from the Connecticut study clearly show the high level of variability in stream ecosystem response to TI at low levels of imperviousness. Most streams in the range of 5-12% TI failed the macroinvertebrate index and a substantial proportion of streams at 2-3% TI also had very low scores (Figure 3). All streams with greater than 12% TI failed the index of stream health (Coles, 2012).

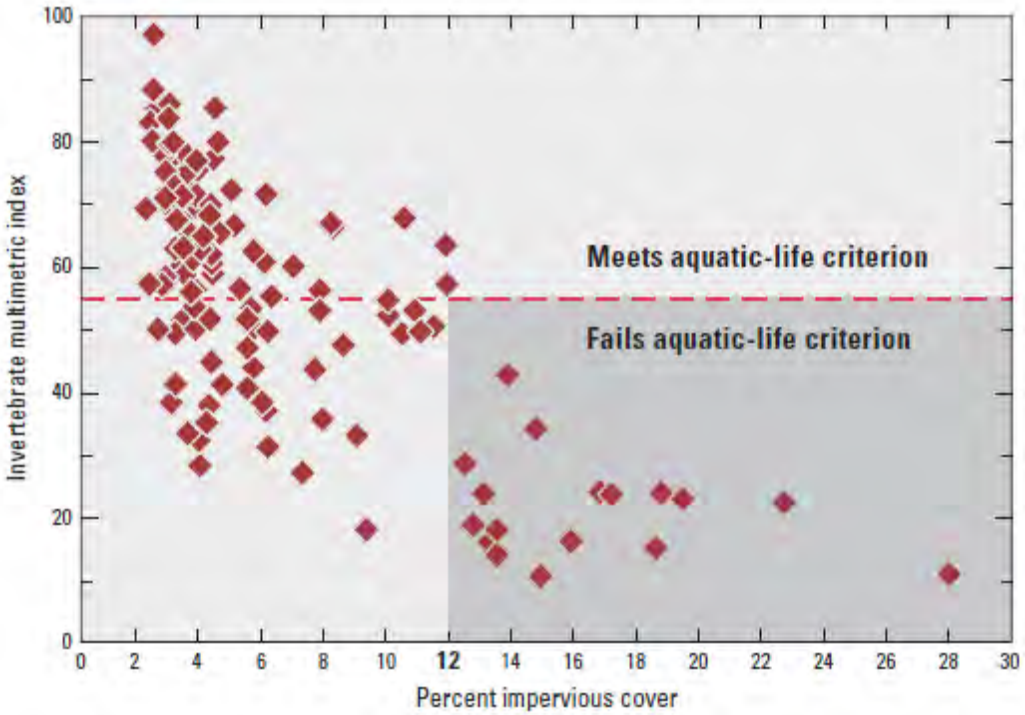

Figure 3. (Figure 7-1 of (Coles, 2012)) The Eagleville Brook impervious cover TMDL(Total Maximum Daily Load) is based on a Connecticut Department of Environmental Protection study that indicated streams in watersheds with impervious cover exceeding approximately 12 percent (the darker area) failed to met the Connecticut aquatic-life criterion for healthy streams.

There is a growing body of literature that has studied the impacts of urbanisation on abiotic and biotic components of steam function. A consistent result of these studies is that stream quality begins to decline from the lowest level of urbanisation measurable by current land use data (Walsh & Webb, 2016) and that degradation of aquatic biological communities begins at the onset of urban development (Coles, 2012). The extent which ecological function is compromised at low levels of urbanisation is not always clear as biological indices of steam health are often designed to detect changes in the occurrence of species known to be sensitive urban stressors. The rapid decline of organisms higher in the food chain (such as platypus) to very low levels of imperviousness (<3%) indicates a substantial change in ecological function. The data shows that macroinvertebrate biodiversity at both the stream reach and catchment level can be severely impacted at very low levels of urban density with macroinvertebrate species richness rapidly declining between 0% and 2.5% AI (King et al., 2011; Walsh & Webb, 2016).

A consistent impact of urbanisation is increases in concentrations of soluble and particulate nitrogen and phosphorus which are detectable at low levels of urbanisation (<2% EI) which are implicated in changed nutrient processing rates in the stream and increased algal biomass. Increased depositional nutrients delivered from impervious surfaces are almost always associated with increased contaminant loads, with many of these contaminants having not been assessed for their aquatic toxicity as they are relatively novel compounds. A study in Melbourne of eight urban sites sampled on two occasions detected 14 metals with copper and zinc found in all samples, in addition 15 herbicides and 93 semi-volatile organic chemicals were found in at least one sample (Allinson et al., 2014). This study also tested all samples against a toxicity bio-assay using bacteria and algae and found that all samples were moderately or strongly toxic to bacteria and all but two sites were toxic to microalgae (Allinson et al., 2014). The close association of a new suite of toxicants with the more

commonly assessed nutrients, sediments, pesticides, metals and physicochemical changes in water quality has not been assessed at low levels of urban impact; however they remain a potentially important stressor to the biotic integrity of streams and receiving waters at very low levels of concentration.

It is still unclear which stressors cause the declines in stream biota observed at low levels of urbanisation. It is quite probable that different stressors may be more important under different catchment conditions and with different types of urbanisation (townships, clustered versus diffuse development). There are a number of commonly measured stressors that can be directly related to changes in biota such as nutrient enrichment leading to increased algal biomass; salinity and toxic metals impacting bacterial, algal or macroinvertebrate survival; or sediment smothering invertebrates or fish gills. Many of these stressors frequently increase together; hence the influence of one factor is often difficult to distinguish from a suite of potential impacts. Similarly there may also be a synergistic effect of multiple stressors or toxicants that lead to a greater impact than would be predicted from each stressor individually.

10. Threats to ecologically sensitive waters

Loads of nitrogen, phosphorus and sediments generated from urban areas delivered to downstream waters shown a linear increase with increasing urbanisation. Increases in upper watershed catchment urbanisation are almost always going to lead to increased loads of nutrients and sediments to slower flowing water bodies (reservoirs, lakes, low land rivers, coastal waters and estuaries). The magnitude of the increased loads will be determined by the level of urbanisation, proximity to watercourses, direct connection of impervious areas, climate, topography, vegetation cover and geomorphology (soils types). Increased loads of both nutrients and sediments to estuaries have been a primary concern for the ecological health of these systems. In particular smaller estuaries are more susceptible to eutrophication due to their low buffering capacity and limited nutrient processing and assimilation rates. This is particularly the case in intermittently open or permanently closed estuaries or coastal lagoons.

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Threats of residential development to aquatic natural values in the Break O'Day Municipality

Simon Roberts Dec 2021

Urban development in proximity to Grants Lagoon, Binalong Bay and Skeleton Bay. Source: LISTmap.

1. Introduction

This report looks at potential nutrient and toxicant issues of aquatic systems in the BOD council area arising from residential development in rural areas (often referred to as exurban development) and townships. There is a trend of expanding exurban development in Australia driven by the desire for both amenity and lifestyle changes. Increasing residential development has led to concern about potential degradation of ecological values in rural areas and in particular the impact on waterways and the coastal environment (Tasmanian Planning Commission 2009). Similarly the desire to live in a coastal location has lead to increased pressure to expand existing townships within the coastal zone which has the potential to lead to ecological degradation of adjacent water bodies and the marine environment (Victorian Coastal Council et al. 2011).

It has been recognised for some time that changes in land use can have profound and often irreversible impacts on both freshwater and estuarine systems. Harris (2001) reported that land clearing in catchments can lead to far reaching "deleterious changes to soil properties, vegetation and surface and ground water quality and quantity"(Harris 2001). Harris (2001) concluded that at 50% vegetation clearance there is a sharp increase in the export of salinity, suspended solids and nutrients to waterways with a corresponding decline in water quality. He also noted that clearing natural vegetation leads to

increased runoff with greater stream power which can cut down into the soil and subsoil of watercourses.

Australian catchments have naturally low levels of export of nutrients to waterways due to low rainfall, generally low relief and low nutrient status of our soils. Freshwater ecosystems, estuarine and coastal lagoons in Australia are therefore particularly susceptible to anthropogenic impacts that can lead to changes in flow or eutrophication (Hadwen and Arthington 2006). Increased nutrient and sediment loads from urban development, waste disposal, agriculture and aquaculture have all been implicated in changes to both river, estuary and coastal lagoon ecology through a deterioration in water quality (Kennish 2002). In general long term water quality monitoring of waterbodies has been restricted to rivers and dams in Tasmania with analysis of land use impacts being mostly attributed to broad scale land use such as grazing, forestry or conservation land (DPIPWE 2020; Hardie and Bobbi 2018; Wagenhoff et al. 2017).

The Resource Management and Planning System (RMPS) of Tasmania has the primary objective of the sustainable development of natural and physical resources and the maintenance of ecological processes. State legislation and State Policies of the RMPS govern the management of freshwater resources and their ecosystems throughout the State. Legislation that contributes to the RMPS shares a common set of high-level objectives (Schedule 1 Objectives of Land Use Planning and Approvals Act 1993). The RMPS also has two State policies that are relevant to protection of both freshwater and marine ecosystems; the Tasmanian State Coastal Policy 1996 and State Policy on Water Quality Management 1997. However, there are few prescriptions within the planning system that consider broadscale ecological impacts of development on aquatic systems.

There is currently a paucity of physical, chemical and benthic invertebrate data from estuaries within the state required to assess the ecological status of these water bodies. This data would be particularly relevant when assessing the potential impacts of current and proposed planning provisions on aquatic environmental values (Edgar, Barrett, and Graddon 1999).

This report details the potential direct and indirect environmental impacts of increased residential development both within and outside established urban zones on waterways in the Break O'day Municipality (see (Roberts 2021) for a more detailed review on residential land use impacts). It summarises the current status and threats to estuaries and coastal lagoons based on reports and studies done to date. Finally it considers various prescriptions that may be considered at the planning level to mitigate or remedy potential impacts of urbanization.

2. Potential direct and indirect environmental impacts of increased residential development on waterways

Increased residential development is a significant driver of decreased aquatic and terrestrial biodiversity (Cuffney et al. 2010; Gagné and Fahrig 2010; King et al. 2011). Urban development or residential development is a considered as one of the most potent land use changes likely to cause degradation to streams on a per area basis (Barmuta et al. 2009; Edgar, Barrett, and Graddon 1999; Urrutiaguer 2016). Increased nutrient, toxicant and sediment loads are highly positively correlated with increases in urban

density (Hatt et al. 2004). Edgar *etal* (1999) calculated an "environmental impact factor (EIF)" for natural lands (unmodified vegetated land and water bodies) of 1, an EIF of 5 for cleared forest and an EIF of 20 for urban land. These EIF values are considered to represent the relative increases in nutrient and sediment loads in runoff from each type of land use (Edgar, Barrett, and Graddon 1999). State wide analysis of broad scale effects of land use on 95 environmental factors in Tasmania found that urban land use ranked in the in the top six factors negatively effecting water quality for four of the six indicators examined (DPIPWE 2020).

Current understanding of the impacts of residential development has lead to the realization that a very small area of impervious area as a percentage of total area of a catchment (<2%) can have significant effects on stream ecology (Urrutiaguer 2016). There is also a clear threshold of ~5% catchment imperviousness beyond which ecosystems are substantially damaged (Ewart 2018). In Tasmania urban land use has been implicated in changes in river water quality indicators whilst representing very low levels of the catchment area (DPIPWE 2020). A key message of the DPIPWE (2020) report was the limited information about factors likely to influence river ecosystem health such as the effect of diffuse pollution or temporal changes in land use.

Estuaries and coastal lagoons are considered as particularly susceptible to impacts from changes in land use as they are generally nitrogen limited and are sensitive to increased inputs of nitrogen from fertilizers, urban run-off and land clearing.(Harris 2001) Increased pollution from both point sources (sewage treatment plants, stormwater outfalls) and non-point sources (septic tanks, fertilizer, urban run-off) lead to higher nutrient and organic carbon loading as well as pathogens and chemical contamination of estuarine waters and sediments (Kennish 2002). Urban runoff can have substantially higher concentrations of phosphorus and has a higher pH which can significantly change the vegetation in impacted areas, a common consequence is the establishment of weed species in formally low nutrient soils (Buchanan 1989). Similarly changes in hydrology either as increased or decreased or altered flow regimes can have profound effects on estuaries and coastal lagoons through increased transport of sediments and shifts in salinity and temperature regimes. Artificial opening or expansion of natural outlets by dredging can also significantly affect the ecology of estuaries and coastal lagoons through increased marine flushing or import of coastal derived organic matter. Artificially changed flushing regimes have been implicated in large changes in fish and invertebrate populations (Clark and Johnston 2016) as well as fish kills brought about by low oxygen concentrations from decomposing plant matter in re-flooded areas of the system (Hadwen and Arthington 2006).

Despite the potential threats to coastal lakes and lagoon ecosystems from antropogenic activities there is still a paucity of data on water quality or inventories of estuarine biota. The latest Australian State of the Environment Report 2016 indicates that the most likely trend is a decrease in the ecological state of coastal lagoons however a robust assessment is difficult due to a lack of baseline data (Clark and Johnston 2016). The State of the Environment Report 2016 concluded that the outlook for lagoons was tightly coupled with human population growth and that current development and land use decisions are likely to lead to ongoing deterioration.

Threats to aquatic natural values in the BOD

Examination of trends in long term datasets of six river health indicators across 85 sites in Tasmania has shown a decline in at least one water quality indicator in 41% of the sites (DPIPWE, 2020). Sites with stable or improving trends were typically at higher elevations (ie higher in the catchment) whereas sites with declining trends were at lower elevations. The impacted sites occurred across all the sampled areas of Tasmania (north, east and south of the state). Differences in trends were attributed to the level of development in catchments with upstream sites generally being undisturbed or with low levels of development. Although few of the sites analysed for long term trends in water quality in Tasmania were in th BOD municipality the general trend of increased development in the lower reaches of catchments is typical of most catchments in the municipality.

Cumulative and increasing ecological pressures in coastal environments have been recognized as having direct effects on both estuaries and coastal embayments. The Victorian Coastal Council (Victorian Coastal Council et al. 2011) identified a key issue to be "understanding the cumulative ecological consequences of coastal development", and identified the direct pressures of increased development to be:

- Roads and other infrastructure, which affect runoff, input of toxicants, change access for wildlife, influence patterns of recreational use of undeveloped areas, etc;
- Development places new demands on nutrient management, with an increase in the volume of nutrients that must be accommodated;
- Use of undeveloped land (recreation, access by pets, etc.) and potential impacts on biodiversity (species that use particular coastal habitats, such as dune-or beach-nesting birds);
- Biosecurity issues with transport of marine pest species by recreational activities (boats, trailers, wet gear, etc.);
- Increased pressure on marine resources (e.g. recreational fish stocks);
- Potential impacts to marine environments from increased off-shore activities (e.g. off-shore oil and gas, marine renewable energy); and
- Increased exposure to risk associated with greater population densities being located in current and future hazardous areas.

Potentially important cumulative or broad scale diffuse effects of development is considered a key consideration for landscape planning in coastal areas (Victorian Coastal Council et al. 2011). In Tasmania other than through local planning schemes there is little integration between the management of catchments and the coastal and marine zones. The recently adopted Rural Water Use Strategy had little consideration of catchment water use on the ecological function of estuarine or coastal ecosystems. The strategy stated that;

> "*Whilst water quality is a consideration in executing functions under the WMA, catchment management and management of water quality more generally are principally managed through other suitable frameworks and instruments outside the water management framework as it relates to the Rural Water Use Strategy."*

The "other suitable frameworks and instruments" are not listed in the Rural Water Use Strategy. Land use planning would be one such mechanism that could be used to control broad scale effects on water quality by limiting potentially threatening types of use or development and designating mitigation actions when uses are potentially threatening to ecological function of waterbodies.

3. Status and threats to estuaries and coastal lagoons in the BOD municipality

Apart from threats to the ecological health of streams, rivers and open estuaries by residential development the BOD council area has a large number of intermittently open/closed estuaries and coastal lagoons that are potentially threatened by increased residential activity and development in their catchments (Bushways 2009; Crawford, Ross, and Gibson 2011; Edgar, Barrett, and Graddon 1999; North Barker 2009). Intermittently open and closed estuaries are considered more vulnerable when they are closed as any nutrient or pollutant entering the water body cannot be flushed out by tidal activity (Crawford, Ross, and Gibson 2011; Hadwen and Arthington 2006; Kennish 2002). Similarly permanently closed coastal lagoons have to process any additional nutrient or toxicant loads internally.

Hadwen etal (2006) reviewed threats to intermittently open/closed estuaries in Australia and concluded that "relatively little is known of the ecology of these intermittently open systems" and that "lack of knowledge of how these systems respond to anthropogenic activities threatens their long-term sustainability". Intermittently open/closed estuaries are functionally different to open tidal estuaries as they typically have low tidal ranges with infrequent periods of connection to the sea. During periods of low connection to the marine environment intermittently open/closed estuaries may behave more like saline lakes, but with unique biogeochemical and limnological processes (Hadwen and Arthington 2006). Intermittently open/closed estuaries were found to support a wide array of invertebrate and fish taxa and this diversity was strongly influenced by entrance opening and closing regimes (Hadwen and Arthington 2006).

Hadwen etal (2006) considered the major processes threatening the ecological health of coastal waterways and in particular intermittently open/closed estuaries in Australia where:

- Eutrophication and contamination – excessive nutrient and contaminant inputs from agricultural, industrial and urban sources;
- Fisheries – impacts of excessive harvesting of fish and macroinvertebrates by commercial and recreational fishers;
- Modification of flow regimes, including water allocation to industry, urban settlements and agriculture, and specifically for intermittently open/closed estuaries, the artificial breaching of berms;
- Tourism – increasing tourist and resident recreational demand and use; and
- Coastal development – increasing land clearing for urban, industrial and agricultural land uses, and habitat loss through in-system modifications.

Crawford et al (2011) noted that estuaries on the east coast of Tasmania are predominantly poorly flushed or intermittently open/closed and that these types of estuaries are either moderately or highly susceptible to degradation to nutrient stress derived from catchment agriculture and urban settlement. The East coast of Tasmania was considered to be particularly sensitive to anthropogenic stressors due to generally lower rainfall and a greater variability in river and stream flow, in addition lower tidal ranges and longshore sand transport increased the likelihood of restricted flow or closure of entrances (Crawford, Ross, and Gibson 2011).

There are only a small number of studies that have individually considered the ecological status of estuaries and coastal lagoons in the Break O'Day municipality. Edgar *etal* (1999) reported on 24

Threats to aquatic natural values in the BOD

Tasmania estuaries of which three were within the Break O'Day municipality (Grants Lagoon, Templestowe and Douglas). Edgar *etal* (1999) concluded that there were nine major threats to Tasmanian estuaries;

- increased siltation resulting from land clearance and urban and rural runoff,
- increased nutrient loads resulting from sewage and agricultural use of fertilisers,
- urban effluent,
- foreshore development and dredging,
- marine farms,
- modification to water flow through dams and weirs,
- acidification of rivers and heavy metal pollution from mines,
- the spread of introduced pest species, and
- long-term climate change.

Edgar *etal* (1994) reported that virtually all the medium sized typically open mouthed estuaries along the east coast of Tasmania where degraded by pollution, siltation, nutrient loads and shore development.

The most comprehensive analysis of estuaries within the Break O'Day municipality is the North Baker report from 2009 for NRM North and Break O'Day Council (North Barker 2009). This report assessed 22 lagoons and wetlands within the Council area to provide a "health check" and to identify current and future stressors on these water bodies. The North Baker (2009) report considered threats to each water body with particular attention paid to catchment activities and disturbances. Each wetland/lagoon had a 100m buffer area around the perimeter examined in detail. Consistent with previous studies urban development posed a current and potential threat through a number of mechanisms (numbers in brackets refer to wetland/lagoon number in report; see below);

- Increased use of the area by people especially over summer leading to increased impacts, such as rubbish, pollution, weeds and vegetation loss (3, 4, 6)
- Potential spill or leaching from the nearby sewage treatment systems or rubbish dumps (3, 8, 10)
- Vegetation clearance from additional development in buffer zone (3, 4, 6, 8, 10, 11, 14, 15)
- Storm water runoff from currently developed areas and seepage from septic systems (3, 4, 6, 8, 10, 11, 14, 15, 18, 21, 24)
- Runoff from highway or roads (7, 8, 10, 13, 14)
- Additional urban development in buffer and catchment (3, 4, 6, 8, 10, 11, 14, 15, 17, 18, 19, 21)

(3. Moriarty & Windmill Lagoons; 4.Diana's Basin & Crockers Arm; 6. Grants Lagoon; 7. Parkside Lagoon; 8. Chimneys Lagoon; 10. Wrinklers Lagoon; 11. Scamander River Mouth Backwater; 13. Lower Marsh Creek and Chain of Lagoons; 14. Boggy Creek Wetland; 15. Yarmouth Creek; 17. St Helens Point- other lagoons; 18. Upper Medeas Cove Marshes; 19. Onion Creek & St Helens Point (other); 21. Four Mile Creek; 24. Douglas River & wetlands)

Eleven of the water bodies studied by North Baker (2009) were found to be under threat from current urban development with five under high threat, four under moderate threat and two under low threat

in 2009. Two of the remaining eleven water bodies were considered to be under threat from runoff from roads (North Barker, 2009). Significantly the North Baker (2009) report considered future urban development to be an additional threat for twelve water bodies however there has not been any additional assessment of this threat since 2009.

Concomitant with the North Baker study Bushways Environmental Services produced a Falmouth and Henderson Lagoon environmental management plan (Bushways 2009) for the Falmouth Community Centre. This detailed report considered a number of threats and potential management issues in relation to the water bodies including:

- Land use impacts from urban development including large subdivisions.
- Roads increasing stormwater runoff and pollutants.
- Vegetation clearance for new developments, infrastructure and fire hazard reduction.
- Impacts of pets, stormwater pollution and "tidying up" of native vegetation around homes and roads.
- Insufficient information on nutrient and toxicant levels in the systems or their potential sources (septic tanks, fertilizer, herbicide and pesticides from agriculture or residential areas).
- Increased pressure on shore birds and other fauna from visitors or road kill.
- Artificial opening and closing of the lagoon.

All the reports produced to date highlight the threat from urban development on many of the estuaries and coastal lagoons in the Break O'Day municipality. Most of these waterbodies are directly threatened by current or potential urbanization which leads to increased amounts of impervious surfaces—roads, parking lots, roof tops, and so on—and a decrease in the amount of forested lands. Similarly increased recreational or domestic use of these areas also has potentially significant impacts such as rubbish, pollution, weeds and vegetation loss.

Many of the drivers of these ecological threats are relatively simple to quantify (vegetation clearance, new roads, number of dwellings) however their ecological impact is often difficult to assess directly or in combination with other stressors. Cumulative impacts on water bodies such as eutrophication or loss of macro-invertebrate diversity is able to be monitored but very little data is available to make these assessments.

4. Recommendations for avoiding or mitigating impacts from urbanization on estuaries and coastal lagoons

A common feature of all the studies into estuaries and coastal lagoons in the BOD council area is a recommendation for the collection of data to determine the current physical and biological function of these water bodies. Currently there is a lack of data on physio-chemical (salinity, flow, temperature, pH), biodiversity, nutrients or toxicants in either the water column or sediments. Most of the data collected is more than 10 years old has been opportunistic, limited in extent and has not captured seasonal or annual trends.

The hydrology of east coast catchments is more typical of arid areas with long periods of low precipitation with low or zero flow punctuated by very large flow events. The ecology of water bodies

are generally highly attuned to natural flow regimes. Ecological management of flow in rivers and streams primarily tries to mimic or retain the natural variability in flows (Bobbi, Warfe, and Hardie 2014). A near natural flow regime is required to maintain the natural values present in the system (endemic or threatened species, floodplains and riparian communities), however in most of these systems these values have not been assessed with a level of rigour that provides certainty that all the values have been identified. The North Baker (2009) report recommended water quality monitoring over the summer months in order to assess how recreational activities and the increase in local populations are affecting the lagoons.

Restrictions on the level of residential development and the protection of currently undeveloped crown land in proximity to lagoons and wetlands are a common recommendation of the North Barker (2009) report. Similarly, a common recommendation of the North Barker (2009) report was that restrictions on the type and scale of development on private land be put in place in the buffer areas and catchments around many of the lagoons and wetlands; in some cases they also recommended that current zoning that would allow development be changed to a conservation zoning.

There is now a general recognition that residential development will lead to increased stormwater run-off with high levels of associated pollutants. Other jurisdictions have implemented mechanisms to try and mitigate or minimise the effect of residential development (and its associated infrastructure) on water bodies. In Victoria there is now state wide guidance from the EPA in relation to urban stormwater (EPA (Vic) 2021). In Victoria residential developments are encouraged to mitigate the amount of stormwater generated through on-site infiltration or use of stormwater as their "general environmental duty". There is also a required reduction in pollutant loads of 45% for nutrients (nitrogen and phosphorus) and 80% for suspended sediment compared to the untreated runoff (EPA (Vic) 2021). The *Tasmania the State Policy on Water Quality Management 1997* requires that:

> *31.1 Planning schemes should require that development proposals with the potential to give rise to off-site polluted stormwater runoff which could cause environmental nuisance or material or serious environmental harm should include, or be required to develop as a condition of approval, stormwater management strategies including appropriate safeguards to reduce the transport of pollutants off-site."; and*
>
> *33.1 Regulatory authorities must require that erosion and stormwater controls are specifically addressed at the design phase of proposals for new developments, and ensure that best practice environmental management is implemented at development sites in accordance with clause 31 of this Policy.*

There are many high ecological value estuaries and lagoons that are drained by relatively small catchments on the coast of the BOD municipality. The current and potential increase in residential development adjacent too and in the catchment of these waterbodies is highly relevant to the implementation of the planning scheme. Protecting the natural flow regime of adjacent and upstream waterways and ensuring good water quality are critical to maintaining their biodiversity and ecological processes. Residential development should as much as possible be restricted to the current serviced townships with appropriate mitigation of stormwater impacts through water sensitive urban design principles (Fletcher et al. 2015).

Threats to aquatic natural values in the BOD

Water sensitive urban design (WSUD) principles can be implemented in any development that has the potential to change the water balance of a parcel of land through the construction of impervious surfaces and/or artificial drainage. The original aims of WSUD where to (cited in (Fletcher et al. 2015)):

1. manage the water balance (considering groundwater and streamflows, along with flood damage and waterway erosion),
2. maintain and where possible enhance water quality (including sediment, protection of riparian vegetation, and minimise the export of pollutants to surface and groundwaters),
3. encourage water conservation (minimizing the import of potable water supply, through the harvesting of stormwater and the recycling of wastewater, and reductions in irrigation requirements), and
4. maintain water-related environmental and recreational opportunities.

A simpler aim for new developments would be to achieve:

- Natural frequency of surface run-off.
- Natural volumes of run-off.
- Natural infiltration rates.
- Natural concentrations of pollutants

These aims are consistent with objectives of the State Policy on Water Quality Management 1997 and would better protect adjacent and downstream water bodies if implemented for new developments.

Varying levels of stormwater infrastructure are in place in many of the townships of the BOD municipality. Traditionally storm water management has been to convey additional flows generated by increased impervious surfaces to the nearest water course in order to reduce the risk of flooding. In most cases this infrastructure increases the risk of environmental damage by reducing the possibility of infiltration or trapping of sediments if this water had followed a natural flow path over pervious areas. Increased connection to current or planned flood mitigation stormwater infrastructure is therefore likely to be an ongoing threat to adjacent water bodies. Potentially mitigation of some of these impacts from “end of pipe” flows from serviced stormwater areas could be directed to appropriately designed retention systems.

A further consideration is the provision of sewage infrastructure including its proximity to water bodies, level of treatment and risk of overflow or leakage. In areas not serviced by sewage pipes septic tanks are the primary waste water treatment. Risks from septic tank to adjacent water bodies are dependent on the proximity to the water course, type and size of system and level of maintenance. An audit of septic systems to check that they are working properly or require upgrading in areas close to sensitive aquatic assets may be appropriate.

5. Planning as a tool to minimise degradation of aquatic resources

The implementation of the planning scheme should further the objective of protection and or enhancement of the ecological function of waterways consistent with the objectives of Schedule 1 of LUPPA; objectives 1 (c) & (e) of the Water Management Act 1999; objectives 3 (a), (c) & (h) of the Environmental Management and Pollution Control Act 1994; and objectives 6.1 (a), (b) & (d) of the State Policy on Water Quality Management 1997.

Threats to aquatic natural values in the BOD

Residential development will in many cases be located in the coastal zone. All developments within one kilometer of the coast will be subject to the objectives and principles of the State Coastal Policy 1996 and its outcomes. Of particular relevance are the outcomes;

> *1.1.1 The coastal zone will be managed to ensure sustainability of major ecosystems and natural processes.*
>
> *1.1.5 Water quality in the coastal zone will be improved, protected and enhanced to maintain coastal and marine ecosystems, and to support other values and uses, such as contact recreation, fishing and aquaculture in designated areas.*
>
> *1.1.9. Important coastal wetlands will be identified, protected, repaired and managed so that their full potential for nature conservation and public benefit is realised. Some wetlands will be managed for multiple use, such as recreation and aquaculture, provided conservation values are not compromised.*
>
> *2.1.1. The coastal zone shall be used and developed in a sustainable manner subject to the objectives, principles and outcomes of this Policy. It is acknowledged that there are conservation reserves and other areas within the coastal zone which will not be available for development.*
>
> *2.1.2. Development proposals will be subject to environmental impact assessment as and where required by State legislation including the Environmental Management and Pollution Control Act 1994.*
>
> *2.1.5. The precautionary principle will be applied to development which may pose serious or irreversible environmental damage to ensure that environmental degradation can be avoided, remedied or mitigated. Development proposals shall include strategies to avoid or mitigate potential adverse environmental effects.*
>
> 2*.4.1. Care will be taken to minimise, or where possible totally avoid, any impact on environmentally sensitive areas from the expansion of urban and residential areas, including the provision of infrastructure for urban and residential areas.*
>
> *2.4.2. Urban and residential development in the coastal zone will be based on existing towns and townships. Compact and contained planned urban and residential development will be encouraged in order to avoid ribbon development and unrelated cluster developments along the coast.*
>
> *2.4.3. Any urban and residential development in the coastal zone, future and existing, will be identified through designation of areas in planning schemes consistent with the objectives, principles and outcomes of this Policy.*

There are limited opportunities within the planning scheme to influence changes in land use that may affect water quality within the BOD municipality. One area where the planning scheme has a significant influence is on the type, size and intensity of residential development and where this may occur. Strategies to manage urban development in undisturbed catchments, such as zoning and land use planning can be important tools to prevent or minimise the degradation of aquatic environments. Similarly planning tools have also been used to initiate stream-rehabilitation efforts that can have a positive effect on the biological condition and health of streams (Coles 2012; Prosser, Morison, and Coleman 2015; Vietz et al. 2016). Using impervious cover (or connected impervious cover) as a surrogate for the many correlated stressors driven by urbanisation has the potential to be used as a planning tool to trigger the implementation of “end of pipe” measures to protect the ecological function of water

bodies. Alternately "source control" at the lot or individual development stage using WSUD or other treatment methods to mimic predevelopment conditions is likely to be more effective and consistent with the "user pays" principle. Retrofitting of WSUD measures may also be appropriate when intensification of development is proposed in a semi-developed area.

The most effective method to prevent additional impacts from residential development in sensitive areas is to rezone privately zoned land to zonings where residential use is discretionary and subject to performance standards that will protect or enhance ecological values. Similarly zoning that restricts sub-division or encourages consolidation of lots will generally reduce the pressure for additional residential development and its associated additional infrastructure such as roads and services.

The Break O'Day LPS include a proposed Stormwater Specific Area Plan which has a has an objective that requires; "*That development provides for adequate stormwater management*.". The acceptable solution in this plan is to either (A1) "*be capable of connecting to public stormwater system*" or (P1) "*have regard to*" "*stormwater quality and quantity management targets identified in the State Stormwater Strategy 2010*". The stormwater SAP applies to specific zones within coastal communities that have been identified to have limited stormwater infrastructure, historic flooding, are at risk to due to local topography or have low permeability or erodible soils. All the coastal communities covered by the Stormwater SAP are poorly serviced by the existing infrastructure and the potential for additional environmental impacts from further development of existing properties could be significant. In addition, some of the properties are small may not have sufficient space to absorb additional flows if developed even if appropriate WSUD infrastructure were required.

The Stormwater SAP has been proposed so "*stormwater quality and quantity is managed to protect natural assets, infrastructure and property."* There is no information provided in relation to how it will protect natural assets. The fundamental purpose of the Stormwater SAP appears to be to decrease the impact of additional stormwater flows from development on other infrastructure. The explanatory document provided to support the Stormwater SAP states it has been proposed to "*to protect off site stormwater impacts on both private land and public infrastructure for the benefit of the whole community*."

A key requirement of both the *State Policy on Water Quality Management 1997* and the *State Stormwater Strategy 2010* are the promotion of source control strategies that treat, store and infiltrate stormwater on-site with an aim of reducing flows and decreasing pollutant concentrations. The *State Policy on Water Quality Management 1997* Clause 33.2 requires that:

> *"State and Local Governments should develop and maintain strategies to encourage the community to reduce stormwater pollution at source."*

Section 3 of this report summarises the results of the North Baker (2009) report into 22 wetlands/lagoons in the municipality of which half were considered under threat from urban impacts, it is highly likely that these threats have increased in the past 11 years. The Stormwater SAP does not reflect the potential impact of stormwater flows either through the existing stormwater infrastructure or through development outside the council stormwater system on natural values. The generation of additional stormwater from new developments being connected to the existing stormwater

infrastructure is likely to be detrimental to many of the aquatic assets of the municipality. Additionally extra flows from developments not connected to the stormwater system are also likely to increase pressures on aquatic habitats.

A key objective of a Stormwater SAP should be to reduce the overall quantity and improve the quality of urban stormwater flows to waterbodies as part of a comprehensive stormwater management program that is premised on the identification of important aquatic ecosystem values and the need to avoid or minimise any potential ecological impacts. A priority should be the management of stormwater to reduce overland flow and to increase water quality at source and where this is impractical then as part of a local treatment process incorporated into the council stormwater infrastructure.

Many studies into the effect of urbanisation on aquatic systems have shown that ecological impacts can occur at very low levels of residential development. Overall impacts of new developments on aquatic systems can be much more effectively managed and lead to less cost if these developments are primarily in already serviced areas and are discouraged in unserviced settlements or in cluster developments outside serviced areas.

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DRAFT LPS WRITTEN DOCUMENT

BRE-Table C8.1 Scenic Protection Areas

REFERENCE NUMBER	SCENIC PROTECTION AREA NAME	DESCRIPTION	SCENIC VALUE	MANAGEMENT OBJECTIVES
BRE-C8.1.1	Scenic Protection Area 1	Area covers Mt William NP, northern part of Bay of Fires, Ansons Bay. Roads include Ansons Bay rd,	Spectacular white sandy beaches, sand dunes, lagoons, wetlands, coastal heath, orange lichen encrusted granite boulders, native forests	(a) Protect vegetated ridgelines and upper slopes (b) Protect natural landscape features (c) Maintain native vegetation and natural character in between settlements (d) Encourage, enhance and maintain landscaping, remnant native vegetation and tree canopy in settlements (e) Maintain landscape values when viewed from public reserves and roads (f) Ensure the colour, height and bulk of

				buildings and other works do not detract from natural character and landscape values
BRE-C8.1.2	Scenic Protection Area 2	Southern end of Bay of Fires, Ansons Bay rd and south to Dianas Basin	Variety of forests on Ansons Bay rd, Ansons River, Georges Bay, pristine sandy beaches, orange lichen encrusted boulders, estuaries, lagoons , wetlands , Dianas Basin wetland	(a) Protect vegetated ridgelines and upper slopes (b) Protect natural landscape features (c) Maintain native vegetation and natural character in between settlements (d) Encourage, enhance and maintain landscaping, remnant native vegetation and tree canopy in settlements (e) Maintain landscape values when viewed from public reserves and roads (f) Ensure the colour, height and bulk of buildings and other works

				do not detract from natural character and landscape values
BRE-C8.1.3	Scenic Protection Area 3	Dianas Basin south to Little Beach also includes Scamander River St Marys Pass, West of St Marys, most of Elephant Pass	Scamander River, coastal wetlands (including Yarmouth Creek) and lagoons (including Wrinklers and Henderson Lagoon) hinterland peaks such as Mount Elephant, St Patricks Head and South Sister, hinterland forests and steep gorges running through Elephant and St Marys Pass, Nicholas Range, some agricultural vistas	(a) Protect vegetated ridgelines and upper slopes (b) Protect natural landscape features (c) Maintain native vegetation and natural character in between settlements (d) Encourage, enhance and maintain landscaping, remnant native vegetation and tree canopy in settlements (e) Maintain landscape values when viewed from public reserves and roads (f) Ensure the colour, height and bulk of buildings and other works do not detract from natural character and landscape

				values
BRE-C8.1.4	Scenic Protection Area 4	Elephant Pass south to Denison Rivulet and Douglas Apsley NP	Steep ravines/gorges running through wet and dry forests Elephant Pass and St Marys Pass, Templestowe Lagoon, sand dunes, white sand beaches at Seymour and Denison Rivulet, golden beaches Chain of Lagoons, sweeping vistas of Douglas Apsley NP forests and Chain of Lagoons, Mount Elephant	(a) Protect vegetated ridgelines and upper slopes (b) Protect natural landscape features (c) Maintain native vegetation and natural character in between settlements (d) Encourage, enhance and maintain landscaping, remnant native vegetation and tree canopy in settlements (e) Maintain landscape values when viewed from public reserves and roads (f) Ensure the colour, height and bulk of buildings and other works do not detract from natural character and landscape values

Scenic Protection Area 1 images

Eddystone beach Mount William NP

Ansons River Ansons Bay rd

Scenic Protection Area 2 images

View from Gardens road to Binalong Bay/ Humbug Point Nature Recreation Area

Gardens road looking north to Sloop Lagoon

The Gardens looking north to Bay of Fires Conservation Area and Mount William NP

Binalong Bay looking towards the northern end of Binalong Bay beach and Mount Pearson State Reserve

Sloop Point looking north to Taylors beach

Maurouard beach St Helens Pint Conservation Area looking south

Georges Bay from Tasman Highway St Helens

St Helens Point road looking south to St Patricks Head in the distance

Scenic Protection Area 3 images

Tasman Highway looking south about 2 kilometres north of Four Mile Creek

Four Mile Creek settlement and beach

Scamander River from Tasman Highway

View to the west from Falmouth to South Sister

Shelley Point looking south to Scamander and St Patricks Head State Reserve

View from St Patrick Head looking north

Scenic Protection Area 4 images

View from Tasman Highway south of Little Beach looking south towards Chain of Lagoons and Douglas Apsley NP

Seymour beach looking south to Bicheno

Denison Rivulet beach looking south to Bicheno

Seymour Swamp looking north to Mount Elephant

PART C: SCENIC MANAGEMENT GUIDELINES

5 SCENIC MANAGEMENT OBJECTIVES AND ZONES

5.1 SCENIC MANAGEMENT OBJECTIVES

The scenic management guidelines are founded on six key objectives that seek to protect and
manage the most significant scenic and landscape values of Lake Macquarie LGA, with those being:

- Objective 1 - Protect vegetated ridgelines and upper slopes;
- Objective 2 - Retain green breaks between urban areas;
- Objective 3 - Protect important natural landscape features;
- Objective 4 - Ensure the built environment does not dominate natural landscape qualities in
non-urban areas;
- Objective 5 - New development to achieve a balance between the character of both the built
and natural environment; and
- Objective 6 – Protect and enhance attractive views from highly visible viewpoints.

Maintain views to surrounding Landscape

Landscaping

Colour/Height/ Bulk of buildings

Industrial areas

Lighting

Car Parks

Services

From:	NE Bioregional Network
To:	Break O Day Office Admin
Subject:	Break O Day LPS representation Last email
Date:	Friday, 17 December 2021 12:43:26 PM
Attachments:	Attachment J Estimated breeding populations of resident shorebirds and small terns Break O Day municipality (Eric J. Woehler Birdlife Tasmania 2020).pdf ATTACHMENT K Saltmarsh comments Vishnu Prahalad.doc Attachment K Saltmarsh Maps.pdf Attachment L Priority Vegetation Area Mapping for Break O Day Municipality (Nick Fitzgerald 2021).pdf Attachment M Linking Landscapes Map.pdf Attachment M Linking Landscapes- New Reserves for North East Tasmania.doc Attachment N Verification of the Heritage Values of ENGO- proposed reserves.pdf

Please note there are only FOUR emails all together in our Break O Day LPS representation not SIX. Sorry about any confusion regarding that.

Regards

Todd Dudley
President
North East Bioregional Network

Phone (03) 6376 1049
Postal address: 24751 Tasman Hwy, RSD St. Marys 7215

Estimated breeding populations of resident shorebirds and small terns, Break O'Day Municipality 2020.

Report to North East Bioregional Network and PWS, July 2020.
Eric J Woehler, BirdLife Tasmania

Executive Summary

Breeding populations of Hooded Plover (6.7% of the global population), Pied Oystercatcher (2.1%) and Fairy Tern (1.3%) are present within the Break O'Day Municipality in internationally- and nationally-significant numbers. Most threats to shorebirds and terns in coastal areas (eg dogs, vehicles, horses, human disturbance) are present on most beaches throughout the Spring and Summer months, and in some cases (eg dogs) present on beaches year-round. The threats to breeding and non-breeding shorebirds and terns are increasing in their frequencies, intensities and extents. The presence of internationally-significant breeding populations of shorebirds and terns on beaches in Break O'Day Council requires pro-active and ongoing protective measures from Council PWS and the community to ensure their protection.

Hooded Plover. ©Eric J Woehler, BirdLife Tasmania.

Document control:		
Written:	E Woehler	10 August 2020
Reviewed:	L Smith (BirdLife Tas), T Dudley (NEBN)	15 August 2020
Submitted:	Todd Dudley, NEBN	17 August 2020

Introduction

The Break O'Day Municipality in northeast Tasmania extends from just south of Boulder Point in wukalina/ Mount William National Park southward to the Denison River just north of Bicheno. Numerous beaches are present in the Municipality that support breeding populations of resident shorebirds and small terns, and of non-breeding populations of migratory shorebirds both from the Northern Hemisphere and from New Zealand.

Numerous reports have been prepared over the last 20 years documenting the status, threats and conservation concerns for shorebirds and terns in the municipality, including Binns (1998), Bryant (2002), Jones et al. (2002), Spruzen et al. (2006), Woehler and Ruoppolo (2013), Woehler (2014, 2015, 2016). These syntheses provide a detailed context for potential efforts by Council, PWS and community members wishing to protect these species.

The aim of this brief synthesis is to provide initial estimates of the contemporary breeding populations of Eastern Hooded Plover *Thinornis cucullatus cucullatus* (hereafter 'Hooded Plover'), Australian Pied Oystercatcher *Haematopus longirostris* (hereafter 'Pied Oystercatcher'), Australian Fairy Tern *Sternula nereis* (hereafter 'Fairy Tern' and Little Tern *S. albifrons* within the Break O'Day Municipality. Other resident shorebird species are encountered on beaches within the municipality (Red-capped Plover *Charadrius ruficapillus* and Sooty Oystercatcher *H. fuliginosus*), but are not coastal-obligate as are the four focal species.

Methods

All field surveys were undertaken by the author, with a consistent methodology used over the 28 years. The surveys were undertaken to census the breeding populations of beach-nesting shorebirds and small terns (when present), and all other shorebirds (non-breeding residents and migratory species) were also recorded. Surveys were undertaken during the shorebird and tern breeding seasons (nominally 1 October to 31 March) and all survey data were recorded immediately.

All GPS data were captured with a Garmin 12-channel GPS receiver in real time. The coordinates of shorebird breeding territories' centroids and any nests encountered were recorded as UTM coordinates based on the WGS 84 datum and converted to latitude °S and longitude °E for mapping.

Species totals for beach-nesting shorebirds and small terns in the Break O'Day Municipality were generated from field survey data collected between 1992 and 2020. Breeding population estimates were based on the most recent field survey data for each of the 45 beaches. No searches for nests were undertaken but occasionally nests with eggs and/or chicks are encountered during surveys.

Significances of resident populations were based on the population estimates present in Break O'Day as percentages of known (ie published) National and International populations, with 1% and 0.1% of global populations deemed to be of international and national significance, respectively. Global population estimates were derived from Maguire et al. (in press) for Hooded Plover, Taylor et al. (2014) for Pied Oystercatcher, Greenwell et al. (in press) for Fairy Tern and McDougall and Woehler (in press) for Little Tern. Species present in numbers of international significance are immediately of national significance.

Results and Discussion

1. Survey effort

Surveys conducted between 1992 and 2020 have surveyed 45 beaches in the Municipality. Most beaches have been surveyed in the last 5 to 8 years, providing a contemporary data set to estimate breeding

populations. Figure 1 shows the locations of the coastal data for the municipality. Note that the Georges Bay foreshore has not been surveyed and mapped, and is known to support nesting Pied Oystercatchers.

2. Estimated breeding populations

Table 1 shows the estimated populations (pairs and individuals) for four species of resident shorebirds and two species of small terns in Break O'Day based on mapping and survey data, 1992 – 2020. The proportion (expressed as a percentage) of each species' global population present in Break O'Day Municipality is shown. Three of the six species surveyed (and three of the four focal species) are present in Break O'Day Municipality in numbers meeting the 1% threshold for international significance. Breeding populations of Hooded Plover (6.7% of the global population), Pied Oystercatcher (2.1%) and Fairy Tern (1.3%) are present within the municipality in internationally- and nationally-significant numbers.

Sooty Oystercatchers typically nest on rocky foreshores and on offshore islands, so the majority will not be surveyed as survey effort has focussed on sandy beaches. The numbers encountered in surveys to date strongly suggest the municipality supports numbers exceeding the 1% threshold for international significance. The current survey data clearly exceed the threshold for nationally-significant numbers. Similarly, the very few breeding pairs of Little Terns present are of national significance (Table 1).

Species	Estimated breeding population (pairs)	Estimated population (birds)	% global population	Tasmania *TSP Act*	Federal *EPBC Act*
Hooded Plover	**90**	**≥ 200**	**6.7**	**VU**	**VU**
Red-capped Plover	≥ 65	≥ 130	-		
Pied Oystercatcher	**100**	**≥ 230**	**2.1**		
Sooty Oystercatcher	> 35	> 70	0.6		
Fairy Tern	**~ 45**	**~ 100**	**1.3**	**VU**	**VU**
Little Tern	2- 5	~ 10	0.8*	**EN**	

Table 1. Estimated populations (pairs and individuals) for four species of resident shorebirds and two species of small terns in Break O'Day Municipality based on mapping and survey data, 1992 – 2020 by the author. The proportion (expressed as a percentage) of each species' global population present in Break O'Day Municipality is shown. Globally-significant populations are shown in bold text.
*The population estimate for Little Terns is for the Australian sub-species.

3. Conservation status

Hooded Plovers, Fairy and Little Terns are all listed under Tasmania's *Threatened Species Protection Act*, with Hooded Plovers and Fairy Terns listed as Vulnerable, and Little Terns as Endangered. Hooded Plovers and fairy Terns are also listed as Threatened Species under the Federal *Environment Protection and Biodiversity Conservation Act* (Table 1); both are listed as Vulnerable.

4. Threats to shorebirds and terns

Woehler (in press) provides a synthesis of the main categories of threats to shorebirds and small terns in Tasmania. The threats were classified under the following headings:

- Off-road vehicles
- Bicycle riding
- Dogs
- Horse riding
- Urban sprawl and coastal development
- Beach walking
- Livestock
- Invasive plants
- Native and introduced vertebrate predators
- Light spill
- Drones and UAVs

These threats are not operating in isolation, with close relationship between and among them – and the vast majority reflect greater human populations (permanent residents and tourists) in coastal areas. As the human population increases, so does the level of recreational activities such as the use of 4WDs, numbers of dogs and other forms of disturbance to nesting birds. Most threats (eg dogs, vehicles, horses, human disturbance) are present on most beaches statewide throughout the Spring and Summer months, and in some cases (eg dogs) present on beaches year-round. East coast beaches in Tasmania are presently experiencing significant increases in all threats for extended periods due to active promotion by the State Government.

The pressures on breeding and migratory shorebirds and breeding terns from human activities in coastal areas of Tasmania have increased dramatically in the last 20 years, and in particular since 2010 with strong government promotion of Tasmania's east coast for tourism. Human activities in coastal areas are presently increasing disproportionately more rapidly than the population increase in coastal areas.

An ever increasing spectrum of threats and pressures from private and commercial activities are occurring more frequently for longer periods on more beaches. Multiplying and expanding human activities in coastal zones are placing significant pressures on coastal ecosystems and the coastal-obligate species dependent on undisturbed and intact coastal habitats for feeding and breeding - such as shorebirds.

The decreases and losses of breeding shorebird and tern adults are not confined to the east coast of Tasmania, and are solely due to the increased regime of disturbance during the summer months from vehicles, dogs, horses and humans on beaches. Sadly, these decreases have been observed to occur inside the Tasmanian Reserve Estate; breeding inside a National Park in Tasmania does not afford a resident shorebird or tern any additional protection from the threats identified in this review. Nesting inside a National Park is likely to present an increasing spectrum of threats and pressure to nesting shorebirds and terns due to the Tasmanian Government's efforts to direct as many people as possible to Tasmania's Reserve Estate's beaches.

The presence of internationally-significant breeding populations of shorebirds and terns on beaches in the Break O'Day Municipality requires pro-active and ongoing protective measures from Council, PWS and the community to ensure their protection.

Conclusions and recommendations

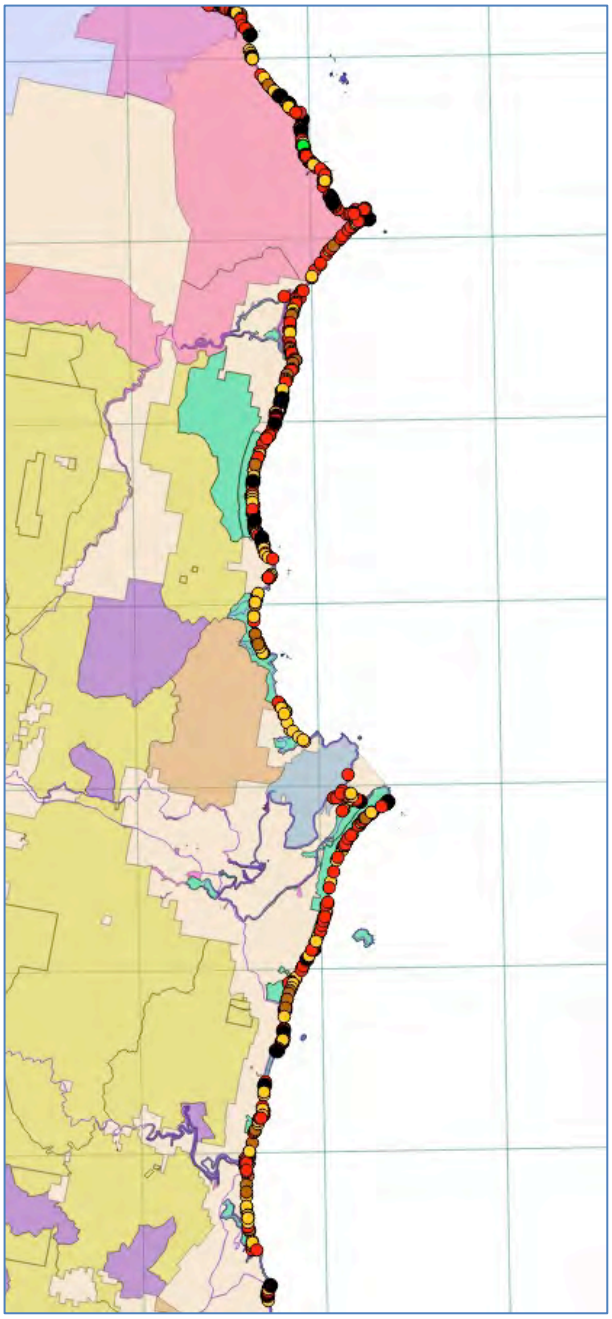
The presence of internationally-significant numbers of breeding Hooded Plovers, Pied Oystercatchers and Fairy Terns in the Break O'Day Municipality warrants strong protection measures and enforced efforts from Council and PWS. Community 'care' groups can contribute to the conservation by adopting restrictions of dogs and vehicles on beaches, and adhering to restrictions such as fencing at the mouth of the Scamander River.

The current dog management policy (https://www.bodc.tas.gov.au/community/dog-friendly-beaches-off-leash-areas-and-dog-parks/) must be revised in light of the significance of breeding shorebird and tern populations, and enforced. Current enforcement by Council and PWS is insufficient to discourage dog owners from ignoring restrictions and thus threatening breeding birds.

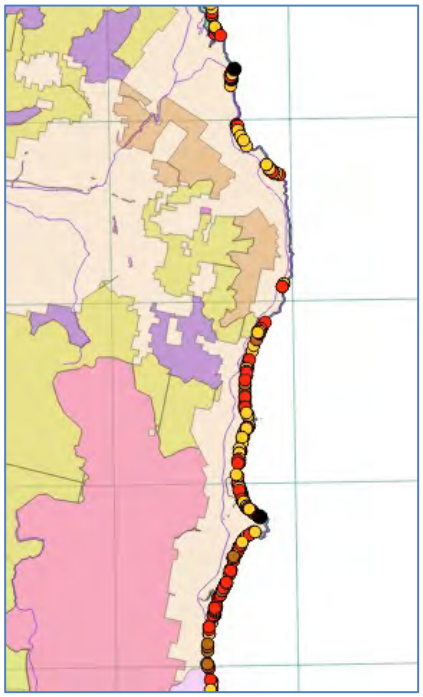
The nesting shorebirds on the Georges Bay foreshore should be mapped to ensure a complete census for the municipality; it is hoped that this can be achieved in the 2020/21 breeding season by the author.

Acknowledgements

Thanks to Laura Smith and Todd Dudley for comments on an earlier draft. Thanks to Todd Dudley (NEBN) for commissioning this brief synthesis.



a. Northern Break O'Day Municipality: wukalina to Four Mile Creek.



b. Southern Break O'Day Municipality: Falmouth to Denison River.

Figure 1. Maps showing coastal survey effort, Break O'Day Council Municipality, 1992 – 2020. Symbols indicate nesting territories for Hooded Plover (orange), Red-capped Plover (brown), Pied Oystercatcher (red), Sooty Oystercatcher (black) and small terns (green); all data for the period 1992 – 2020 are shown for completeness. Coloured polygons denote land tenure and 10km UTM grids are shown.

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ATTACHMENT K
Saltmarsh in the Break O Day Municipality

The extent of Saltmarsh in the Break O Day municipality has been mapped. Saltmarsh is a nationally listed (EPBC Act) vegetation community which provides a range of habitat and ecosystem services including supporting biodiversity, increasing coastal food production through fisheries, maintaining coastal water quality, acting as buffers against storm surges and sea level rise and sequestering carbon (now labelled “blue carbon” and is now the subject of a multi -million dollar Australian Government funding initiative that local government is eligible to apply for)
Both historically and on a continuing basis, despite the formal understanding that saltmarshes provide a 'critical ecological function' in Tasmania, saltmarshes are subjected to myriad threatening processes (Prahalad et al., 2020; Mount et al., 2010). The key threats to Tasmanian coastal saltmarshes can be summarised as:
* coastal development (residential and industrial)
*development infrastructure (roads, stormwater pipes, buildings, rubbish tips etc.)
*landfill, sea wall construction, tidal restriction/manipulation via levee banks, channels etc. (in many cases becoming more prevalent with sea level rise)
*catchment modification (including changes in nutrient, sediment and freshwater flow budgets cause by land use practices, dams etc.)
*eutrophication caused by increased nutrients from surface and ground water flows including stormwater
*acid sulphate soils (often occur beneath saltmarshes and are a hazard if disturbed)
*grazing by livestock and rabbits
*trampling by livestock, humans and off road vehicles
*encroachment by weeds (primarily following disturbance caused by removal of buffer/backing vegetation)
*dumping of general rubbish, including waste from aquaculture industries.

An additional future threat to coastal saltmarsh will be as a result of climate change and relative increases in sea level and coastal erosion.

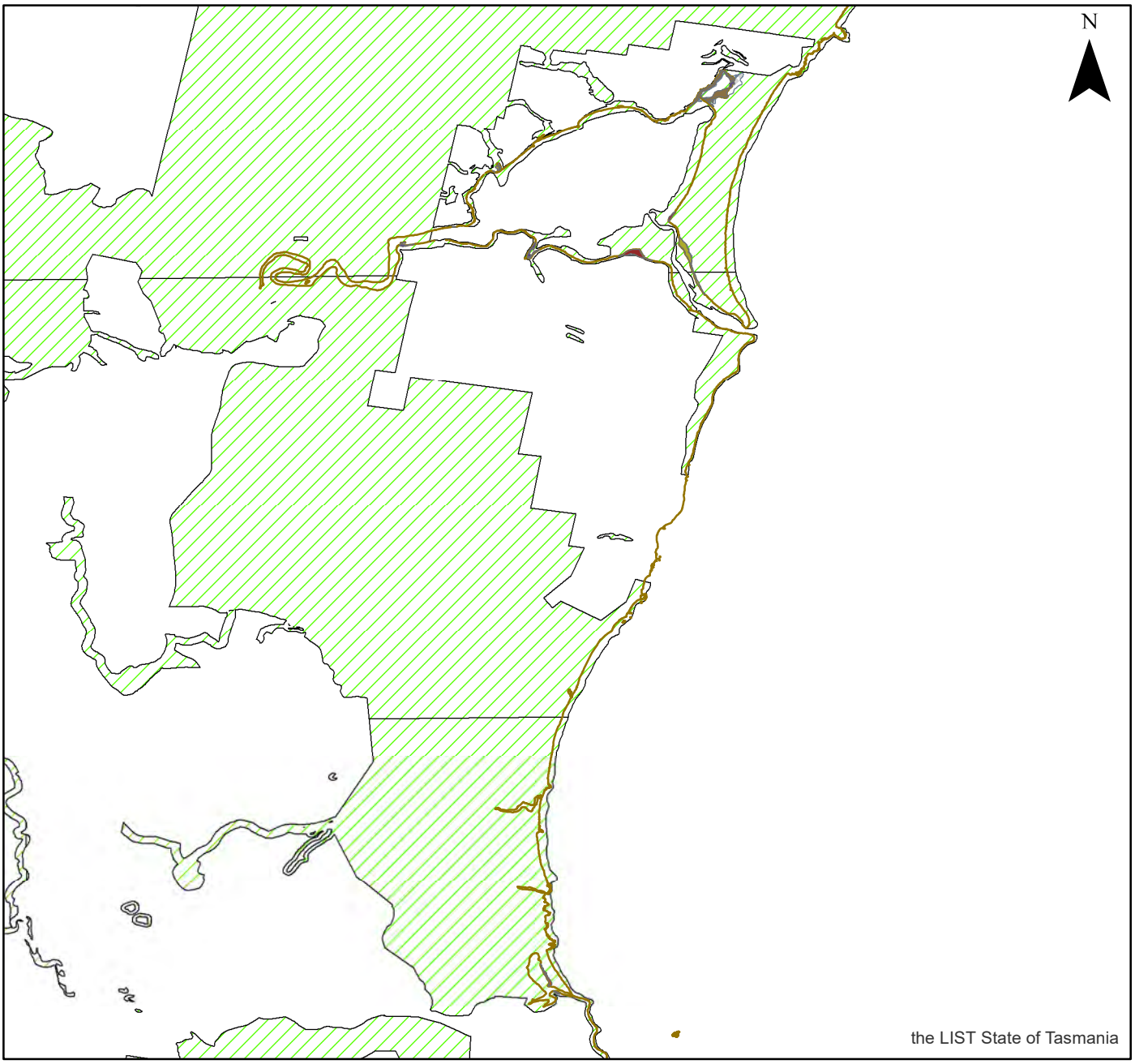
It is vital that local government planning schemes identify and protect critical coastal ecosystem assets such as saltmarsh. Indeed the Australian Government

has explicitly identified the need for planning authorities to include development controls on current wetland extent, their buffers and future retreat areas.

Vishnu Prahalad

UTAS

Ansons Bay and Gardens Lagoon Saltmarsh Land Tenure



0 0.5 1 2 3 4
Kilometers

Legend

Ansons_Bay_Gardens_Lagoon

TEN_CLASS

- Casement (1)
- Conservation Area (2)
- Conservation Covenant (1)
- Inland Water (5)
- Private Freehold (7)
- Public Reserve (5)
- Coastline

Overlays

O_NAME

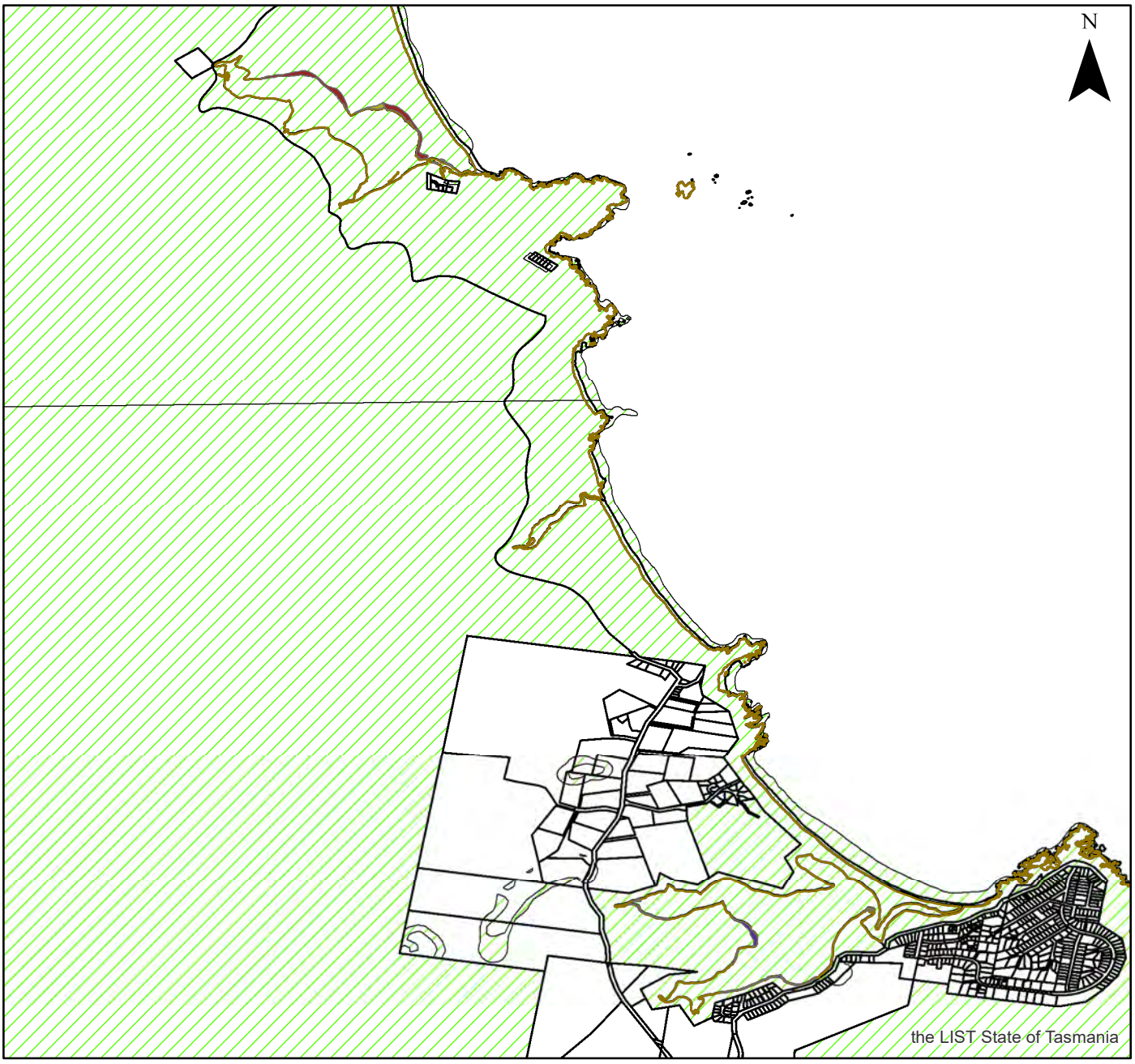
- Flood Prone Areas
- Priority Habitat

Reference Scale: 1:60,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Bay of Fire Saltmarsh Land Tenure



0 0.25 0.5 1 1.5 2
Kilometers

Legend

Cadastral Parcels

Overlays

O_NAME

Flood Prone Areas

Priority Habitat

Bay_of_Fires

TEN_CLASS

Conservation Area (2)

Inland Water (3)

Private Freehold (4)

Public Reserve (2)

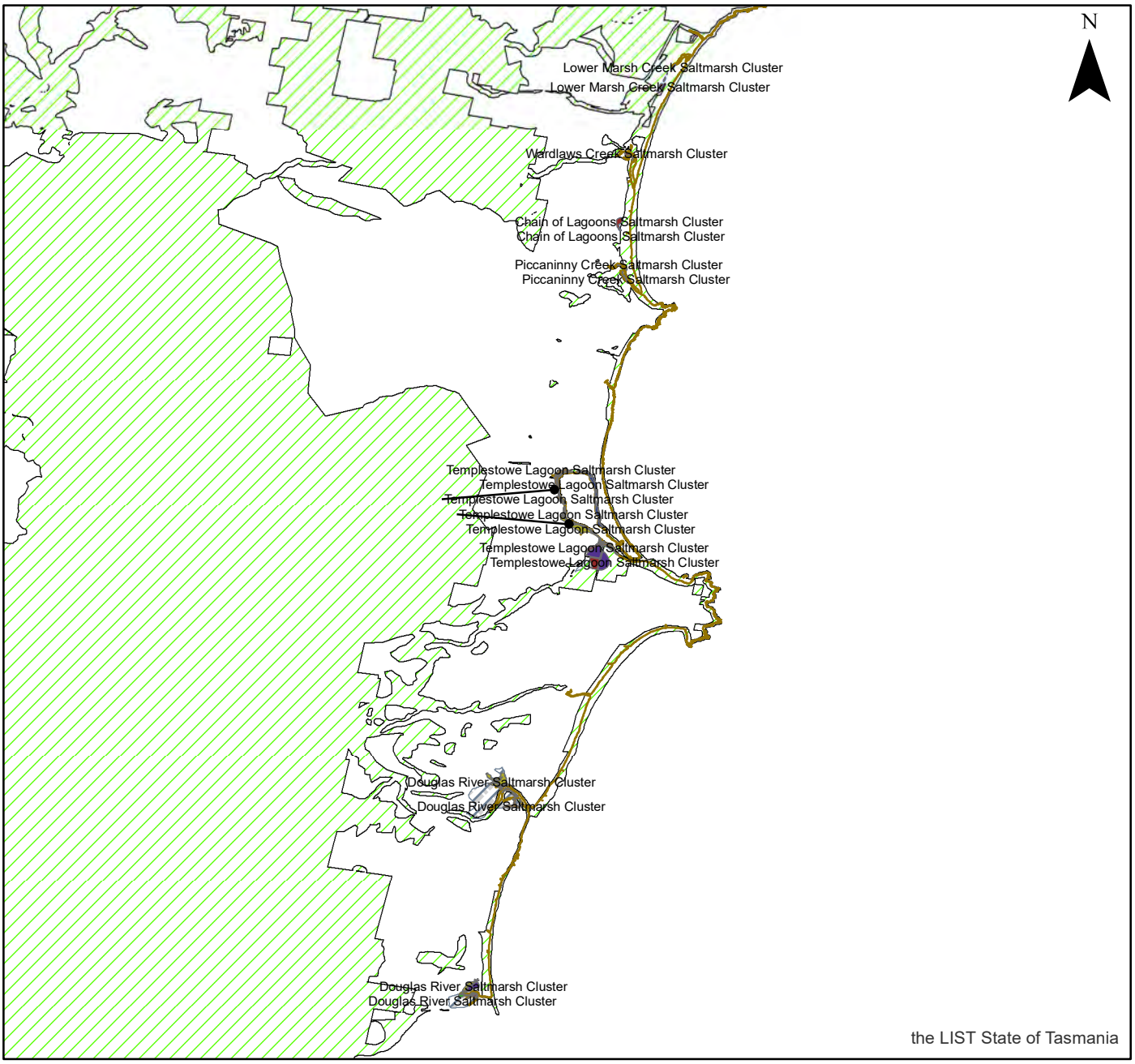
Coastline

Reference Scale: 1:40,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Chain of Lagoons Saltmarsh Land Tenure



Legend

- Coastline
- No Land Tenure (12)

Overlays

O_NAME

- Flood Prone Areas
- Priority Habitat

Chain_of_Lagoons

TEN_CLASS

- Casement (3)
- Conservation Area (10)
- Conservation Covenant (2)
- Crown Land (4)
- Inland Water (16)
- Private Freehold (19)
- Public Reserve (8)
- Regional Reserve (2)

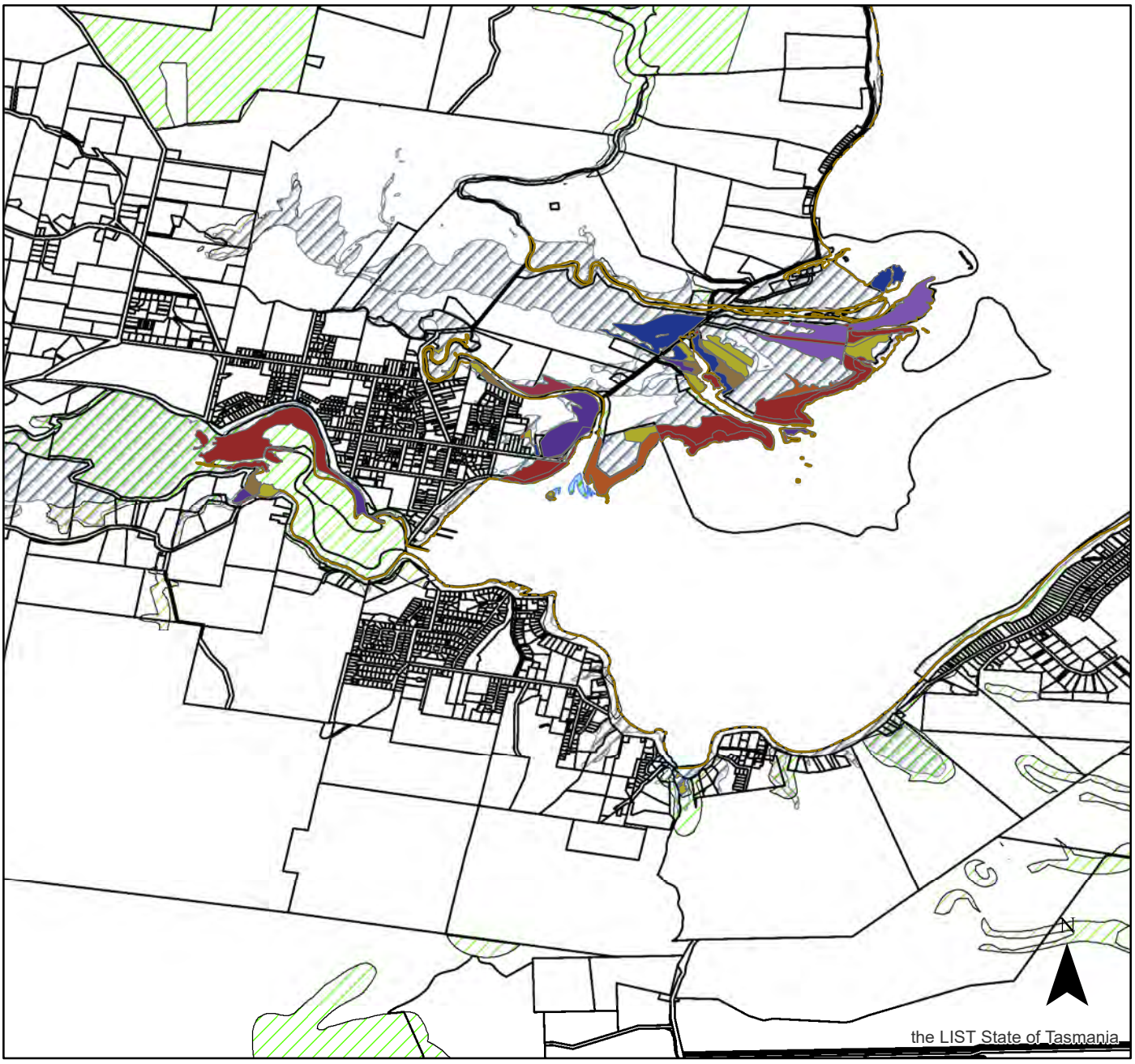
0 0.75 1.5 3 4.5 6
Kilometers

Reference Scale: 1:120,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Georges Bay Land Tenure



Legend

TEN_CLASS

- Casement (5)
- Conservation Area (19)
- Conservation Covenant (2)
- Crown Land (7)
- Inland Water (8)
- Local Government Act Reserve (3)
- Nature Recreation Area (1)
- Private Freehold (26)
- Public Reserve (11)
- Tas Water (1)
- Cadastral Parcels

Overlays

O_NAME

- Flood Prone Areas
- Priority Habitat

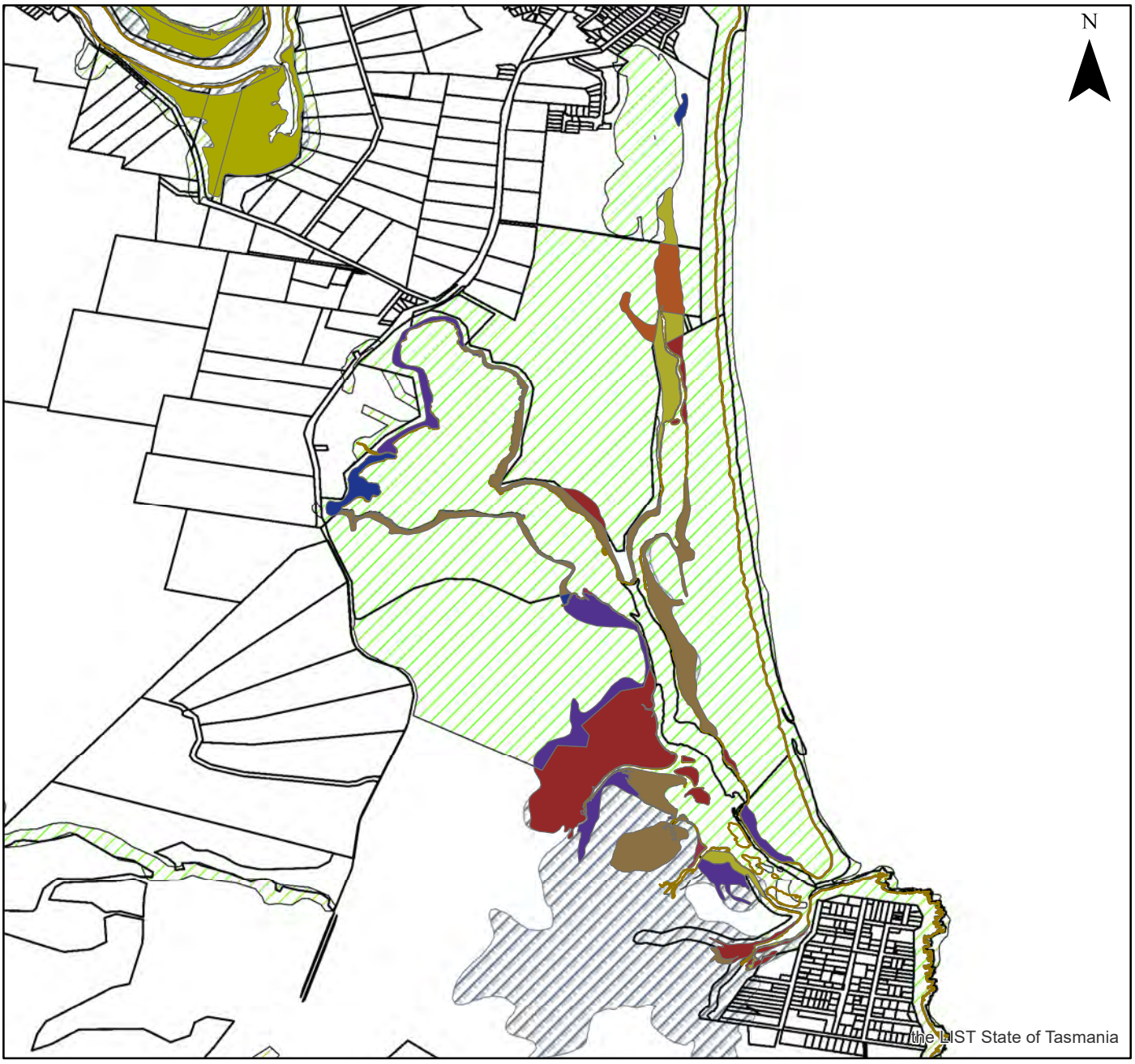
0 0.25 0.5 1 1.5 2
Kilometers

Reference Scale: 1:40,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Henderson Lagoon Saltmarsh Land Tenure



Legend

Henderson_Lagoon

TEN_CLASS

- Casement (1)
- Conservation Area (4)
- Conservation Covenant (2)
- Crown Land (4)
- Inland Water (13)
- Private Freehold (14)
- Public Reserve (7)
- Coastline
- Cadastral Parcels

Overlays

O_NAME

- Flood Prone Areas
- Priority Habitat

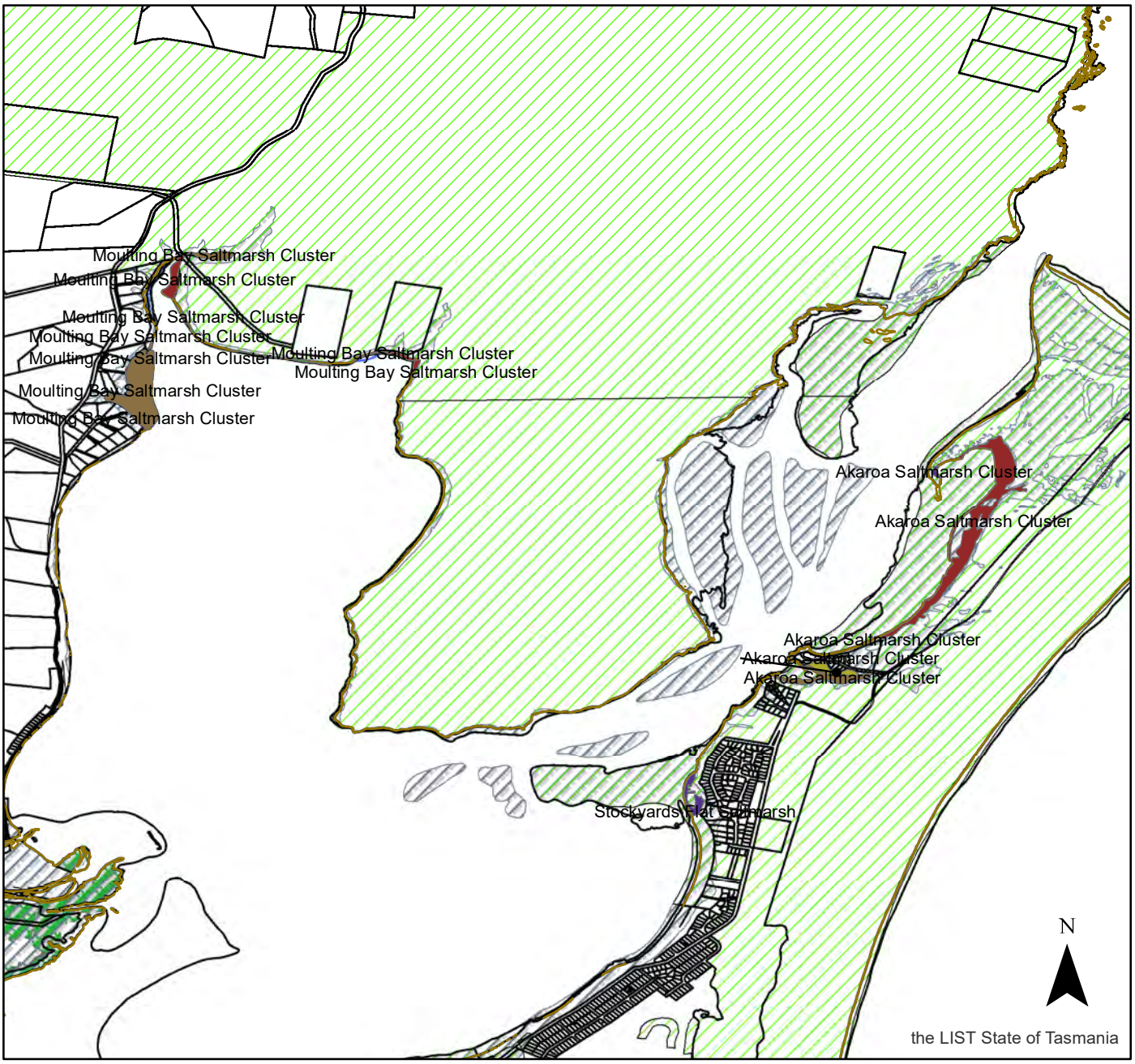
0 0.175 0.35 0.7 1.05 1.4
Kilometers

Reference Scale: 1:30,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Moulting Bay Land Tenure



Legend

TEN_CLASS

- Conservation Area (1)
- Inland Water (8)
- Private Freehold (7)
- Public Reserve (3)
- Regional Reserve (2)
- Cadastral Parcels

Overlays

O_NAME

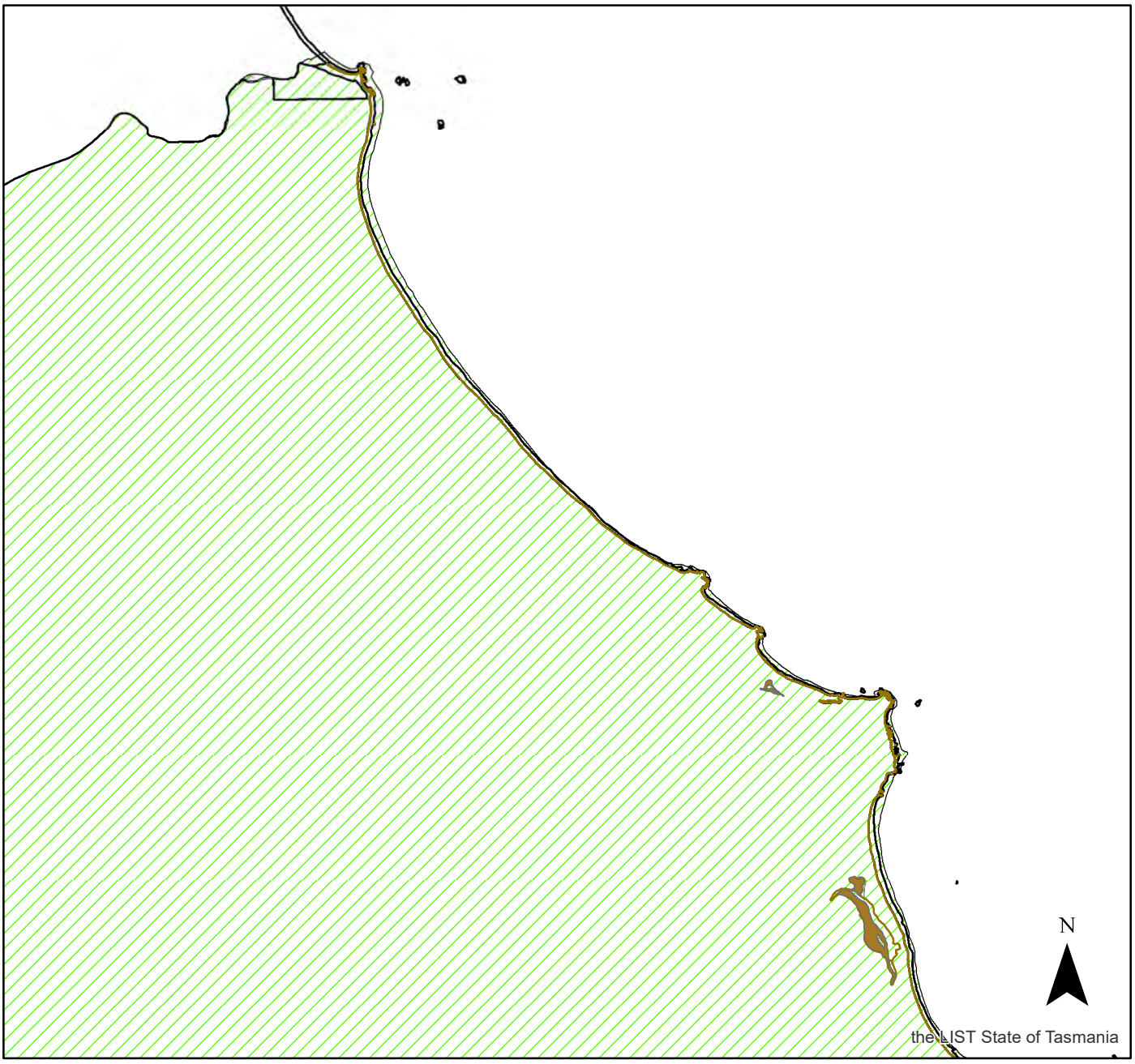
- Flood Prone Areas
- Priority Habitat

0 0.275 0.55 1.1 1.65 2.2
Kilometers

Reference Scale: 1:40,000
Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Mt William and Musselroe Bay Land Tenure



0 0.275 0.55 1.1 1.65 2.2
Kilometers

Legend

TEN_CLASS

- National Park (5)
- Cadastral Parcels

Overlays

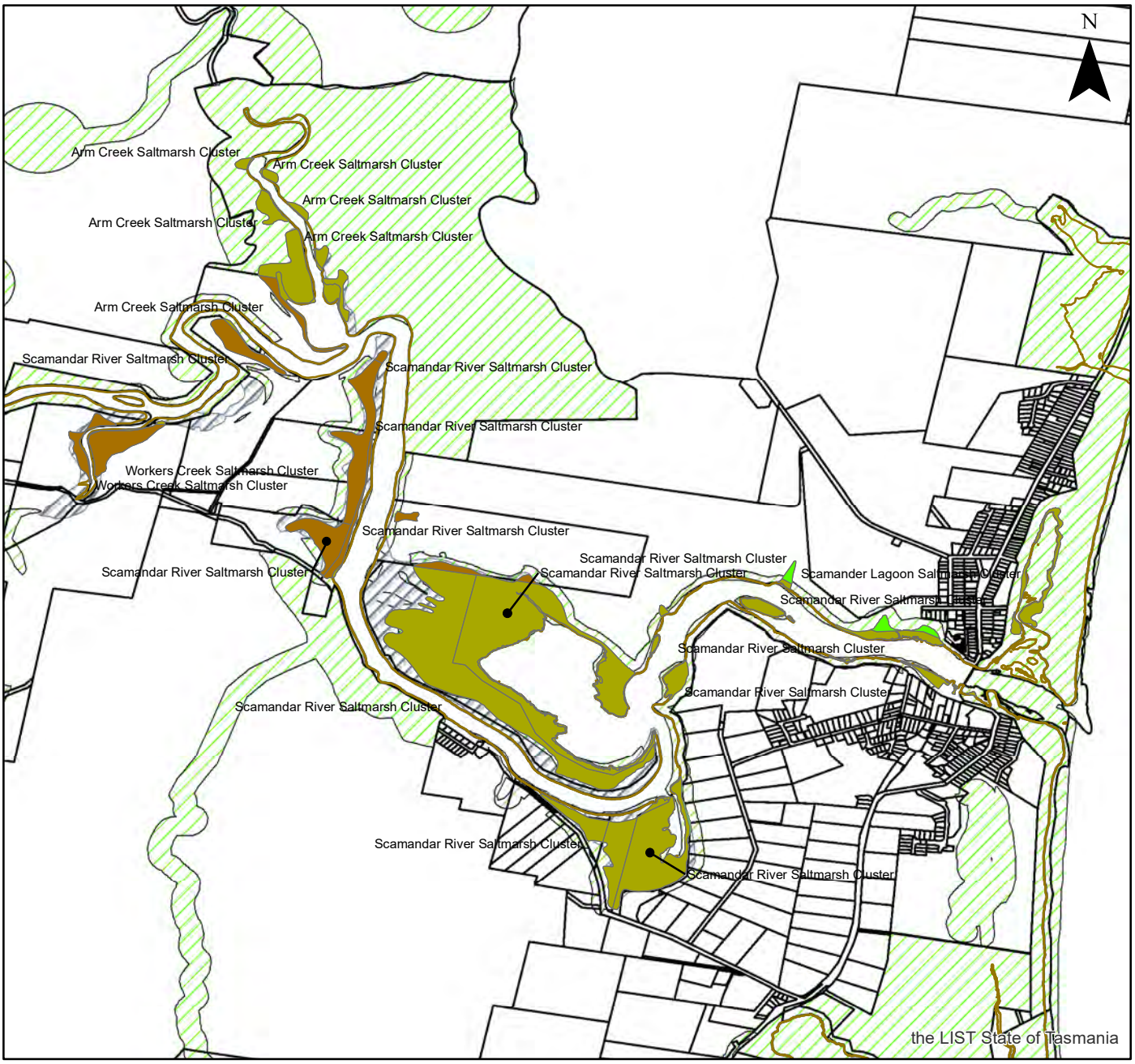
O_NAME

- Flood Prone Areas
- Priority Habitat

Reference Scale: 1:45,000
Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Scamander River Saltmarsh Land Tenure



Legend

Scamander_River_Saltmarsh_Complex

TEN_CLASS

- Casement (1)
- Conservation Area (4)
- Conservation Covenant (2)
- Crown Land (10)
- Inland Water (22)
- Private Freehold (9)
- Public Reserve (10)
- Regional Reserve (7)
- Coastline
- Cadastral Parcels

Overlays

O_NAME

- Flood Prone Areas
- Priority Habitat

0 0.2 0.4 0.8 1.2 1.6
Kilometers

Reference Scale: 1:35,000
Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

Wrinklers and Yarmouth Saltmarsh Land Tenure

0 0.175 0.35 0.7 1.05 1.4
Kilometers

Legend

Cadastral Parcels

Overlays

O_NAME

Flood Prone Areas

Priority Habitat

Wrinklers_Yarmouth

TEN_CLASS

Casement (1)

Conservation Area (2)

Inland Water (5)

Private Freehold (5)

Public Reserve (3)

Reference Scale: 1:30,000

Coordinate System: GDA2020
Datum: GDA2020
Units: Degree

Sources:Background the LIST, State of Tasmania(2021). Saltmarsh shapefile Vishnu Prahalad (2020).

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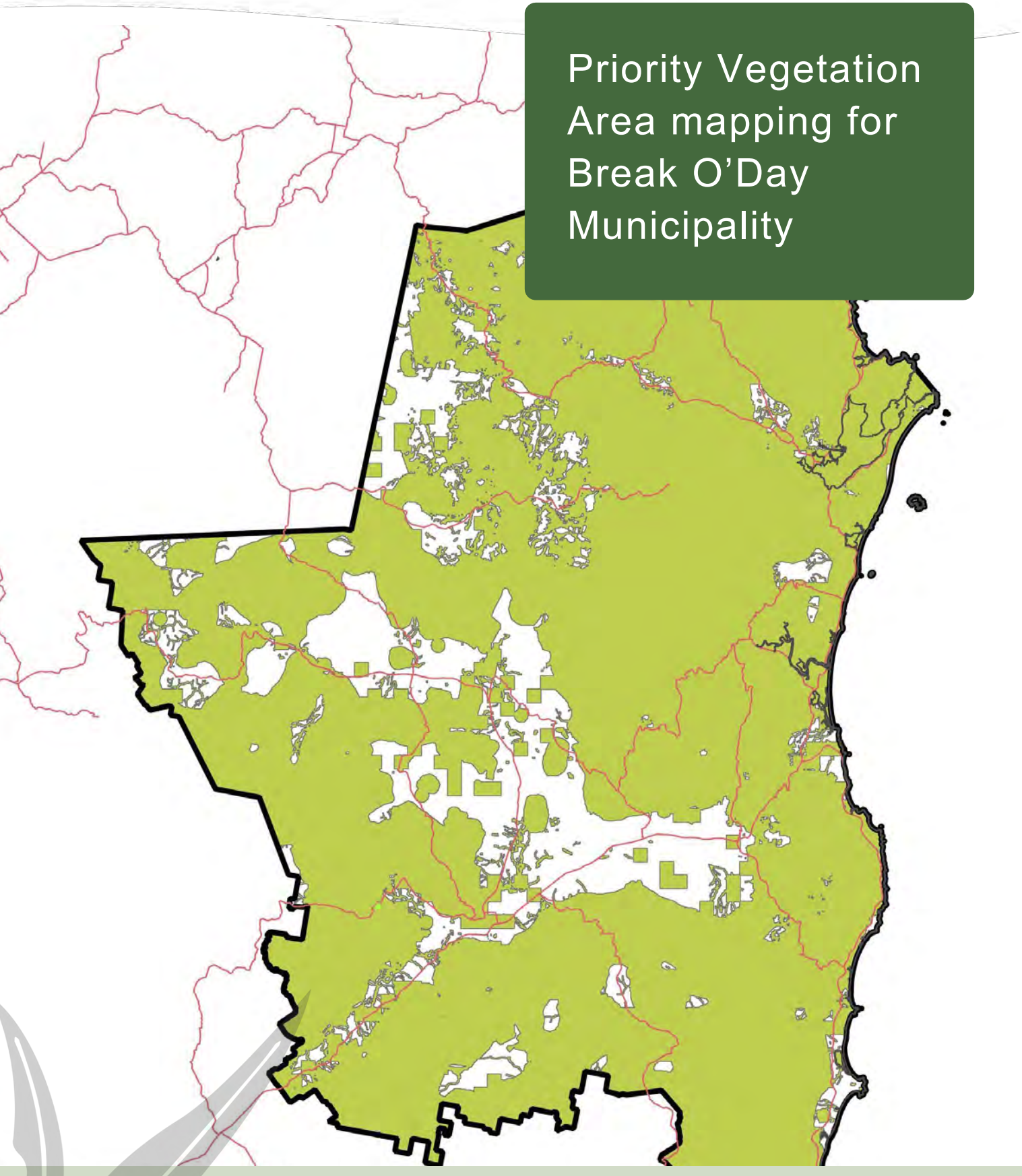
Priority Vegetation Area mapping for Break O'Day Municipality



Client: North East Bioregional Network
Prepared by: Dr Nick Fitzgerald

10 December 2021

Contents

Introduction

The new Tasmanian Planning Scheme requires local councils to develop Local Provision Schedules (LPSs) which will apply the State Planning Provisions (SPP) at the municipal level. These LPSs including land use zoning and codes. The Natural Assets Code under the SPP identifies areas with ecological, hydrological and geomorphological values, and provides for protection or minimization of impacts on these values.

The Natural Assets Code includes priority vegetation areas within certain land use zones. Break O' Day municipality in north-eastern Tasmania currently has a priority vegetation overlay that does not meet the specifications of the new state-wide planning scheme. Key criteria have not been included in the overlay, resulting in substantial gaps in the spatial coverage.

The "maintenance of ecological processes and genetic diversity" is a key objective and requirement of the Resource Management and Planning System of Tasmania (Schedule 1 LUPA Act Part 1. 1(a))

The purpose of the Natural Assets Code is:
C7.1.1 To minimise impacts on water quality, natural assets including native riparian vegetation, river condition and the natural ecological function of watercourses, wetlands and lakes.
C7.1.2 To minimise impacts on coastal and foreshore assets, native littoral vegetation, natural coastal processes and the natural ecological function of the coast.
C7.1.3 To protect vulnerable coastal areas to enable natural processes to continue to occur, including the landward transgression of sand dunes, wetlands, saltmarshes and other sensitive coastal habitats due to sea-level rise.
C7.1.4 To minimise impacts on identified priority vegetation.
C7.1.5 To manage impacts on threatened fauna species by minimising clearance of significant habitat.
(Tasmanian Government 2018)

Maintaining ecological processes – such as water flows, species migrations and natural fire regimes – is critical to the function of the ecosystems which support all life. This requires identifying and managing natural values across the landscape.

The key objective of this project is to identify Priority Vegetation Areas within Break O'Day municipality by undertaking spatial analysis of best available biodiversity data.

The resulting spatial layer provides a basis for defining the Priority Vegetation Area.

Biodiversity values in Break O'Day municipality

A wide variety of biodiversity values are present in the Break O'Day municipality. These include threatened ecological communities, such as coastal saltmarshes, and vegetation communities that are not adequately represented in the Tasmanian reserve estate. At least 50 threatened fauna species and 142 threatened flora species are known to occur in the municipality. Several threatened species occur only in the municipality or have their main population there, such as Davies waxflower, giant velvet worm and three species of stag beetle (NEBN 2010). Biodiversity also includes the numerous species that are not listed as threatened, and the complex links between all these species to maintain the ecosystems we rely on for a healthy landscape.

Maintaining biodiversity requires much more than protecting individual species. Allowing natural process, such as water flows and fire regimes, to function across large or interconnected areas is necessary to maintain diverse and resilient ecosystems (Mackey *et al.* 2007; McQuillan *et al.* 2009). For example, forests are critical for carbon storage and for maintaining water balance in catchments.

Wetlands, watercourses and riparian areas are important for biodiversity and also provide critical ecosystem functions in maintaining water flows and water quality in the landscape.

While most of the Break O'Day municipality supports native vegetation, its ecological condition is variable (NEBN 2010). This may not be apparent without a knowledge of the baseline condition. Loss of old-growth trees due to logging and land clearing, for example, has reduced the availability of nesting hollows for the dozens of native birds and mammals which rely on old trees.

The Priority Vegetation Area overlay is a critical tool for assessing impacts of developments within areas containing known or potential features of conservation significance. Many of these areas are outside reserves and allow for land clearing and other impacts under the planning scheme. For example, areas of Future Potential Production Forest have significant biodiversity values (IVAG 2012a,b).

A comprehensive PVA overlay means potential impacts on biodiversity are considered during the planning process, with on-ground assessment to identify natural values, and that mitigation measures are implemented where necessary.

Priority Vegetation Area specifications

Under the State Planning Provisions, each council must have a map of Priority Vegetation Areas in the Local Provisions Schedule (Tasmanian Government 2018). The Natural Assets Code will apply to areas of mapped Priority Vegetation, within certain zones.

Priority vegetation means native vegetation where any of the following apply:

> (a) it forms an integral part of a threatened native vegetation community as prescribed under Schedule 3A of the *Nature Conservation Act 2002*;
>
> (b) is a threatened flora species;
>
> (c) it forms a significant habitat for a threatened fauna species; or
>
> (d) it has been identified as native vegetation of local importance.

Significant habitat means the habitat within the known or core range of a threatened fauna species, where any of the following applies:

> (a) is known to be of high priority for the maintenance of breeding populations throughout the species' range; or
>
> (b) the conversion of it to non-priority vegetation is considered to result in a long-term negative impact on breeding populations of the threatened fauna species.

Under LP1.7.5:

(c) the priority vegetation area must:

> (i) include threatened native vegetation communities as identified on TASVEG Version 3 mapping, as published on the Department of Primary Industries, Parks, Water and the Environment's website and available on the Land Information System Tasmania;
>
> (ii) be derived from threatened flora data from the Natural Values Atlas, as published on the Department of Primary Industries, Parks, Water and the Environment's website and available on the Land Information System Tasmania; and

(iii) be derived from threatened fauna data from the Natural Values Atlas, as published on the Department of Primary Industries, Parks, Water and the Environment's website for the identification of significant habitat for threatened fauna species; and

(d) the planning authority may modify the priority vegetation area derived under clause LP1.7.5(c) based on field verification, analysis or mapping undertaken by, the planning authority or a suitably qualified person on behalf of the planning authority, at a local or regional level, which:

(i) addresses any anomalies or inaccuracies in the mapping and data in sub-clause LP1.7.5(c);

(ii) provides more recent or detailed local assessment of the mapping and data in sub-clause LP1.7.5(c); or

(iii) identifies native vegetation of local importance, including habitat for native fauna of local importance.

The Tasmanian Planning Commission's *Guideline No. 1: Local Provisions Schedule (LPS): zone and code application* (Tasmanian Planning Commission 2018) provides guidance on the development of a Priority Vegetation Overlay (pp. 39-41).

Priority Vegetation Area Overlay
NAC 7 The priority vegetation area overlay must include threatened native vegetation communities as identified in TASVEG Version 3 mapping, as published on the Department of Primary Industries, Parks, Water and the Environment's (DPIPWE) website and available on the LIST.

NAC 8 For the purposes of applying the priority vegetation area overlay to land containing threatened flora species, any areas mapped within the overlay should be derived from or based on the threatened flora data from the Natural Values Atlas as published DPIPWE's website and available on the LIST.

NAC 9 In applying the priority vegetation area overlay for threatened flora species, the overlay map may include an area around recorded occurrences of threatened flora species to identify areas of potential occurrence based on field verification, analysis or mapping undertaken by, or on behalf of, the planning authority.

NAC 10 For the purposes of applying the priority vegetation area overlay to land containing significant habitat for threatened fauna species, any areas identified as significant habitat should be based on the threatened fauna data from the Natural Values Atlas, as published on DPIPWE's website.

NAC 11 The priority vegetation area overlay may be based on field verification, analysis or mapping undertaken by, or on behalf of, the planning authority to:
(a) address any anomalies or inaccuracies in the mapping and data in clauses NAC 7, NAC 8 and NAC 10 above; or
(b) provide more recent or detailed local assessment of the mapping and data in clauses NAC 7, NAC 8 and NAC 10 above.

NAC 12 The priority vegetation area overlay may include areas of native vegetation which have been identified as being of local importance based on field verification, analysis or mapping undertaken by, or on behalf of, the planning authority. Identification of these areas may be assisted by datasets or spatial products identified by DPIPWE.

NAC 13 A priority vegetation area should not be shown on the overlay map for land that is within the:
(a) Inner Residential Zone;

(b) Village Zone;
(c) Urban Mixed Use Zone;
(d) Local Business Zone;
(e) General Business Zone;
(f) Central Business Zone;
(g) Commercial Zone;
(h) Light Industrial Zone;
(i) General Industrial Zone;
(j) Agriculture Zone; or
(k) Port and Marine Zone.

Exemptions from the Natural Assets Code

Under NAC 13, exempting the Agriculture Zone from the Natural Assets Code is not compatible with protecting natural values or supporting landscape connectivity which is critical for maintaining "ecological processes and genetic diversity" (i.e. ability for species to move, colonise and interbreed across the landscape).

Natural values on agricultural properties should be split zoned where possible so that natural values and landscape connectivity and ecological processes will be identified, managed and protected. The most suitable zoning would be Landscape Conservation Zone for such purposes. For example, an extensive area of critically endangered forest (EPBC Act listed 'Tasmanian forests and woodlands dominated by black gum or brookers gum') near Ansons Bay Road is within the proposed Agriculture Zone and therefore has no recognition for its nationally recognised natural values under the Planning Scheme.

The Break O Day Interim Planning Scheme 2013 under Part B Administration defines a "habitat corridor" as "an area or network of areas , not necessarily continuous, which enables migration, colonisation or interbreeding of flora and fauna species between two or more areas of habitat". This encapsulates the rationale for landscape connectivity and best practice nature conservation planning reflects this aspiration. Habitat corridors therefore require cross tenure planning and zoning to ensure the ongoing survival and evolution of species. The exemption of bushland areas within the proposed Agricultural Zone from the Natural Assets Code is contrary to the biodiversity objectives of the planning scheme and LUPA Act.

Methodology and Results

Overview

To create a Priority Vegetation Area overlay we compiled relevant flora, fauna, vegetation and ecological datasets from the DPIPWE Natural Values Atlas (NVA), DPIPWE Conservation Information System (CIS) and Forest Practices Authority (FPA).

Following the guidance from the Tasmanian Planning Commission for developing a Natural Assets Code, we obtained spatial datasets which identify threatened native vegetation communities (NAC 7) and significant habitat for threatened fauna species (NAC 10). Additional datasets, including TasVeg 3.0 and aerial imagery, were also used to identify potential anomalies and inaccuracies (NAC 11) and potential areas of native vegetation of local importance (NAC 12).

Spatial Analysis

In order to map multiple biodiversity values we created a continuous grid of 50 m square cells (each 0.25 ha) covering the entire Break O'Day Municipality.

To identify areas of priority vegetation, we compiled three types of datasets:

- Vegetation and biogeographic priority areas (from the CIS);
- Threatened species observations (from the NVA);
- Threatened fauna habitat mapping (from the FPA).

The individual datasets used are summarized in Table 1, with details of data sources and pre-processing. Each of these datasets is considered priority vegetation.

Some datasets required pre-processing. Observations from the natural Values Atlas are point locations and vary in age and spatial accuracy. Observations with poor spatial accuracy (> 250 m) were excluded from this dataset since the point location provided may not be a real location for the species. Similarly, records from prior to 1950 were excluded on the assumption that the species will be represented by more recent observations if it is extant in a particular area (most of these pre-1950 observations also do not meet the spatial accuracy requirements).

Observations of threatened fauna species are not necessarily indicative of high-quality habitat, since many are roadkill records or opportunistic observations of wide-ranging species such as wedge-tailed eagles. Only observations of relatively sedentary threatened fauna species and of nests and dens of other species (i.e. Tasmanian devil, swift parrot, wedge-tailed eagle, white-bellied sea eagle) were considered representative of priority vegetation. These selected threatened fauna observations were buffered by 100 m to create a 200 m wide circle representing the habitat of that species. Similarly, threatened flora observations were buffered by 100 m.

Table 1. Datasets used in the spatial analysis process to identify Priority Vegetation Areas.

Layer	Source	Pre-processing and notes	Code Application Guideline[1]
Threatened flora locations	NVA	TSPA and EPBC listed flora point observations from NVA (Sept 2019) with location accuracy < 250 m and date > 01-01-1950. Points buffered by 100 m.	NAC 8
Threatened fauna locations	NVA	TSPA and EPBC listed fauna point observations from NVA (Sept 2019) with location accuracy < 250 m and date > 01-01-1950. Sedentary species[2] only selected, plus nest or den observations of other species. Points buffered by 100 m.	NAC 10
Giant velvet worm habitat	FPA	Range boundary intersected with all TASVEG 3.0 wet eucalypt forest and rainforest communities.	NAC 12
Blind velvet worm habitat	FPA	Range boundary intersected with all TASVEG 3.0 wet eucalypt forest and rainforest communities.	NAC 12
Vanderschoors stag beetle habitat	FPA	Range boundary intersected with all TASVEG 3.0 wet eucalypt forest and rainforest communities, or highland grassy sedgeland (MGH) or native forest (except Eucalyptus sieberi forest) on granite geology within 50 m of watercourses.	NAC 12
Masked owl – significant habitat	FPA	FPA mature habitat density (1 km radius) classes Medium and High intersected with dry eucalypt forest.	NAC 12
New Holland mouse habitat	FPA	FPA range boundary intersected with the eleven TASVEG vegetation types identified as constituting new holland mouse habitat by Lazenby (2009): Coastal scrub (SSC), Coastal heathland (SCH), Dry scrub (SDU), Coastal scrub on alkaline sands (SCA), Eucalyptus amygdalina coastal forest and woodland (DAC), E. nitida Furneaux forest (DNF), E. sieberi forest and woodland not on granite (DSO),	NAC 12

[1] Tasmanian Planning Commission (2018) Guideline No. 1 – Local Provisions Schedule (LPS): zone and code application.

[2] The following species were considered sedentary or localized and therefore likely to have important habitat accurately represented by point observations: *Antipodia chaostola* subsp. *leucophaea, Enchymus* sp. nov.*, Galaxiella pusilla, Hoplogonus bornemisszai, Hoplogonus simsoni, Hoplogonus vanderschoori, Hydrobiosella sagitta, Litoria raniformis, Pseudemoia rawlinsoni, Pseudomys novaehollandiae, Tasmanipatus anophthalmus, Tasmanipatus barretti*

Layer	Source	Pre-processing and notes	Code Application Guideline[1]
		Heathland on granite (SHG), E. sieberi forest and woodland on granite (DSG), E. viminalis Furneaux forest and woodland (DVF), and Heathland scrub complex at Wingaroo (SCW).	
Swan galaxias habitat	FPA	FPA range boundary intersected with a riparian layer created by buffering watercourses 20 m either side.	NAC 12
Simsons stag beetle habitat	FPA	FPA 'suitable habitat' layer.	NAC 12
Giant freshwater crayfish habitat	FPA	FPA modelled giant freshwater crayfish habitat – select all watercourse segments with Medium or High suitability.	NAC 12
Mature habitat (tree hollow density)	FPA	FPA mature habitat density (1 km radius) classes Medium and High.	NAC 12
Swift parrot foraging habitat	DPIPWE	GlobMap layer used without further processing, noting that mapping was not undertaken for some areas of potential habitat.	NAC 12
Threatened native vegetation communities	CIS	Layer sourced from CIS, containing both State and Commonwealth listed communities.	NAC 7
Distinctiveness of areas of threatened and uncommon plants	CIS	Cells with CIS score > 0 (i.e. Med, High, Very High categories).	NAC 12
Riparian zone vegetation	CIS	Med, High, Very High categories of Integrated Conservation Value (ICV).	NAC 12
Native vegetation in bioregions with <10% NRS reservation	CIS	In Tasmania, the only bioregion with less than 10% area in the National Reserve System is the Northern Midlands, which includes the south-east of BOD municipality.	NAC 12
Reservation priority vegetation communities	CIS	Communities with low levels of reservation at the bioregional or statewide level (two CIS layers).	NAC 12
Contemporary refugia	CIS	Fire and disease refugia from National Estate data.	NAC 12
Glacial refugia	CIS	Glacial refugia from National Estate data.	NAC 12
Important Bird Areas	CIS	Locations identified as important habitat for birds.	NAC 12

Range boundaries or habitat models are not available for most threatened fauna species in Tasmania. Range boundaries for selected threatened species produced by the FPA indicate the likely extent of a species but do not distinguish actual habitat within that range (FPA 2008). These range boundaries were used as a starting point to identify habitat for threatened species which had mapped range boundaries in Break O'Day municipality. Where available, 'core range' boundaries were used for widespread species so as to focus only on important areas for these species. Rulesets devised by experts for mapping habitat of many of these threatened species were published by Yee & Koch (2016). These rules have been implemented or approximated in this project, using available datasets, to produce maps of likely habitat within the range of each species (see Table 1).

No field verification or analysis (NAC 9, NAC 11). The PVA map was produced for the entire municipality regardless of zoning. The final step needed to comply with NAC 13 is to exclude the specified zones where the PVA does not apply.

These datasets were each intersected with the grid layer so that each grid cell was attributed with the presence or absence of each biodiversity value. All grid cells with one or more values present were then classified as Priority Vegetation Area (PVA). This draft PVA layer is shown in Figure 1.

The draft PVA includes areas that are likely to be exempt from the Natural Assets Code, depending on zoning under the new SPP or other exemptions.

Conclusion

This project reviewed the specifications for determining Priority Vegetation Areas under the State Planning Provisions and developed a spatial analysis methodology to combine the best available spatial biodiversity data to map Priority Vegetation Areas across the Break O'Day municipality. Spatial datasets representing known locations of threatened species, mapped habitat for threatened fauna, conservation priority vegetation and sites of biogeographic significance were compiled to address the relevant Natural Assets Code criteria.

The resulting spatial layer represents a comprehensive Priority Vegetation Area overlay that addresses the SPP specifications. There may be areas of native vegetation which qualify as priority vegetation areas but have not been captured in the spatial layers used in this exercise due to limitations and inaccuracies in the spatial datasets. NAC 9, 11 and 12 allow for field verification, such as has been undertaken by some councils to assess areas of identified potential priority habitat based on local knowledge and desktop analysis.

The Priority Vegetation Area identified here is extensive, covering most of the municipality. This reflects the large extent of native vegetation and the concentration of biodiversity values in the municipality. This extensive coverage of biodiversity values indicates that in most bushland areas within the municipality council planning processes require consideration of biodiversity values under the Natural Assets Code.

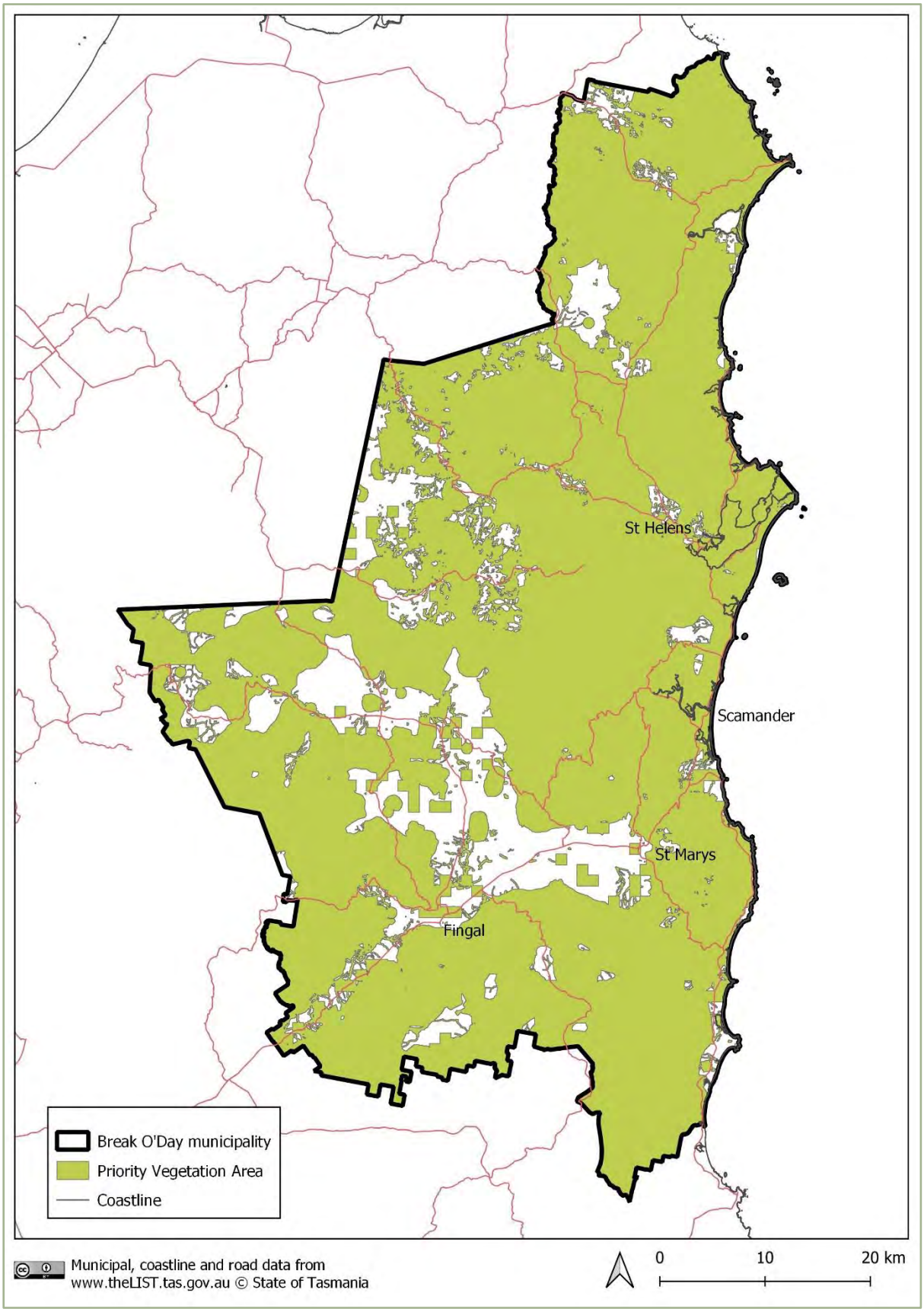


Figure 1. Priority Vegetation Area map for Break O'Day municipality based on analysis in this project.

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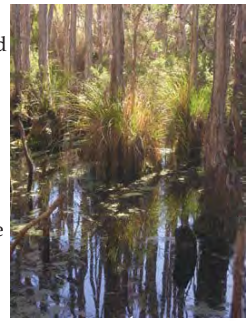
Linking Landscapes

A WildCountry Vision for North-East Tasmania

McKerrow Marshes



480 hectares of Crown Land

An important remnant of river flat vegetation on the Great Forester River

Most of the surrounding Great Northern Plain is privately owned and has been cleared for agriculture

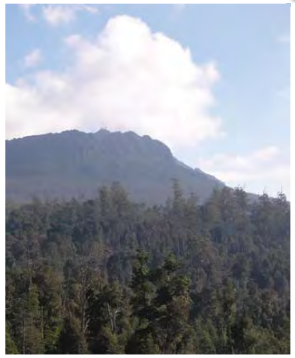
This proposed reserve contains paperbark swamp forest (considered rare and endangered in Tasmania) and a regionally significant patch of blackwood swamp forest

Mount Maurice Reserve extensions

The existing Mt Maurice Forest Reserve protects some of the highland vegetation in the area but neglects old-growth forests on the lower and middle slopes

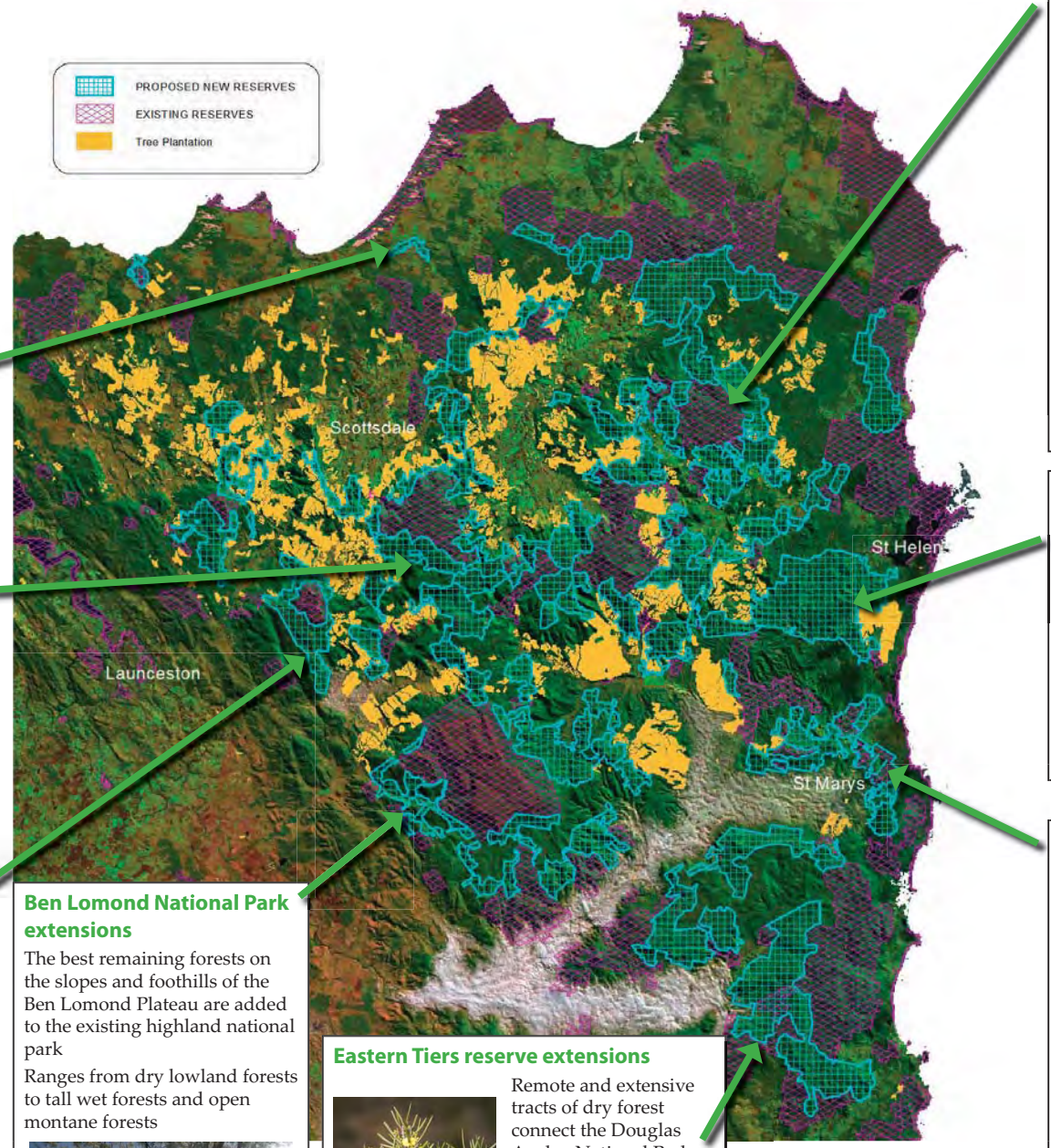
These proposed extensions will ensure protection of the most extensive tracts of rainforest and tea-tree forest in north east Tasmania in addition to some of the best remaining stands of tall mountain ash forest and rare highland grasslands

Mount Barrow Protected Landscape



Integrating the conservation commitment of landowners who have covenants on their land with protection of surrounding public land

Connects the Mt Barrow and Mt Barrow Falls reserves and protects an altitudinal sequence of vegetation (providing a representative sample of the local ecology and allowing for environmental responses to climate change)



Ben Lomond National Park extensions

The best remaining forests on the slopes and foothills of the Ben Lomond Plateau are added to the existing highland national park

Ranges from dry lowland forests to tall wet forests and open montane forests

Eastern Tiers reserve extensions

Remote and extensive tracts of dry forest connect the Douglas Apsley National Park with other existing reserves to create a large protected area in the largely unprotected Eastern Tiers

A hotspot for threatened plant species

North East Highlands – a new national park

By connecting several existing reserves a large area of spectacular and biodiverse mountains will be protected as a national park

This will be a major tourist drawcard for the north-east, offering scenic drives and bushwalks

The area includes extensive areas of undisturbed vegetation, important threatened species habitat and the headwaters of numerous water catchments

Constable Creek – Loila Tier

This relatively pristine area of dry forest and heathland is close to St Helens

Contains several rare and threatened vegetation types, old-growth dry forests and significant populations of threatened plant species

St Marys Protected Landscape

A varied landscape of dolerite peaks, limestone caves, wet and dry forests

Existing reserves on public and private land are connected and integrated into a landscape-scale protected area

Protecting and promoting the natural attractions of the St Marys region

Recognising the significant contribution to nature conservation by private landowners in the area

5870 hectares of proposed reserves in addition to 3670 hectares of existing reserves

North East Bioregional Network

THE WILDERNESS SOCIETY

LINKING LANDSCAPES

New Reserves for North-east Tasmania

September 2007

ENVIRONMENT
TASMANIA INC

A summary of known values and justification for proposed reserve areas. Refer to accompanying maps for proposed reserve areas.

Total area of new reserves (not including areas currently protected) = 148 934 hectares (NB this figure includes areas designated as 'informal reserves' as per the Tasmanian RFA).

Threatened species records from TSS data. Vegetation from TASVEG 1.2

"High Conservation Value Vegetation Communities" includes all TASVEG communities listed as threatened under State legislation (i.e. Schedule 3A of the Nature Conservation Act 2002) or Commonwealth legislation (EPBC Act) in addition to all areas of old growth forest and other vegetation occurrences of biogeographic significance (such as rainforest). Three-letter codes used are from the TASVEG 1.2 classification scheme.

"Threatened Species" includes those species recorded from the proposed reserve area (as per the State Government Natural Values Atlas database) which are listed on the Tasmanian or Commonwealth threatened species schedules. This is not a comprehensive list of threatened species for each proposed reserve, further unrecorded threatened species are likely to occur in many cases.

In the accompanying maps existing reserves on public land are shown as 'formal' or 'dedicated' reserves in reference to international classification of reserve classes as per the Tasmanian Regional Forest Agreement (1997):

> **"Dedicated Reserve"** means a Formal Reserve equivalent to IUCN Protected Area Management Categories I, II, III, or IV as defined by the IUCN Commission for National Parks and Protected Areas (1994). In Tasmania, Dedicated Reserves comprise the following reserves as described in Attachment 7: national parks, state reserves, game reserves, nature reserves, historic sites and forest reserves not subject to the *Minerals Resources Development Act* 1995 (Tas.)*;*
>
> **"Formal Reserve"** means a reserve equivalent to IUCN Protected Area Management Categories I, II, III, IV, or VI as defined by the IUCN Commission for National Parks and Protected Areas (1994). The status of Formal Reserves is secure, requiring action by the Tasmanian Parliament for dedication or revocation. Formal Reserves in Tasmania, comprise Dedicated Reserves, and the following reserves as described in Attachment 7: managed natural areas/regional reserves, conservation areas, nature recreation areas and forest reserves subject to the *Mineral Resources Development Act* 1995 (Tas.).

Most of north-east Tasmania is within the Ben Lomond bioregion. The following description is from 'Identifying Priorities for Biodiversity Conservation' in State of the Environment Tasmania (2006):

> **Ben Lomond Bioregion** has a moderate priority for reserve consolidation. Comprehensiveness is high and adequacy low (11%), with a substantial number of unreserved threatened ecosystems. Representativeness is low to moderate: alpine and subalpine vegetation is strongly represented in reserves, but lowland forest and woodland ecosystems are not. Expansion of forestry plantations operates as a regional scale threatening process.
>
> Reserve management in the Ben Lomond bioregion as a whole is good. Ben Lomond National Park is well managed but suffers from localised snowfield degradation. Well managed Forest Reserves are a significant component of reserves. Reserves around the lowland margins of the region, notably Cameron Regional Reserve have a lower management standard.

EAST COAST

Constable Creek – Loila Tier Reserve

Area: 13 196 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus ovata forest (DOV)
Eucalyptus ovata heathy woodland (DOW)
Oldgrowth *Eucalyptus sieberi* forest on granite (DSG)
Oldgrowth *Eucalyptus sieberi* forest on Mathinna beds (DSO)
Oldgrowth *Eucalyptus obliqua* dry forest (DOB)
Oldgrowth *Eucalyptus amygdalina* coastal forest (DAC)
Melaleuca ericifolia swamp forest (NME)
Riparian scrub (SRI)
Saline wetland (AWU)

Threatened Species

Plants	Common Name	Tas status	National status
Baumea gunnii	slender twigsedge	r	
Blechnum cartilagineum	gristle fern	v	
Euphrasia collina ssp. *deflexifolia*	eastern eyebright	r	
Hibbertia calycina	lesser guinea flower	v	
Hibbertia virgata	twiggy guinea flower	r	
Hierochloe rariflora	cane holygrass	r	
Hovea corrickiae	glossy purple-pea	r	
*Phebalium daviesii**	davies waxflower	e	CR
Plantago debilis	shade plantain	r	

* translocated population established by Threatened Species Section, DPIWE

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN
Haliaeetus leucogaster	white-bellied sea eagle	v	
Tasmanipatus barretti	giant velvet worm	r	
Tyto novaehollandiae castanops	masked owl	e	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
Scenic preservation, visitor attractions (waterfalls, lookouts, scenic drives, bushwalks)

Context
large area of relatively undisturbed native vegetation
near coastal – inland vegetation sequence

St Marys Protected Landscape

Area: 9529 hectares (including 5872 hectares new reserves)
Current Tenure: State Forest, State Reserve, Forest Reserve, private land (some with conservation covenants)
Proposed Tenure: combination of State Reserve, Forest Reserve, Nature Reserve, private land and conservation covenants
High Conservation Value Vegetation Communities
Eucalyptus brookeriana forest (WBR)

Threatened Species

Plants	Common Name	Tas status	National status
Blechnum cartilagineum	gristle fern	v	
Cyathea X *marcescens*	skirted treefern	v	
Desmodium gunnii	slender tick trefoil	v	
Euphrasia collina ssp. *deflexifolia*	eastern eyebright	r	
Glycine microphylla	small-leaf glycine	v	
Hibbertia calycina	lesser guinea flower	v	
Hierochloe rariflora	cane holygrass	r	
Pellaea calidirupium	hot rock fern	r	
*Phebalium daviesii**	davies waxflower	e	CR
Plantago debilis	shade plantain	r	
Prostanthera rotundifolia	roundleaf mintbush	v	
Veronica plebeia	trailing speedwell	r	

* translocated population established by Threatened Species Section, DPIWE

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	
Aquila audax fleayi	wedge-tailed eagle	e	EN
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU
Lathamus discolor	swift parrot	e	EN
Tasmanipatus anophthalmus	blind velvet worm	e	
Tasmanipatus barretti	giant velvet worm	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values

Numerous sites listed on Tasmanian Geoconservation database e.g. St Patricks Head Basaltic Soils, Mt Elephant Karst, Huntsmans Creek Waterfall, Durham Creek Meander Cave with Constructional Karst, Upper Durham Creek Karst System, St Marys Porphyrite and Catos Creek Dyke, Mt Nicholas and Blackboy Plains High Plateau Marshes, Huntsmans-Scales Creeks Triassic Basalt, Mt Nicholas High Plateau Marshes, Mt Nicholas Dolerite Residual Peak, North and South Sister Dolerite Periglacial System, Mt Nicholas Dolerite Periglacial System, North-east Tasmania Dolerite Residual Peaks

Context

north- south corridor, connects existing reserves
diversity of habitats and communities

Siamese Ridge reserve proposal

Area: 1209 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus obliqua* wet forest (WOU)

Threatened Species

Plants	Common Name	Tas status	National status
Hierochloe rariflora	cane holygrass	r	

Animals	Common Name	Tas status	National status
Tasmanipatus barretti	giant velvet worm	r	

Other Values

Context
transition from north- to south-facing slopes

Mt Nisbet reserve proposal

Area: 633 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus ovata forest (DOV)
Oldgrowth *Eucalyptus sieberi* forest on granite (DSG)

Threatened Species

Animals	Common Name	Tas status	National status
Tasmanipatus barretti	giant velvet worm	r	

Context
landscape connectivity

Bells Marsh Reserve extensions

Area: 1225 hectares
Current Tenure: State Forest, Crown Land
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities

Threatened Species

Animals	Common Name	Tas status	National status
Tasmanipatus barretti	giant velvet worm	r	

Other Values
Riparian protection

Context
connects existing reserves
mosaic of lowland dry forest types and heath

Bay of Fires Reserve extensions

Area: 3935 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *E. obliqua* dry forest (DOB)
biogeographically significant remnant rainforest (requires verification)

Threatened Species

Plants	Common Name	Tas status	National status
Hierochloe rariflora	cane holygrass	r	
Pomaderris elachophylla	small-leaf Pomaderris	v	

Animals	Common Name	Tas status	National status
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU
Lathamus discolor	swift parrot	e	EN

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Context
near-coastal north-south corridor between existing reserves

Avenue River reserve extension

Area: 431 hectares
Current Tenure: State Forest
Proposed Tenure: Forest Reserve
High Conservation Value Vegetation Communities
Eucalyptus amygdalina forest on sandstone (DAS)
Oldgrowth *Eucalyptus sieberi* forest on Mathinna beds (DSO)

Threatened Species

Plants	Common Name	Tas status	National status
Teucrium corymbosum	forest germander	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

SOUTH ESK

Mathinna Reserve

Area: 189 hectares
Current Tenure: State Forest, Crown Land
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus amygdalina* forest on Mathinna beds (DAM)
Oldgrowth *Eucalyptus sieberi* forest on Mathinna beds (DSO)
Oldgrowth *E. obliqua* wet forest (WOU)

Other Values
Riparian protection

Context
Remnant native forest on alluvial flats

Evercreech Reserve extensions

Area: 3475 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus ovata forest (DOV)
Oldgrowth *Eucalyptus sieberi* forest on Mathinna beds (DSO)
Oldgrowth *Eucalyptus obliqua* dry forest (DOB)
Oldgrowth *Eucalyptus regnans* forest (WRE)
Oldgrowth *Eucalyptus obliqua* wet forest (WOU)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)

Threatened Species

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN
Tasmanipatus barretti	giant velvet worm	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values

Context
east-west landscape connectivity in an area of extensive plantations connects four existing reserves

Cokers Creek Reserve

Area: 1092 hectares
Current Tenure: State Forest, Crown Land
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus sieberi* forest on Mathinna beds (DSO)
Oldgrowth *Eucalyptus obliqua* dry forest (DOB)
Oldgrowth *Eucalyptus obliqua* wet forest (WOU)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)

Threatened Species

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN

Other Values

Context
relatively undisturbed vegetation
valley to highland sequence

NORTH EAST HIGHLANDS

North East Highlands National Park proposal

Total area: 35 182 ha (20 919 ha reserve extensions + 14 263 existing reserves)
Existing reserves: Mt Victoria FR 8274 ha, Frome FR 931 ha, Blue Tier FR 5058 ha

Unit	Hectares
Blue Tier eastern ext	1400
Blue Tier northern ext	988
Blue Tier southern ext	2413
Blue Tier southeast ext	1414
Cascade	1196
Jubilee Hill	1473
Marguerita Ridge	621
Mathinna Plains	1202
Mt Saddleback	485
Mt Victoria western ext	3212
Polleys Creek	1109
Rattler Hill	1961
Rattler ext	244
Starlight Ridge	1567
Weld Hill	1438
Weldborough Pass	196

Current Tenure: State Forest, Public Reserve, Crown Land, Forest Reserve
Proposed Tenure: National Park

VALUES IN PROPOSED RESERVE EXTENSIONS

High Conservation Value Vegetation Communities

Lowland *Poa* grassland (GPL)
Lacustrine herbland (AHL)
Rainforest (RMT)
various oldgrowth communities including *E. regnans* forest (WRE)

Threatened Species

Plants	Common Name	Tas status	National status
Acacia mucronata ssp. *dependens*	blunt caterpillar wattle	r	
Juncus prismatocarpus	branching rush	r	

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	
Aquila audax fleayi	wedge-tailed eagle	e	EN
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU
Hoplogonus bornemisszai	Bornemissza's stag beetle	e	
Hoplogonus simsoni	Simson's stag beetle	v	
Perameles gunnii	eastern barred bandicoot		VU

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values

headwaters of many water catchments

Context

extensive areas of undisturbed native vegetation
altitudinal sequences

Mount Maurice Reserve extensions

Area: 6618 hectares

Unit	Hectares
Cuckoo Hill	1366
Maurice east	244
Maurice west	443
Maurice south	4565

Current Tenure: State Forest
Proposed Tenure: State Reserve

High Conservation Value Vegetation Communities

Highland grassy sedgeland (MGH)
Highland *Poa* grassland (GPH)
Rainforest (RMT)

Threatened Species

Plants	Common Name	Tas status	National status
Blechnum cartilagineum	gristle fern	v	
Viola cunninghamii	Cunningham's violet	r	

Other Values
Most extensive tracts of rainforest and *Leptospermum* forest in north east Tasmania

Context
large, relatively intact area of wet forest
altitudinal sequences

Pyengana reserve extensions

Area: 4035 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
oldgrowth *Eucalyptus regnans* (WRE)
rainforest (RMT)
Eucalyptus rodwayi forest (WRO)

Threatened Species

Animals	Common Name	Tas status	National status
Lathamus discolor	swift parrot	e	EN
Tasmanipatus barretti	giant velvet worm	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
catchment for several watercourses

Context
large area of intact *E. regnans* forest
connects existing reserves

St Columba Falls reserve extension

Area: 469 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
rainforest (RMT)

Context
connects existing reserves

Wyniford reserve proposal

Area: 2316 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus viminalis wet forest (WVI)

Threatened Species

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU
Hoplogonus simsoni	Simson's stag beetle	v	

Other Values
headwaters of Wyniford River

Context
altitudinal sequence (70 – 700 m asl)

Carneys Creek reserve proposal

Area: 900 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
rainforest (RMT)

Context
large area of mature forest in major plantation area

Evelyn Rivulet reserve proposal

Area: 983 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Rainforest (RMT)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)

Context
large patch of undisturbed rainforest

Boags Ridge reserve proposal

Area: 358 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve

High Conservation Value Vegetation Communities
Oldgrowth *E. obliqua* dry forest (DOB)
Oldgrowth damp sclerophyll forest (DSC)
Oldgrowth *E. amygdalina* forest on Mathinna beds (DAM)
Oldgrowth *E. amygdalina* forest on dolerite (DAD)

Threatened Species

Plants	Common Name	Tas status	National status
Pimelea curviflora var. *gracilis*	slender curved rice-flower	r	

Other Values

Context
mosaic of mature dry forest types on Mathinna beds

Ben Nevis Marshes reserve proposal

Area: 168 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Lowland *Poa* grassland (GPL)
Eucalyptus viminalis wet forest (WVI)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)

Context
native grassland on river flats, riparian on North Esk river
almost the entire remainder of the valley bottom is plantation

Ben Nevis reserve proposal

Area: 3101 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Alpine vegetation (HUE)
Rainforest (RMT)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)
Oldgrowth *Eucalyptus obliqua* wet forest (WOU)

Threatened Species

Plants	Common Name	Tas status	National status
Acacia pataczekii	wally's wattle	r	

Context
headwaters of North Esk river
montane vegetation mosaics (delegatensis forest/heaths/highland grassland)
topographically diverse

Tombstone Plain reserve proposal

Area: 1600 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Highland grassy sedgeland (MGH)
Rainforest (RMT)
Oldgrowth *E. obliqua* wet forest (WOU)
Oldgrowth *E. obliqua* dry forest (DOB)

Threatened Species

Plants	Common Name	Tas status	National status
Viola cunninghamii	cunningham's violet	r	

Context
montane vegetation mosaics (delegatensis forest/heath/scrub/sedgeland)
topographically diverse

BEN LOMOND

Ben Lomond National Park extensions

Area: 11 285 hectares

Unit	Hectares
Fonthill Flat	661
northwest extension	166
southern extension	1254
Tyne	6482
Nive linkages	2721

Current Tenure: State Forest, Crown Land
Proposed Tenure: National Park
High Conservation Value Vegetation Communities
Riparian vegetation (SRI)
Alpine vegetation (HUE)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)

Threatened Species

Plants	Common Name	Tas status	National status
Acacia pataczekii	wally's wattle	r	
Bossiaea obcordata	spiny bossiaea	r	
Hierochloe rariflora	cane holygrass	r	
Prasophyllum stellatum	Ben Lomond leek orchid	e	CR
Teucrium corymbosum	forest germander	r	

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values

Scenic protection

Grasstree Ridge Reserve

Area: 828 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus amygdalina* forest on Mathinna beds (DAM)

Context

altitudinal sequence
largely undisturbed native vegetation adjacent to extensive plantations

Avoca area reserve extensions

Area: 5504 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Oldgrowth *Eucalyptus delegatensis* dry forest (DDE)

Threatened Species

Plants	Common Name	Tas status	National status
Monotoca submutica	roundleaf broom-heath	r	
Stegostyla congesta	black-tongue Caladenia	e	

Roses Tier Reserve

Area: 1761 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus ovata forest (DOV)
Oldgrowth *Eucalyptus delegatensis* wet forest (WDU)
Highland *Poa* grassland (GPH)
Rainforest (RMT)

Threatened Species

Plants	Common Name	Tas status	National status
Acacia pataczekii	wally's wattle	r	

Context
north-south landscape connectivity

MOUNTS BARROW & ARTHUR

Mt Barrow Protected Landscape

Area: 4486 hectares
Current Tenure: State Forest, private land (some with conservation covenants)
Proposed Tenure: State Reserve, Conservation covenants or management agreements
High Conservation Value Vegetation Communities
Eucalyptus dalrympleana forest (WDA)

Other Values
Scenic preservation, bushwalks
highland vegetation mosaic

Context
altitudinal vegetation sequences/environmental gradients

Upper Brid Catchment

Area: 1080 hectares
Current Tenure: State Forest
Proposed Tenure: Forest Reserve

High Conservation Value Vegetation Communities
Rainforest (RMT)
Mature *E. regnans* forest (WRE)

Context
large lowland wet forest remnant in area of extensive plantations
headwaters of Brid River

St Patricks Rivers Reserve

Area: 576 hectares
Current Tenure: State Forest (including informal reserves), Public Reserve (River Reserve)
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Lowland *Poa* grassland (GPL)
Riparian scrub (SRI)
Rainforest (RMT)

Threatened Species

Plants	Common Name	Tas status	National status
Barbarea australis	Native Wintercress	e	CR
Isolepis habra	Alpine club rush	r	
Pimelea pauciflora	Poison riceflower	r	
Ranunculus amphitrichus	River buttercup	r	

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN

Other Values
Riparian protection

Context
adjacent to private reserve
wet forest remnant in area of extensive plantations

Sideling Range Reserve proposal

Area: 295 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Rainforest (RMT)
Mature *E. regnans* forest (WRE)

Threatened Species

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	
Charopidae “Skemps”	Skemps snail	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
Scenic protection

Context
wet forest remnant

Panama Ridge Reserve proposal

Area: 1098 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *E. obliqua* wet forest (WOU)
Oldgrowth *E. amygdalina* coastal forest (DAC)

Threatened Species

Plants	Common Name	Tas status	National status
Blechnum cartilagineum	gristle fern	v	

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
Scenic protection

Mount Arthur Reserve extensions

Area: 5213 hectares

Unit	Hectares
Bessells	525
Eaglehawk Tier	3202
Lone Star	1342
Patersonia	144

Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
E. ovata forest (DOV)
Riparian scrub (SRI)
Oldgrowth *E. obliqua* wet forest (WOU)
Oldgrowth *E. obliqua* dry forest (DOB)
Oldgrowth *E. regnans* wet forest (WRE)
Oldgrowth *E. delegatensis* wet forest (WDU)
Oldgrowth *E. amygdalina* forest on dolerite (DAD)

Threatened Species

Plants	Common Name	Tas status	National status
Blechnum cartilagineum	gristle fern	v	
Boronia hemichiton	Mt Arthur boronia	e	VU
Pimelea filiformis	trailing rice-flower	r	

Animals	Common Name	Tas status	National status
Engaeus orramakunna	Mt Arthur burrowing crayfish	v	VU
Charopidae “Skemps”	Skemps snail	r	

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
Scenic protection
Relatively large area of *E. regnans* forest

Context
landscape dominated by plantation and clearfell

NORTH COAST

McKerrow Marshes reserve proposal

Area: 426 hectares
Current Tenure: Crown Land
Proposed Tenure: Nature Reserve
High Conservation Value Vegetation Communities
Melaleuca ericifolia swamp forest (NME)
Wetland (AWU)

Other Values
Regionally significant patch of *Acacia melanoxylon* swamp forest (NAF)
Remnant floodplain vegetation
Riparian protection

Branxholm White Gum Reserve

Area: 226 hectares
Current Tenure: State Forest
Proposed Tenure: Nature Reserve
High Conservation Value Vegetation Communities
Eucalyptus viminalis wet forest (WVI)
Oldgrowth *E. obliqua* wet forest (WOU)
Oldgrowth *E. obliqua* dry forest (DOB)

Threatened Species

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	

Pipers River Reserve proposal

Area: 536 hectares
Current Tenure: Conservation Area, Public Reserve
Proposed Tenure: State Reserve

High Conservation Value Vegetation Communities
Melaleuca ericifolia swamp forest (NME)
Wetland (AWU)
Freshwater aquatic sedgeland (ASF)
Eucalyptus ovata forest (DOV)

Threatened Species

Plants	Common Name	Tas status	National status
Arachnorchis caudata	tailed spider orchid	r	VU
Pultenaea mollis	guinea flower pea bush	v	
Triglochin minutissimum	tiny arrow grass	r	
Xanthorrhoea bracteata	shiny grasstree	v	EN

Animals	Common Name	Tas status	National status
Dasyurus maculatus maculatus	spotted-tail quoll	r	VU

Other Values
Riparian/estuarine protection

Context
diverse range of vegetation communities
threatened flora

Mount Horror Reserve extensions

Area: 958 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve

Threatened Species

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	

Other Values

Context
large isolated wet forest remnant
limit of *E. regnans* range

Great Forester River Reserve

Area: 3492 hectares

Unit	Hectares
Arnon River	1395
Hang Dog Creek	1824
Ruby Creek	273

Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *Eucalyptus regnans* forest (WRE)
Oldgrowth *Eucalyptus amygdalina* coastal forest (DAC)
Oldgrowth damp sclerophyll forest (DSC)
Rainforest (RMT)

Threatened Species

Animals	Common Name	Tas status	National status
Accipiter novaehollandiae	grey goshawk	e	
Engaeus spinicaudatus	Scottsdale burrowing crayfish	e	EN
Perameles gunnii	eastern barred bandicoot		VU

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Context

connections between existing reserves
landscape of extensive plantations and agricultural land
mix of wet and dry forest types, including rainforest remnants

Cameron Reserve Extensions

Area: 11 644 hectares
Current Tenure: State Forest, Crown Land
Proposed Tenure: Conservation Area
High Conservation Value Vegetation Communities
E. ovata forest (DOV)
Wetland (AWU) – Ringarooma River floodplain
Oldgrowth damp sclerophyll complex (DSC)

Threatened Species

Plants	Common Name	Tas status	National status
Agrostis australiensis	southern bentgrass	r	
Arachnorchis caudata	tailed spider orchid	r	VU
Epacris aff. *virgata* 'graniticola'	Mt Cameron heath	v	EN
Isolepis stellata	star club rush	r	
Microtidium atratum	yellow onion orchid	r	
Orthoceras stictum	horned orchid	r	

Animals	Common Name	Tas status	National status
Astacopsis gouldi	giant freshwater crayfish	v	VU
Litoria raniformis	green and gold frog	v	VU

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
riparian protection on Ringarooma River

Context
expansive area of native vegetation in largely good condition
east-west corridor
catchment for lower Ringarooma River wetlands Ramsar site

EASTERN TIERS

Fingal Tier Reserve

Area: 11 297 hectares

Unit	Hectares
Fingal Tier	4887
Dickies Ridge extension	1715
St Pauls extension	4694

Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Oldgrowth *E. amygdalina* forest on dolerite (DAD)
Oldgrowth *E. delegatensis* dry forest (DDE)
Oldgrowth *E. delegatensis* wet forest (WDU)

Threatened Species

Plants	Common Name	Tas status	National status
Cyphanthera tasmanica	Tasmanian ray flower	r	
Eucalyptus barberi	Barber's gum	r	
Euphrasia scabra	yellow eyebright	e	
Myriophyllum integrifolium	tiny water milfoil	v	

Animals	Common Name	Tas status	National status
Aquila audax fleayi	wedge-tailed eagle	e	EN

Other Values

Context
east-west connectivity

Eastern Tiers Reserve extensions

Area: 15 505 hectares
Current Tenure: State Forest
Proposed Tenure: State Reserve
High Conservation Value Vegetation Communities
Eucalyptus globulus grassy forest (DGL)
E. ovata forest (DOV)
E. brookeriana wet forest (WBR)
Callitris rhomboidea forest (NCR)

Threatened Species

Plants	Common Name	Tas status	National status
Acacia axillaris	Midlands wattle	v	VU
Agrostis diemenica	flat-leaf southern bent	r	
Boronia gunnii	gunn's boronia	v	VU
Boronia hippopala	velvet boronia	v	VU
Brachyscome rigidula	hairy cutleaf daisy	v	
Carex longebrachiata	drooping sedge	r	
Epacris exserta	South Esk heath	v	EN
E. limbata	border heath	e	CR
Eucalyptus barberi	Barber's gum	r	
Euphrasia collina aff. *diemenica*		?	
Euphrasia scabra	yellow eyebright	e	
Hierochloe rariflora	cane holygrass		
Hovea tasmanica	hill hovea	r	
Monotoca submutica var. *autumnalis*	roundleaf broom-heath	r	
Pomaderris phylicifolia	narrow leaf pomaderris	r	
Stonesiella selaginoides	clubmoss bush pea	v	EN

Animals	Common Name	Tas status	National status
Galaxius fontanus	swan galaxies	e	EN

NB: the above are species reliably known to inhabit the proposed reserve, many more threatened species are likely to be present but are as yet unrecorded from this area.

Other Values
threatened species hotspots

Context
connects existing reserves
large area of relatively intact native forest and heathland

Verification of the Heritage Value
of ENGO-Proposed Reserves

IVG
Forest Conservation
REPORT 5A

IVG Forest Conservation Report 5A

Verification of the Heritage Value of ENGO-Proposed Reserves

An assessment and verification of the '*National and World Heritage Values and significance of Tasmania's native forest estate with particular reference to the area of Tasmanian forest identified by ENGOs as being of High Conservation Value'*

Written by Peter Hitchcock, for the Independent Verification Group for the Tasmanian Forests Intergovernmental Agreement 2011.

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About the author—Peter Hitchcock *AM*

The author's career of more than 40 years has focused on natural resource management and conservation, specialising in protected areas and World Heritage. Briefly, the author:

- *trained and graduated*—in forest science progressing to operational forest mapping, timber resource assessment, management planning and supervision of field operations
- *applied conservation*—progressed into natural heritage conservation including conservation planning and protected area design
- *corporate management*—held a range of positions, including as, Deputy Director (Policy and Wildlife), NSW National Parks and Wildlife Service, and the inaugural Executive Director of the Wet Tropics (World Heritage) Management Authority (WTMA) in Queensland, Australia.

The author's professional experience in heritage conservation, including World Heritage, is extensive and ongoing, including:

Australia

- Commissioner on Australian Heritage Commission (two terms)

NSW

- Conservation planning, protection and management of forests in parks and reserves
- Team member in World Heritage nomination of the Central Eastern Rainforests of NSW and Qld. (now Gondwana Rainforests)

Queensland: Wet Tropics World Heritage Area

- First Executive Director of Wet Tropics Management Authority (1991–96)

Tasmania

- Commissioner on Commission of Inquiry into Southern Forests of Tasmania
- Consultancy on boundary review of TWWHA

Lebanon

- Consultant advisor to UN Cedars of Lebanon project

South East Asian Forests

- World Heritage assessment, monitoring, management planning of forests in Indonesia, including Papua.
- Management review of selected National Parks in Indonesia
- Forest Conservation Advisor, BTRF, Indonesia

South America

- Guyana, World Heritage assessment of forest area

Papua New Guinea

- Australian Government Adviser, World Heritage and Protected Areas

The author currently operates his Cairns based consultancy, Old Cassowary Consulting (OCConsulting), specialising in natural heritage conservation and World Heritage issues. His World Heritage experience in and/or visits include Argentina, Austria, Canada, Croatia, Guyana, Indonesia, Japan, Kiribati, Lebanon, Madagascar, Malaysia, Nepal, New Zealand Papua New Guinea, Syria, Thailand, Turkey, USA and Venezuela.

Contents

Executive summary

Introduction

It proved a challenging task to assess and verify the:

National and World Heritage values and significance of Tasmania's native forest estate with particular reference to the area of Tasmanian forest identified by ENGOs as being of High Conservation Value and referred to in the Tasmanian Forests Intergovernmental Agreement of 7 August, 2011, noting that the ENGO identified HCV areas comprise 572,000 hectares.

Adding to the challenge was the fact that these lands were made up of some 270 different parcels from all parts of Tasmania.

Assessment methodology

Given strict time constraints on the heritage verification process, most assessments were limited to landscape level assessment, drawing on any accessible and reliable data source.

Information referred to included ENGO documents posted on the Environment Tasmania website at www.et.org.au Particular use was made of published scientific papers and grey literature. A substantial amount of data was extracted from various government online databases, in particular the Land Information Service Tasmania (LIST). Considerable use was made of Google Earth imagery which fortuitously now has a layer showing Tasmanian formal reserve boundaries (not including Forestry Tasmania Forest Reserves). A substantial amount of Forestry Tasmania geospatial data was accessed. Some assessments relied on personal communications with experts and are attributed accordingly. The author is very familiar with aspects of the Tasmanian landscape and was able to draw upon this knowledge in interpreting available data, maps and imagery.

Assessment of individual parcels of land was mostly not comprehensive, and only conducted to the level sufficient to make a definitive finding on whether an area was of likely national or global significance. If a parcel of land was found to be important habitat of a species of national significance, then the assessment was often not extended beyond that identified value. In a number of cases, once an area was assessed as being of World Heritage significance, it was not assessed further for national significance on the assumption that the national significance would shadow global significance.

For some parcels of land, accessible data failed to elucidate any documented values. However, this was not proof positive that the land was not of conservation value. Indeed, in some cases the land appeared likely to be of conservation value but there was no documentation to confirm this. Where there was doubt, a precautionary approach was adopted and the finding left open and recommending further investigation.

In some cases when it was clear that a parcel was most unlikely to have conservation value at a state level of significance or above, the finding was one of 'conservation value not verified'. A significant number of very small parcels were assessed as having no conservation value. These may make locally important contributions to boundary issues.

The author's plea is that while the assessment process was conducted with every reasonable effort to accurately identify any conservation values, it is possible some conservation values have been overlooked. **A precautionary approach is therefore urged throughout the follow-up process.**

Context for assessment

When assessing land for conservation value and hence heritage conservation significance it is important to understand the land's context. This is especially so for smaller areas of land and was the case for many of the ENGO reserve proposals, some of which were very small.

The geographic and/or ecological context can be critically important to establishing the conservation value(s) of a parcel of land. Some factors important in assessing conservation value include proximity to existing protected areas, other comparable habitat, and connectivity to other lands of known conservation value (see below).

Assessing the relative value or significance also required a contextual knowledge and understanding of the attributes of a piece of land, such as whether the same attributes are locally, regionally or nationally rare, common or are replicated elsewhere.

Assessment at 'cluster' or landscape level

Given the many and varied parcels of land in the ENGO-proposed reserves, it was in some cases, more logical to assess at a holistic or landscape level. Compared with separately assessed individual parcels, landscape level assessments are based on shared attributes and/or recognisable geographic groupings or 'clusters' of land parcels. It was found that individual parcels in some clusters shared certain attributes and that much of their relative value came from their context within that cluster.

Most notable was the Tarkine area. It was a logical cluster that had already been assessed by others, including the National Heritage Council, as a 'cluster' or a single entity.

It was evident that there were one or two regional-scale 'clusters' in the North East and down the East Coast of the state. This was not surprising given many of the ENGO-proposed reserves within these clusters shared the theme of 'linking landscapes'. This reinforced the need to conduct the initial level of assessment of conservation value at the regional or 'cluster' level, given the role that connectivity might play between individual parcels and existing formal reserves. Smaller sub-regional or local clusters were adopted where there were indications of a shared value or theme for example Mole Creek Karst, Western Tiers, Mersey Valley escarpment.

The assessment found that the aggregate 'linked landscapes' of the North East and East Coast clusters, which includes all existing reserves and a selection of related ENGO-proposed reserves, to be lands of **national heritage significance**.

CAVEAT: In a significant number of cases involving a cluster or landscape level assessment, some existing formal reserves (usually identified in the report) formed an important part of the context for the assessment. The conservation value is often interdependent on the coexistence with those existing reserves. In ALL such cases, the assumption has been made that all existing formal and informal reserves will be retained. Should this not be the case, the assessed values and significance of the ENGO reserves may be downgraded.

Connectivity

The assessment process placed considerable emphasis on the value of habitat connectivity in assessing the overall conservation **value** of the targeted ENGO-proposed reserves lands. Connectivity conservation is a relatively new science and is still evolving but there is strong consensus on the imperative of connectivity for ensuring successful conservation over time. The definition of 'connectivity conservation' adopted in Worboys, Francis and Lockwood (2010) was used as a guide.

For connectivity to be effective, the connecting corridors must, as far as practicable, allow movement of all relevant species, not just a particular species. Each species will have different requirements for movement and, as far as possible, this should be taken into account in assessing corridors.

This assessment was not a conservation planning and protected area design exercise. Consideration was, however, given to the relative value of the recognisable corridors for achieving long-term biological conservation. While there are no definitive rules about corridor design, simple criteria were used in assessing the relative contribution of connectivity, including:

- the wider the better
- multiple habitat corridors better than single habitat corridors
- multiple connectivity corridors better than single connectivity
- likely robustness over time
- scale of contribution (local, regional, state etc.).

Many informally recognised linear corridors exist within state forests, although many are narrow and along the edges of streams or roadsides. While these may have a local role in wildlife conservation they are not adequate nor can be relied upon for long-term species movement across the landscape at a regional scale.

While it was found that the most important value of some ENGO-proposed reserves was their likely contribution to regional connectivity, many such lands had the potential for contributing other conservation values.

Contributory values

In assessing the value and significance of some parcels of land, particularly those adjoining or adjacent to the existing Tasmanian Wilderness World Heritage Area, one of the identified conservation values of a parcel was found to be the **contribution** that parcel might make to the value and integrity of the existing Tasmanian Wilderness World Heritage Area.

This was particularly so where an attribute or feature was partly in and partly outside the TWWHA and into adjoining ENGO-proposed reserves. For example, some karst, cave and glacial features were found to cross the boundary. In this case the assessment would conclude that the proposed reserves, if added to the TWWHA, would contribute to the value or integrity of the TWWHA. This was considered grounds for concluding that the land was indeed of high heritage conservation value.

Some plant communities or other ecological features identified in ENGO-proposed reserves were found to have the potential to significantly enhance or add value to the TWWHA. For example, some of the tall eucalypt forests are identified as having the potential, if added to the TWWHA, to add to the ecological diversity of the tall eucalypt forests already cited as an official value of the TWWHA. Where it was clear that adding some lands to the TWWHA would make an important 'contribution to the integrity' of the area, it was concluded that the land parcel was of World Heritage significance.

The concept of contributory values was equally applicable to situations where a parcel could contribute to an existing valued protected area. For example, lands adjoining South Bruny National Park were found to make an important contribution to the value and significance of the national park, in this case by protecting and adding further swift parrot (nationally endangered) nesting areas to the park.

Ongoing natural processes

It is important to note that the Tasmanian Wilderness World Heritage Area has been listed against criterion (ix):

... to be outstanding examples representing significant **ongoing ecological and biological processes** in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; (emphasis added)

Further, the conditions of integrity emphasise maintaining the 'ongoing ecological and biological processes':

For all properties nominated under criteria (vii)—(x), bio-physical processes and landform features should be relatively intact ... ' (para 90)

and:

Properties proposed under criterion (ix) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long-term conservation of the ecosystems and the biological diversity they contain … (Para 94)

Many 'ongoing ecological and biological processes' are operating in the Tasmanian landscape, which are vital to the maintenance and ongoing evolution of the attributes for which the Tasmanian Wilderness World Heritage Area has been listed. Processes such as erosion, sedimentation, weathering, predation, decay of organic material, karst development and fire are all a part of the TWWHA landscape. One of the most critical and as well controversial processes is that of fire. Fire has played a role in the Tasmanian landscape well before human habitation. The Aboriginal people harnessed it to some extent and the contemporary human population has variously harnessed, used, abused and feared fire.

The protected area manager requires Solomon-like wisdom to balance the occurrence and use of fire to both address the reasonable concerns of society and to ensure that fire has a rightful role as one of the 'ongoing ecological and biological processes'.

It follows that designing and setting the boundaries of a reserve is a prerequisite to facilitating fire management within the Tasmanian Wilderness World Heritage Area. The author has been very mindful of the dilemmas of fire management and so has factored this into the identification, delineation and facilitation of the 'ongoing ecological and biological processes' of which fire is a part.

Much the same principles have been applied to other landscapes not related to the existing TWWHA.

Boundary considerations

In many cases it was important to provide comment on the boundary implications of protecting particular ENGO-proposed reserves, especially if added to existing protected areas.

In some instances it was apparent that these reserves were designed or selected to address boundary deficiencies of existing protected areas. This is acknowledged and supported where appropriate. Where opportunities for further boundary improvement were identified, these have been recorded.

In some other cases it was apparent that conservation values were the more important consideration and that adding the land parcel to an existing protected area did not necessarily improve the boundary as such, but the contrary was sometimes the case.

Boundary issues for the TWWHA have been contentious since its inscription. The current boundary often makes little ecological or management sense and in most instances creates an artificial barrier to natural ecological interactions. In many instances inappropriate boundaries are a threat to the integrity of the TWWHA. There have been a number of minor changes to the boundary since inscription, none of which have solved the fundamental problems. The proposed revisions to the boundary represent an attempt to resolve the integrity and management challenges once and for all.

Reserve designations

In Tasmania, the level of security and protection of conservation values varies greatly according to the protected area or reserve designation, so reservation outcomes for the ENGO-proposed reserves could be an important issue.

Where designation has been raised in the report, preference has been given to simply recommend adding the area to the most logical, immediately adjoining existing formal reserve, including forest reserves. However, reservation to the highest level of protection should be applied wherever possible. Similarly, management should be assigned to the most competent authority.

Key findings

General

1. Most of the 270 ENGO-proposed reserves were assessed and verified to be of either National Heritage significance or World Heritage significance.
2. The assessed natural heritage value and significance of many ENGO-proposed reserves is significantly dependent upon their being integrally related to existing formal reserves.
3. The area known as the Tarkine* was assessed to be of National Heritage significance and very likely of World Heritage significance. It would add a major new component to the TWWHA, recognising and protecting the largest area of cool temperate rainforest in the southern hemisphere and is recommended for addition to the TWWHA.
   (* *Approximating the boundaries proposed by the Tarkine National Coalition differs in some important ways from the area currently being assessed by the Australian Heritage Council*)
4. The global significance of a connected area of tall eucalypt forests, albeit involving some restoration, would add a major new dimension to the TWWHA.
5. Many of the ENGO-proposed reserves in the North East and East Coast of the state were recognised as being significant for their habitat connectivity and that many existing formal reserves are critically important to that connectivity.
6. It is apparent that beyond the ENGO-proposed reserves, the great majority of state forest land in Tasmania has been extensively logged and/or converted to plantation with the result that much of the natural heritage values have been destroyed or severely degraded. It follows that in many ways the ENGO-proposed reserves are the last chance to address and protect many natural heritage values remaining in the state forest estate.
7. Many of the ENGO-proposed reserves have the potential for cultural heritage values in addition to their natural heritage values, but this study focused primarily on verifying natural heritage values.

The global significance of the tall eucalypt forests

1. While the small area of tall eucalypt forest within the TWWHA is currently acknowledged as contributing to criteria (vii) and (ix) (… be outstanding examples representing significant ongoing ecological and biological processes …), albeit with minimal mention, new research and analysis leads to the conclusion that in the context of the TWWHA they satisfy additional World Heritage criterion and more strongly qualify against (vii) and (ix) than previously acknowledged.
2. If considered as the product of an extraordinary dynamic process which is ongoing, it is argued that the whole dynamic interaction of the tall eucalypts and rainforest, the ‘syndrome of a fire dependent forest above a fire intolerant forest (that) is only known in the associations between eucalypts and Australian rainforest’, represents a unique ecological phenomenon, a ‘superlative natural phenomenon’ of global significance—‘outstanding universal value’—World Heritage.

3. Not only do the tall eucalypt forests readily satisfy criterion (vii), (ix) and (x), it is highly likely that these forests also satisfy criterion (viii).
4. On this basis encompassing a functionally integrated 'connectivity corridor' of tall eucalypt forest into the TWWHA would make an outstanding contribution to the values captured and protected in the TWTasmanian Wilderness.

Other values

1. At the time this report was being written substantial additional information was received revealing significant biodiversity and ecological values in many of the 270 ENGO-proposed reserves. There has not been time to attach these values to the clusters used for assessment in this report. However, it is clear that significant values exist for many of the ENGO proposals, adding weight to the conclusions regarding World Heritage and National Heritage significance. Particularly relevant is the analysis revealing the major contribution most of the proposed extensions would make to the protection of globally significant invertebrate fauna and the newly discovered and globally outstanding diversity of macro fungi.

Cultural heritage

Significant information has also been provided in relation to important Aboriginal cultural sites, including for significant sites not currently protected in the TWWHA, which require full formal assessment.

Area specific findings

Southern Forests (Cockle Creek to Upper Derwent)

A substantial proportion of the forested ENGO-proposed reserves adjoining and adjacent to the eastern boundary of the Tasmanian Wilderness World Heritage Area were found to have important conservation values. If added to the adjoining TWWHA they would make important contributions to its integrity. Many of these values derive from the area's tall eucalypt forests but a significant number of areas other important hjeritage attributs including karst, caves, Aboriginal sites and glacial features. Given their adjacency, these important attributes would add to the values and integrity of the TWWHA. Particular attention is drawn to the potential in these areas to maintain ongoing natural processes, especially those directly relevant to the TWWHA.

- Picton–Huon–Weld and Styx valleys

  Notwithstanding that significant areas have been logged, a holistic long-term view was taken in establishing the contribution that the areas can make to conserving tall eucalypt forest and associated ongoing natural processes. Some rehabilitation will be necessary to restore the ecology of the area in the longer-term.

- Styx River

  This is an area of outstanding conservation value and of global significance. It is also a complicated area given the extent of recent logging, which has degraded the natural integrity of the forest landscape. The conservation values are high enough to warrant taking a holistic long-term approach, which must include rehabilitating degraded areas, including removing recently-introduced eucalypt species. The Styx offers one of the rare opportunities to protect tall eucalypt rainforest at a scale and nature that makes it possible to maintain ecosystem processes in the longer term. It also includes a good representation of the world's tallest flowering plant, *Eucalyptus regnans*.

- Upper Florentine–Mount Field

Assessing some of the ENGO reserves in this area led to considering Mount Field National Park as an integral part of the cluster of conservation attributes. As a result, it is recommended that Mount Field National Park, together with associated ENGO-proposed reserves and public reserves, be added to the Tasmanian Wilderness World Heritage Area.

- Upper Derwent

  The assessment confirmed the conservation importance of tall eucalypt forest on the west side of the Derwent Gorge. It also confirmed the importance of the potential restoration of previously identified wilderness values and the appropriateness of adopting the Derwent Gorge as a permanent boundary to the World Heritage Area.

West Coast (between TWWHA and the west coast, south of Pieman River)

It has long been recognised that this region has very important conservation values. There is also considerable interest in known and prospective mineralisation that has prevented the area being reserved as national park and/or being added to the TWWHA. Under the World Heritage Convention, there is an obligation on State Parties to at least identify and protect World Heritage values. This assessment contributes to identifying World Heritage values. Every opportunity should be taken to at least upgrade the level of protection of these areas, if not add them to the World Heritage Area.

An aggregate of ENGO-proposed reserves and associated formal reserves identified as being collectively of World Heritage value and recommended for addition to the TWWHA is illustrated on the appended map (Map 1).

Northern TWWHA (Great Western Tiers, Central Plateau, Mole Creek Karst, Mersey, Cradle Mountain)

Great Western Tiers

- Some obvious ‘clusters’ or ‘themes’ were adopted to assess the heritage values and significance along the northern boundary of the Tasmanian Wilderness World Heritage Area. Many of the ENGO-proposed reserves adjoining or adjacent to the northern boundary proved to contain significant conservation values, which made important contributions to the values and/or integrity of the TWWHA. That is, they are of World Heritage significance. The net result of the assessment of the lands below the cliffs of the Great Western Tiers is a shift in the northern boundary of the TWWHA from the plateau to below the escarpment—although some related precedents already exist. Most of the proposed additions below the escarpment are obvious.

Central Plateau

- Some areas were found to be of definite importance for adding to the TWWHA. It is apparent, however, that on more eastern parts of the Central Plateau the values need to be reviewed to design a robust and sustainable north-eastern boundary for the TWWHA. More detailed study is required in this area.

Mole Creek Karst

- The ENGO-proposed reserves in the Mole Creek karst region were demonstrably of potential World Heritage significance. The ENGO-proposed reserves provide the opportunity for an important consolidation of karst protection and the addition of the balance of Mole Creek Karst National Park to the TWWHA.

As with the Tarkine and the North East, the juxtaposition of the ENGO-proposed reserves with existing formal reserves is critically important to both assessed values and significance, as well to consolidating protection.

Tarkine cluster

This cluster was assessed as having very high conservation value of at least National Heritage significance and substantial values of global (World Heritage) significance. As with a number of other cluster sites, the existing formal reserves make a major contribution to the overall heritage value and significance of the Tarkine. It was noted that the area currently the subject of National Heritage assessment by the Australian Heritage Council has had excised from further consideration some areas which the author has assessed as potentially very important to the area's integrity, especially its ecological integrity (Sumac Road area). An area recommended for consideration as a World Heritage nomination is shown on the attached map (Map 1). Note that the Tarkine might best be considered as an extension of the Tasmanian Wilderness World Heritage Area, especially given the likely connectivity between the two.

North Coast ENGO reserves

A series of ENGO-proposed reserves along the north coast and not associated with the Tarkine, TWWHA or the North East cluster were separately assessed and presented in the report findings. Although most contained significant conservation values of state significance, none were considered to achieve global (World Heritage) level significance. Several clusters were assessed to be of National Heritage significance as follows:

- Dismal Swamp
- Rare plant community plus important geoconservation feature.
- Shakespeare Hills—Dip Range ('Keith River Cluster' on map)
- A substantial tract of land that is linked to the Tarkine to the south and was considered as a potential part of a Tarkine protected area. Some potentially have values which contribute to a World Heritage listed Tarkine. Based on the major extent of this cluster and its direct link to the Tarkine, the area was assessed, albeit with limited available data, as likely to be of national significance and should, as a precaution, be assessed as such.
-

North East cluster

The North East and East Coast were found, with minor exceptions, to be so interconnected that they were assessed as two aggregate areas or 'clusters'. The combined effect of all the existing formal reserves and the ENGO-proposed reserves is that it is potentially a single protected area with a high degree of connectivity between component parts. This was no surprise given the way the 'linking landscapes' concept had guided selection of the ENGO-proposed reserves.

It also became apparent during the assessment that the north east of Tasmania, as well as comprising bioregions separate and distinct from those in western Tasmania, also demonstrated biodiversity and genetic differences when compared with western Tasmania. This was supported by a growing amount of research. It suggests a long-standing separation of the respective biotas—the 'two Tasmanias'. This evolutionary separation contributed to assessment of the North East-East Coast cluster(s) to be of National Heritage significance.

It is very important to recognise that it is the combination of the existing reserves and the ENGO-proposed reserves that elevated the assessed significance to national significance.

Notwithstanding, 'core areas' such as Ben Lomond and Mount Maurice might independently rate as being of national significance because of the concentration of conservation values (rainforest, tall eucalypt outlier, glacial, geoconservation, threatened plant communities)

The aggregate clusters in the North East and East Coast that are assessed as being of national heritage significance are illustrated on the attached map. They are:

North East cluster

- The North East cluster is illustrated on the accompanying summary map (Map 1). This map shows the overall extent and interconnectedness of the existing and proposed reserves.

Douglas Apsley (East Coast) cluster

- The reality is that the assessment process discovered that connectivity between the North East Cluster and the Douglas Apsley cluster was reasonably effective. This illustrates that the National Heritage significance of both clusters are ecologically linked. Indeed, the two clusters should be considered conceptually as a single protected area complex.
- As with the Southern Forests, industrial logging of the forests in the North East has now reached a critical stage, or more to the point the remaining unlogged forests have reached a critical stage. Unless the opportunity is taken to protect these remaining forest remnants, the North East will be quickly reduced to an archipelago of island reserves. This verification process has demonstrated that option for an integrated connected reserve system remains an option—maybe a case of a single 'Swiss cheese' reserve versus an archipelago of island reserves. Even the 'Swiss cheese' protected area option is of much greater heritage conservation value than a landscape reduced to isolated islands.

Other National Heritage reserves

Several other ENGO reserves or clusters of reserves not addressed in the above categories were assessed to meet National Heritage criteria. They are:

- Wellington Range

  This was originally considered as an integral part of an ENGO-proposed reserve that adjoined the World Heritage Area. It was decided that, notwithstanding the increasing evidence of the conservation values of the Wellington Range, it would not be appropriate as an addition to the World Heritage Area. This significant tract of mostly eucalypt forest undoubtedly has important conservation values as well, because of its connectivity to the World Heritage Area. It could, therefore, be seen as complementing the TWWHA. Together with Mount Wellington, the Wellington Range was assessed to be of National Heritage significance.

- Bruny Island

  The ENGO-proposed reserves on Bruny Island were assessed as a cluster that included South Bruny National Park. A selection of the ENGO-proposed reserves, the ones that were most relevant to the National Park, was assessed as being of National heritage significance. The habitat of a nationally endangered species, the Swift parrot, was an important contribution to the assessment.

- Tasman—Forestier Peninsula

  The combination of conservation values in the cluster comprising both the ENGO-proposed reserves and Tasman National Park were considered to be potentially of National Heritage significance. A small part potentially makes a contribution to the landscape integrity of the adjacent Port Arthur section of the Convict Sites World Heritage Area.

The combination of the assessments, verification of national or world significance and subsequent recommendations offers the opportunity to greatly improve the values and integrity of the TWWHA and to create a more robust and appropriate permanent boundary to the area. Given that much of the assessment was conducted using a holistic approach it would be a mistake to disaggregate the various parcels when considering implementing as a significant number of land parcels are interdependent.

The need for more detailed investigation of some localities has been identified. This includes the need for 'gap filling' in some important breaks in connectivity. Further conservation planning is needed to establish robust and more appropriate boundaries, especially in the North East.

The assessment process was significantly constrained by data deficiencies for some individual ENGO-proposed reserves and so further investigation is recommended in those instances. Deficiencies in data available at the time prevented verification in a number of cases where significant conservation values appeared likely. More detail for some areas is available in the body of the report.

Finally, it is apparent that many of the ENGO-proposed reserves have a sound base in conservation planning. Many will make very important contributions to the existing Tasmanian Wilderness World Heritage Area, adding both to the integrity of the area and in many cases to a more robust and appropriate boundary than presently exists. The Tarkine emerged as an area of outstanding heritage value of World Heritage significance. The verification process confirmed the importance of the 'linking landscapes' concept in the North East and the East Coast. The national significance of the North East and closely associated East Coast clusters emerged from the assessment process.

Background

Issues relating to the Tasmanian Wilderness World Heritage Area (TWWHA)

The eastern boundary of the Tasmanian Wilderness World Heritage Area has long been recognised as unsatisfactory. Many areas, which are contiguous with the World Heritage Area, have been omitted from inclusion in the TWWHA despite being evaluated and recommended for World Heritage listing by IUCN as far back as 1988.

The 1988 IUCN field evaluation identified a number of tall forest areas, which should have been included in the World Heritage Area. The findings of the 1988 IUCN field mission report are reflected in IUCN resolution 18.70.

Despite numerous attempts to resolve the issue, including a reactive field mission in 2008, the World Heritage Committee, at its 32nd session in Quebec City 2008 reiterated an invitation to the state party to 'consider at its own discretion, extension of the property to include appropriate areas of tall eucalyptus forest, having regard to the advice of IUCN', and made a similar request regarding cultural sites.

Conflict has been ongoing between commercial logging operations and areas recognised to have World Heritage value by all relevant heritage experts. This has ensured that the logging operations and the subsequent damage to these forests, which are essentially 'World Heritage in waiting', have remained controversial. It has also prompted many attempts by Tasmanian and Australian Governments to resolve this issue.

The most recent recommendation by IUCN adopted at the 4th World Conservation Congress in October 2008 states the following:

The World Conservation Congress at its 4th session in Barcelona, Spain, 5–14 October 2008

4.124 Forest conservation in Tasmania

RECALLING Recommendation 18.70 *Wilderness and Forest Conservation in Tasmania* adopted by the 18th IUCN General Assembly (Perth, 1990) and Recommendation 19.89 *Forest Conservation in Tasmania, Australia* adopted by the 19th IUCN General Assembly (Buenos Aires, 1994);

NOTING that IUCN is committed to the importance of maintaining the integrity of the IUCN Protected Area Categories;

NOTING that in decision 32 COM 7B.41, taken by the World Heritage Committee at its 32nd session (Quebec City, 2008), the Committee *'Reiterates its request to the State Party to consider, at its own discretion, extension of the property to include appropriate areas of tall eucalyptus forest, having regard to the advice of IUCN';*

NOTING that IUCN's advice to the 32nd session of the World Heritage Committee included the following: 'In the view of IUCN, it would be desirable that a moratorium on logging activity in areas of potential outstanding universal value be considered, as logging in these areas would foreclose the option of adding these areas to the property';

ALARMED that most of the forests in the nine areas identified in IUCN Recommendation 18.70 (Beech Creek/Counsel River, Wylds Craig, Gordon and Tiger Range, Upper Florentine, Upper Styx, Middle Weld, Middle Huon, Picton Valley and Southeast Cape) are still under threat from logging activities;

RECALLING that Recommendation 18.70 called on the Tasmanian State Government and the Government of Australia to protect all National Estate areas contiguous with the current

Western Tasmanian Heritage Site and the temperate rainforests of north-west Tasmania already listed on the Register of the National Estate; and

AWARE that these areas together with the Tasmanian Wilderness World Heritage Area comprise one of the world's greatest temperate wilderness areas and are home to rare and threatened species such as the Tasmanian Wedge-Tailed Eagle *Aquila audax,* the Spotted-Tail Quoll *Dasyurus maculatus* and the Giant Freshwater Crayfish *Astacopsis gouldi;*

The World Conservation Congress at its 4th Session in Barcelona, Spain, 5–14 October 2008

CALLS ON the Tasmanian and Australian Governments to implement urgently decision 32 COM 7B.41 of the 32nd session of the World Heritage Committee (Quebec City, 2008) in which the Committee: *'Reiterates its request to the State party to consider, at its own discretion, extension of the property to include appropriate areas of tall eucalyptus forest, having regard to the advice of IUCN',* and recalls IUCN advice to the World Heritage Committee that: ***'it would be desirable that a moratorium on logging activity in areas of potential outstanding universal value be considered, as logging in these areas would foreclose the option of adding these areas to the property'***.

The Australian Government responded to decisions WHC 34 COM 7B.38 and WHC 34 COM 8B.46 on 1 February 2012.

World Heritage Committee decision: 34 COM 7B.38

The World Heritage Committee:

1. Having examined Document WHC-10/34.COM/7B
2. Recalling Decision 32 COM 7B.41, adopted at its 32nd session (Quebec City, 2008)
3. Recognises the efforts made by the State Party to address the actions requested in Decision 32 COM 7B.41
4. Welcomes the submission of a draft Statement of Outstanding Universal Value for the property
5. Thanks the State Party for proposing a minor modification to include 21 formal reserves within the property that are already covered by the Tasmanian Wilderness World Heritage Area Management Plan, also welcomes its commitment to add the Melaleuca–Cox Bight area to the property once mining licences have expired, and also recalls its request regarding the potential for further additional areas to be considered at the discretion of the State Party for eventual addition to the property
6. Notes the potential for impact on the integrity of the existing World Heritage property from adjoining forestry operations, and requests the State Party to maintain rigorous assessment and management systems to ensure that no such impacts arise;
7. Also requests the State Party to finalize as soon as possible the creation of a mechanism involving all relevant stakeholders, to monitor, assess and manage the impact of forestry operations, road construction and regeneration on the integrity of the Tasmanian Wilderness World Heritage Area, and adjoining reserves, as previously requested by the Committee;
8. Further requests the State Party to submit to the World Heritage Centre, by 1 February 2012, an updated report on the state of conservation of the property, especially on the outcomes of the monitoring arrangements focusing specifically on the impact of the logging operations and road construction on the Outstanding Universal Value of the existing property, for examination by the World Heritage Committee at its 36th session in 2012.

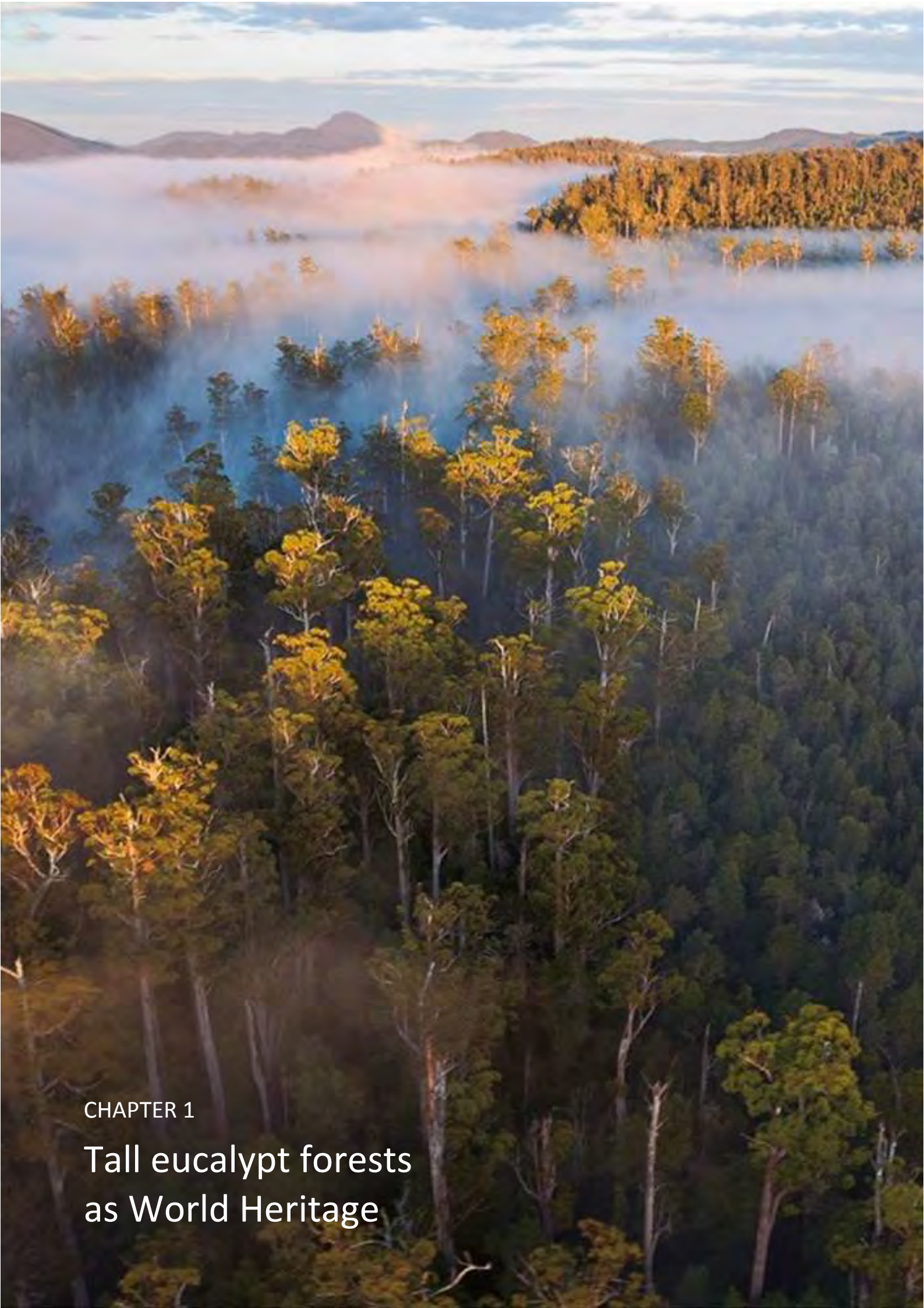
The Australian Government, in its report to the World Heritage Committee of 1 February 2012, advised that:

> The Australian and Tasmanian Governments have entered into a new process to further protect Tasmania's public native forests while also ensuring a sustainable forestry industry.
>
> The Prime Minister, the Hon. Julia Gillard MP, and the Tasmanian Premier, the Hon. Lara Giddings MP, signed the Tasmanian Forests Intergovernmental Agreement on 7 August 2011. This delivers on the governments' commitment to provide certainty for Tasmania's forestry industry, for local jobs and communities, and further protection for the state's ancient forests.
>
> Under the terms of the agreement, significant iconic areas adjacent to the Tasmanian Wilderness World Heritage Area will be given interim protection from logging activities, including the Upper Florentine, and areas within the Styx, Huon, Picton and Counsel River valleys, while an independent verification process to assess the values of these areas and available timber reserves is undertaken. Following conclusion of this verification process, the Tasmanian Government will provide legislative protection for those areas identified as being of high conservation value and compatible with wood supply guarantees to the forestry industry. This protection will be provided by the Tasmanian Government through appropriate forms of land tenure, and may include possible nomination of appropriate areas for inclusion in the Tasmanian Wilderness World Heritage Area.

This verification process confirms the previous evaluations, in finding that the eastern boundary of the Tasmanian Wilderness World Heritage Area is unsatisfactory and currently does not include many areas already evaluated by IUCN to be of outstanding universal value.

New information obtained as part of the verification process substantially increases our understanding of the global significance of the tall eucalypt forests contained within these areas and reinforces the need for their inclusion within a revised World Heritage area.

A map is attached with a recommended revised boundary, in line with IUCN's recommendations and the Australian Government's undertakings to the World Heritage Committee to resolve this long-running problem.



CHAPTER 1

Tall eucalypt forests as World Heritage

Chapter 1

Tall eucalypt forests as World Heritage

Global and national context of 'tall eucalypt forests ecosystem'

Introduction

To understand the ongoing debate about conserving so called 'tall eucalypt forests' in Tasmania, and in parts of Australia, it is essential to understand the ecology and global heritage significance of these forests.

The adequacy of protection of the tall eucalypt forests of Tasmania, and especially those along the eastern boundary of the Tasmanian Wilderness World Heritage Area has been debated for decades.

It is essential to understand the context, both temporal and spatial of any places or features of potential heritage significance such as the tall eucalypt forests, in order to assess their significance.

A number of the ENGO-proposed reserves, the subject of this heritage verification processes comprise tall eucalypt forests, in particular in the 'Southern Forests', from Cockle Creek near South Cape northwards along the World Heritage boundary to the Upper Derwent. Tall eucalypt forests are also present in a number of other ENGO-proposed reserves elsewhere, such as in the Tarkine and the North East of the state.

Defining tall eucalypt forest

Tasmania is renowned for its 'giant trees', with individual trees that have been measured being very tall even by global standards. The 'giant trees' of Tasmania are just four to five species of tall growing eucalypts that make up the tall eucalypt forests. The individual trees are undoubtedly of outstanding heritage value and contribute to assessment of the overall heritage values of the forests in which they occur. No-one disputes the importance of individual giant trees and their heritage significance at the state, national or global levels. But individual trees are not forests although they are useful indicators of where the best developed tall eucalypt forests are.

The tall eucalypt forests and the ecosystems of which they are a part, and how to define and recognise them have been the subject of debate for decades. Scientists, foresters and conservationists often see the forests differently but for conservation and heritage assessment it is important to understand them and preferably have a defensible definition. A very recent unpublished paper (Tng, Williamson, Jordan et al. 2012) has adopted a stand height of 70 metres for defining the 'Giant Eucalypt Forests'. Others have nominated stand heights ranging from 40 metres to 65 metres for 'tall' eucalypt forests but the perceptions and understanding of what it is that is being defined vary significantly.

The simple matter is that the tall eucalypt forests of Tasmania, Australia, indeed the world, have not yet been defined by consensus because we are still trying to comprehend where they fit into the ecology of the world's forests. But by describing their origin, location, appearance, and ecology we are getting closer to being able to find the concepts and terminology that will eventually define them. They are not just forests made up of tall growing eucalypts, and this is one of the confusions. The reality is that the tall eucalypt forests are distinguished by the

fact that they occupy 'rainforest habitat', habitat with climate and soils conducive to the development of rainforest. Little surprise then that both eucalypt and rainforest species may cohabit such sites, leading to the dichotomy of those who seek to interpret such forests as either 'eucalypt forest' or as 'rainforest', even giving them a name that is neither, such as 'mixed forest'. 'Tall eucalypt forests', sometimes qualified as 'tall (wet) eucalypt forest', is one term in use that seeks to recognise the distinctiveness of these forests. It is adopted in this report to be consistent with the popular use of the term.

In order to spatially identify tall eucalypt forest a conceptual model has to be adopted, Hitchcock 2012 (in prep) has reviewed current thinking, research and methods for considering the 'tall forest ecosystem'. While acknowledging that a definition is not yet possible there are three components identified which can be used to establish an indicative spatial layer for this ecosystem in Tasmania.

The three components that can be spatially identified using current available data are: Vegetation Community, Height Potential, (by using height potential data the analysis is constrained to public land), old-growth and Forestry Tasmania's disturbance classes. Old-growth and regeneration year are surrogates for condition. Appendix 1: Spatially Identifying Tall Eucalypt Forests in Tasmania further describes the approach adopted to spatially identify tall eucalypt forests.

As several authors have documented, the delimitation of rainforest and mixed forests from sclerophyll forests has led to considerable debate, especially between conservation and forestry groups (Lynch & Neldner 2000, Bowman 2000, Kirkpatrick & DellaSella 2011). These debates demonstrate that the definition of these vegetation types can have significant implications for the conservation and management of these systems. (Williams 2012, unpublished)

Definition 1

Rainforest in Australia is a tree-dominated plant formation, where the tallest tree layer is usually closed (with a projective foliage cover of greater than 70%) and greater than 5 m in height. Rainforest also includes tree- dominated plant formations where the tallest tree layer is not closed (projective foliage cover of less than 70%) and the canopy is less than 5 m high, but the tallest trees are rainforest species. (**Additional qualifying criteria for Definitions 2 and 3). Rainforest plant species are adapted to regenerating in the low-light conditions experienced under the closed canopy or in localised gaps caused by recurring disturbances which are part of the natural rainforest ecosystem, and are not dependent on fire for successful regeneration. The closed-canopy mangrove communities are specially adapted to the intertidal zone, and should be considered a distinct formation.

Additional qualifying criteria for Definition 2

**The ecological definition of rainforest includes transitional (ecotonal) and seral (secondary or mixed) communities with a minimal (to be defined—somewhere between 5 and 50%) component of emergent non-rainforest species, where the community is of similar botanical composition to mature rainforests in which non-rainforest species are absent.

Additional qualifying criteria for Definition 3

**The ecological definition of rainforest includes the late successional stages of transitional (ecotonal) and serial (secondary or mixed) communities with emergent non-rainforest species in their older growth stages, where the community is of similar botanical composition to mature rainforests in which non-rainforest species are absent.

Box 1: A nationally applicable rainforest definition developed by Lynch & Neldner (2000) designed to apply across Australia. The first definition forms the basis for all three

recommended definitions. The additional two definitions incorporate mixed forests. in Williams 2012 (unpublished)

There is a tendency to recognise three components in the rainforest—wet sclerophyll eucalypt forest, with an intermediate or transition forest being described, perhaps rather aptly, as 'mixed forest' (Williams 2012), that is:

- rainforest
- mixed forest
- wet sclerophyll eucalypt.

Context for assessment

In the quest to understand the tall eucalypt forests, it is instructive to explore the evolving knowledge of their origins in a geological time scale.

Separation of the Australian continental plate* from Antarctica, the final step in the breakup of the Gondwana super-continent, saw Australia drifting northward for the next 60 million or more years. The overall climate change inflicted first by the separation (resulting in creation of a circumpolar ocean current) and northward drift (increasing warmth) ultimately led to incremental drying of the continent, especially in the past two million years. This imposed a dramatic but incremental shift from the presumed previously vast rainforest cover of Australia subsequent to separation, favoring sclerophyllous vegetation adapted to increasingly drier conditions.

* Includes much of what is now the island of New Guinea, being part of the Australian tectonic plate.

Many elements of the moisture-loving rainforest vegetation characteristic of Gondwana prior to the split of Australia from Antarctica failed to adapt to the dramatic drying of the continent. This led to extinctions or vegetation being forced to retreat to those increasingly limited areas where climatic conditions remained conducive to their survival—climatic refugia. Western Tasmania is an obvious example of such refugia and hence the survival of many cool temperate rainforest species and communities in that region.

The rainforests of predominantly Gondwanan species on the Australian continent (includes New Guinea up to 6,500 years ago) retreated to the point where today, circa 60 million years since the Australian continent split from Antarctica, they are now largely limited to just a scatter of relict forests in Tasmania, in south-east and eastern mainland Australia and in the cooler mountains of New Guinea. Other continental and island fragments of Gondwana also retained some of the Gondwanan rainforest, notably South America and New Zealand where southern beech forests (*Nothofagus* species) survive to the present.

The two areas of greatest extent where cool temperate forests survive on the Australian tectonic plate are in the wet highland regions of New Guinea and the wet mountains of western Tasmania, including the Tarkine. Smaller isolated relict communities survive in the highlands of North East Tasmania, the Otway Ranges in Victoria and mountainous terrain along the Great Dividing Range and Great Eastern Escarpment from eastern Victoria to the Wet Tropics of northern Queensland.

In response to the increasingly drier conditions, some elements of the Gondwanan biota, both plants and animals, were favored and underwent major evolutionary adaptation and radiation into the new drier habitats. Most spectacularly the eucalypts evolved into a diverse array of hundreds of species that would eventually occupy and dominate almost every one of the new niche habitats across the continent. Although a few species escaped into islands north of the Australian plate, the eucalypts and their many close relatives have become synonymous with the Australian continent, a distinctly Australian biota. Only nine eucalypt species are not

found in Australia. No other continent has a comparable extant biota so distinctly different to all other continents.

A recent study of 52 million-year-old (Eocene) fossils discovered in Patagonian Argentina in South America reveals graphic evidence of plants that we would today recognise as eucalypts. This raises the possibility that ancestral eucalypts had already evolved in Gondwana prior to the separation of Australia and Antarctica and likely prior to the separation of South America from Antarctica. Although it was long believed that the eucalypts evolved in situ in Australia (Specht & Specht 2002), long after separation from Antarctica, it is now apparent that the evolutionary history of the eucalypts is much older and likely existed prior to final breakup of Gondwana (Gandolfo et al. 2011).

Furthermore, other fossil evidence from the 52 million-year-old Patagonian fossil site reveals that the 'eucalypts' of Patagonia closely coexisted with rainforests, suggesting the cohabitation or interaction of eucalypts with rainforest has a much older history than some have previously assumed.

> The presence of Eucalyptus in Eocene South America, however, adds a new dimension to what was once a regionally limited understanding of the biogeographic history of the genus and suggests that Eucalyptus also once occurred on Antarctica, because this continent served as a connection between Australia and South America during the Paleogene. —Gandolfo et al. 2011

Based on the South American fossils, it is apparent that the present day eucalypts in Australia are directly traceable to ancestral eucalypts prior to the split from Antarctica, suggesting eucalypts are every bit as Gondwanan as the much publicised rainforests, indeed that perhaps they have coexisted and likely cohabited since before the split of Australia from Antarctica.

The question arises as to whether the present day eucalypt species that compete with rainforest are direct descendants of the ancestral eucalypts that occupied the same ecological niche in Gondwana. While it is tempting to conjecture that the 'tall eucalypt' species of today are the direct descendants, the evidence is not yet definitive. The eucalypt fossils certainly have characteristics that are shared with at least one modern eucalypt (*E. microcorys*), a feature tree of tall eucalypt forests of northern New South Wales where it is often found in close association with Gondwanan warm temperate rainforest.

> Eucalypts and rainforest species have coexisted for 27 million years, in Victoria at least. The widespread radiation of sclerophyllous taxa appears to have occurred around 20 Ma, with wet eucalypt forest and mixed forest communities identified elsewhere around 10–15 Ma. —Williams 2012

> While our understanding of the evolution of eucalypt species continues to grow, especially given new analytical techniques, it is likely that wet eucalypt forests and mixed forests have existed widely in some form for at least 10–15 million years. Given that there is strong fossil evidence *Nothofagus* and eucalypts coexisted as long ago as 27 Ma (Steart et al. 2005), certain vegetation associations go back even further in some parts of Australia. The recent discovery of eucalypt macro-fossils associated with rainforest species in Patagonia, and new phylogenetic analyses (e.g. Crisp et al. 2011), raise many questions about the evolution and interaction of eucalypt and rainforest taxa. These and other studies point to a longer and more geographically diverse evolutionary history for eucalypts than previously thought. —Williams 2012

Given the latest evidence of the evolutionary history of the eucalypts, particularly the fossil evidence from South America, it seems likely that ancestral eucalypts not only coexisted with but cohabited with rainforest in Gondwana and that the competitive interaction between these two communities is perhaps not a newly evolved phenomenon but rather one of great antiquity. Only further fossil evidence, particularly from Australia, is likely to reveal the extent of that antiquity.

The eucalypt and eucalypt-related biota has undergone adaptive radiation to almost every habitat in the continent, from near desert conditions, to hot monsoon tropical to alpine environments. Most eucalypt species now occupy habitats where conditions are no longer conducive to rainforest plants and therefore development of rainforests.

The eucalypts as a whole demonstrate extraordinary adaptation to a huge spectrum of habitat types across Australia and the islands to the north of Australia. It is, however, only a select few species that have remained in or adapted to life in the relatively uncommon higher rainfall/wet conditions. This brings them into direct competition with the shade tolerant rainforest species and hence closed canopy rainforests.

A relatively select few species of the hundreds of eucalypts presently occupy rainforest habitats and are able to compete with or become part of a rainforest. Increasingly the tall eucalypt forests existing in rainforest habitat and which cohabit with rainforest plant and animal species are increasingly being described by ecologists as rainforests (Tng et al. 2012) To the lay person the question is naturally 'how can a eucalypt forest develop in rainforest habitat, let alone be called a rainforest?'

All of the more than 600 species of eucalypts* share one particular characteristic, that of being essentially **shade intolerant**. As a consequence they require direct sunlight to germinate. Eucalypts therefore cannot regenerate under a shading rainforest canopy, but as can be readily demonstrated in many parts of Tasmania, the east coast forests of Australia, New Guinea, Sulawesi (Indonesia) and the Philippines, eucalypts are commonly found in rainforests—but only as an emergent tree with the crown held above the shading rainforest.

> * Eucalypts is here used in the broader sense (sensu lato) and includes the related taxa such as Eudesmia, Corymbia and Angophora.

Those distinguishing evolved characteristics of the tall (wet) eucalypt species, which are able to occupy rainforest habitat, even cohabit with rainforest, include:

- ***Tallness*:** only those eucalypt species capable of growing taller than rainforest would be capable of surviving the shading canopy of rainforest; the taller the rainforest the taller eucalypt must be to compete.
- ***Rapid growth*:** to facilitate growth at a rate faster than competing rainforest species. This allows eucalypts to take advantage of the rare occasion of exposure of the forest floor to light as a result of fire or other gross disturbance, so ensuring continued site occupation, albeit with a rainforest understorey.
- ***Flammability*:** the flammability of eucalypts and their litter (e.g. oil rich leaves, durable and combustible wood) plays an essential role in destroying the shading rainforest species to expose mineral soil conducive to germination of eucalypt seed.
- Seeds which are:
    - ***protected*** from dry conditions and fire (held high up tree, non-fleshy and in thick walled capsules and so not vulnerable to desiccation)
    - ***durable*** so can germinate in any season
    - ***abundant*** so as to maximise rare opportunities for germination.

Even equipped with those evolved characteristics, for any tall eucalypt species to continue to occupy a 'rainforest' site beyond one generation, the externalities of fire or other intense site disturbance are critically important. Most 'tall eucalypt' species in Australia, from tropical north Queensland to southern Tasmania are heavily dependent on fire, high intensity fire, to destroy rainforest and prepare the seedbed. *Eucalyptus deglupta* in tropical rainforests of New Guinea, Indonesia and the Philippines relies more on mass soil movement as a result of river erosion or landslip for life-giving site disturbance, and much less on fire. But the principles are the same; removal of any shading and exposure of mineral soil to allow germination.

It should be no surprise that modern forestry practice in Tasmania, which puts a premium on eucalypt wood, attempts to simulate nature with a combination of clear felling and applying intense fire. This removes the shading rainforest understory and exposes the mineral soil by burning any debris or peaty soil mat on the forest floor.

Forestry practices may be capable of maintaining a stand of eucalypt trees but are incapable of doing so for the natural ongoing ecological processes that are so important for keeping the whole ecosystem and on which a premium is placed for ecologically-based conservation.

The tall eucalypt forests—a class assessment

What makes the tall (wet) eucalypt forest ecosystem globally significant?

The expert workshop convened in 1999 reporting on the 'World Heritage Eucalypt Theme' reported, inter alia:

> The eucalypts are widely regarded as globally outstanding and as an exemplar of the unique character and diversity of the Australia biota (e.g. see Blakers 1987, Busby 1992, Mosley & Costin 1992, Kirkpatrick 1994). Factors important in contributing to the outstanding universal value of the eucalypts include their ancient Gondwanan origins and their subsequent evolution which parallels the geological and ecological history of the Australian continent, their success in dominating the majority of woody ecosystems throughout an entire continent, the diversity of their growth forms which range from the tallest hardwood forests in the world to prostrate shrub forms, the wide diversity of the communities which they dominate, and their unique ecology. —Expert Workshop Report: World Heritage Eucalypt Theme 1999

Comment

It should be noted that the expert panel workshop was held within the context of the Regional Forest Agreements. It is apparent that this constrained the approach adopted. Other points worth mentioning to provide a context for this section include:

- The process was limited to a thematic approach—one developed for cultural heritage but later applied to natural heritage (see box right). However, it is not intended to be the only basis for identifying natural heritage values.
- It relies on a 'theme to place' sequence rather than a 'place to values' approach which is the fundamental of the World Heritage Convention. The thematic approach constrains addressing the context of a place, which could be critical for natural heritage.

> The Global Strategy was initially developed with reference to cultural heritage. At the request of the World Heritage Committee, the Global Strategy was subsequently expanded to also include reference to natural heritage and combined cultural and natural heritage. http://whc.unesco.org/en/globalstrategy)
>
> (Explanatory note in Operational Guidelines 2008)

- In identifying possible places, the expert panel considered only 'forested' areas as defined in the National Forest Policy Statement (Commonwealth of Australia 1992) and did not consider other areas with eucalypt-dominated vegetation such as woodlands or mallee, thereby truncating the definition of the eucalypt theme.
- 'It should be noted that for some regions, governments have agreed that any potential World Heritage nomination can be achieved from within the CAR Reserve System.' (Expert Workshop Report: World Heritage Eucalypt Theme 1999)

This suggests a limit to the sites that might be considered:

> The Panel also took a wider view of the genus *Eucalyptus*. For example, it commented that a best global representation of eucalypt-dominated vegetation in Australia 'would necessarily be based on a series of areas. The areas would, together, represent the major types of ecological relationships exhibited by the genus *Eucalyptus* (sensu lato) [i.e. in the broad sense] including such taxa as *Eudesmia*, *Corymbia* and *Angophora*, the major structural types and the floristic variation in the genus. —World Heritage Report 1997b
>
> Two hypotheses have been proposed: either the fossils represent an ancient lineage for the eucalypts which was more widely distributed in Gondwana prior to the break-up or, alternatively, the fossils resulted from long-distance dispersal either from Australia or from some other part of the natural distribution of the eucalypts. Either hypothesis might explain the New Zealand fossils, whereas verification of the South American fossils as eucalypts would constitute stronger support for the former explanation. There is no clear fossil evidence to support either of these explanations to date. —World Heritage Report 1997b.

Comment

Update—The South American fossils have now been confirmed as 52 million-year-old eucalypts, adding strong support for the option of 'fossils representing ancient lineage for the eucalypts which was more widely distributed in Gondwana prior to the break-up'. The ancient lineage is further reinforced by the great similarity in the fossil eucalypts to the modern eucalypts, indicating that the eucalypts were already evolved and recognisable as eucalypts 52 million years ago. This raises the likelihood that eucalypts existed prior to the final break-up of Gondwana.

> Certain species of eucalypts can attain great size in response to the high rainfall conditions and the deep, relatively fertile soils of the continent's most resource-rich environments. These exceptional species constitute the tall open eucalypt forests of Australia. They have been described as the 'supreme expression of the genus Eucalyptus sensu lato.' —Ashton 1981a. (Emphasis added)

Comment

This tends to follow the traditional approach in not referring to the associated rainforests and attributing exceptional 'great size' to rainfall and soil. All such species have of course evolved those characteristics and many can reach such sizes even on poorer soils. Rainfall is the key, bringing them into typical rainforest habitat and hence rainforest.

Summary comments on workshop:
The workshop focused mainly on the 'representative' approach to identifying representative examples of eucalypt forests that exhibited the nominated features considered to be of 'outstanding universal value'. The workshop dealt with all eucalypt forests, and was not limited to tall eucalypt forests.

The thematic approach leading to identifying areas that exhibit predetermined features of 'outstanding universal value' must be seen as only one approach and very limiting when analysed in the full context of World Heritage criteria. The usual approach under the convention is area-specific but the thematic approach can be integrated into an area specific approach as a way of informing assessment at the area level.

The author does not argue against the importance of recognising the global significance of the eucalypt biota. There is a case for special consideration for the tall eucalypt forests, beyond the confines of the 'eucalypt theme' guiding the expert panel, viewing them for both for what Ashton describes as 'supreme expression of the genus *Eucalyptus* sensu lato' (Ashton 1981)

and as 'superlative natural phenomena' (World Heritage Criterion [vii]). A wider view of the tall eucalypt forests is presented in the following preliminary assessment.

Tall eucalypt forest and World Heritage Convention—a preliminary assessment

With the eucalypt-dominated vegetation being such a ubiquitous part of the Australian landscape, even extending beyond Australia, it might well be asked what is so special about tall eucalypt forests? What makes them of World Heritage significance?

The eucalypts (including the 13 sub-genera e.g. *Corymbia*) are the dominant botanical group in the vegetation of the Australian continent and so represent a unique and distinctive element in the context of the global plant world. The eucalypt group is exemplified by its evolutionary adaptation to major continental-scale climatic drying to the point where eucalypts now occupy a huge range of habitats and ecological niches across the continent and some islands beyond. But they also continue to occupy that unique ecological niche where they continue to directly compete with the shading rainforest that the ancestral eucalypts coexisted with for tens of millions of years.

The eucalypts of Australia present an exceptional biological* and ecological diversity of global significance—'many species, many places'.

> * '"Biological diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.' —Convention on Biological Diversity

The World Heritage nomination document for the Greater Blue Mountains in New South Wales had a primary focus on the eucalypt heritage:

> The crux of the case for its World Heritage listing could be said to lie in the outstanding universal significance of eucalypt-dominated vegetation, of which it represents the best single example through its outstanding richness of **species** in a protected area with large components of wilderness. (emphasis added) —nomination document 1998

The inscribed values for the now inscribed property record that, inter alia:

> The Greater Blue Mountains Area provides outstanding examples representing ongoing ecological and biological processes significant in the evolution of Australia's highly diverse ecosystems and communities of plants and animals, particularly eucalypt-dominated ecosystems.

While 'tall eucalypt forest' and rainforest are both present in the Greater Blue Mountains and often cohabit, both are now a relatively minor relictual part of the landscape, occupying the deeper, well-watered soils in steep valleys sheltered from frequent fire or on basalt-capped misty mountain tops. The rainforests here are warm and temperate with species of predominantly Gondwanan ancestry (*Cunoniaceae*, *Atherospermataceae*, *Escalloniaceae*) and the tall eucalypts are limited to a few species including *E. deanei,* a species not found in Tasmania, and *E. obliqua* which is shared with Tasmania. The overlap between tall eucalypt forest and rainforest is very short due to often-steep ecological gradients of deep valleys. The tall eucalypt-rainforest ecosystem in the Blue Mountains, being such a minor part of the landscape, are but a thin bookend to the otherwise impressive eucalypt story that can be told in this site.

The phenomenon of eucalypts occupying rainforest habitat can be found discontinuously through 50 degrees of latitude, all the way from Tasmania to the Philippines. The species may change through that huge distance but the ecological characteristics remain essentially constant. In the tropical forests of Sulawesi and Mindanao huge *E. deglupta* tower above dense tropical rainforest and regeneration is mostly in response to disturbance from soil mass movement, especially flood erosion along rivers (author observations). In the Wet Tropics of

Far North Queensland, *E. grandis* can be found towering above 'cool' tropical forest, albeit only in limited patches in the World Heritage listed parts on the Atherton highlands. Research has demonstrated that fire plays the essential role of providing disturbance of the rainforest for eucalypt regeneration (Tng et al. 2012, Hopkins et al. 1993).

Through southern Queensland and northern New South Wales the phenomenon of eucalypt forests occupying rainforest habitat is well developed with a suite of eucalypt species, indeed also eucalypt related species, interacting with rainforests that range from sub-tropical, through warm temperate to cool temperate (*Nothofagus moorei*). The overlap or extent of 'mingling of tall eucalypt and rainforest is in places quite extensive, with so-called 'transitional' forests that may be kilometres in width. The Gondwana Rainforests World Heritage Area provides outstanding examples of tall eucalypt forest that demonstrate much of the genetic and ecological diversity of tall eucalypt forests of the sub-tropics. See table below.

Examples of eucalypt-rainforest associations in Gondwana Rainforests World Heritage Area	
Rainforest type	**Typical tall eucalypt species**
Cool temperate (*Nothofagus moorei)*	*E. obliqua, E. fastigata*
Warm temperate (e.g. Coachwood, Sassafras)	*E. microcorys, E. laevopinea, E. viminalis,*
Subtropical (e.g. Mixed species such as Booyong, Cedar, Black Bean, Figs etc.)	*E. saligna, E. grandis, E. pilularis,*
Dry	

Tall eucalypt forests and the World Heritage criteria

There are four World Heritage criteria against which tall eucalypt forests might be assessed to test their World Heritage values and global significance. Tall eucalypts as a class of forest are evaluated against the criteria as a way of testing the World Heritage value and significance of tall eucalypts forests in general.

CAVEAT: The World Heritage criteria have been framed so that they can be applied to evaluate particular places or protected areas for the presence of World Heritage values. It follows that some of this assessment can only be indicative, as it is not area specific.

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

IUCN, the official advisory body to the World Heritage Committee, says of Criterion (vii):

2.22 Two distinct ideas are embodied in this criterion. The first, 'superlative natural phenomena', can often be objectively measured and assessed (the deepest canyon, the highest

mountain, the largest cave system, the highest waterfall, etc.). The second concept, that of 'exceptional natural beauty and aesthetic importance' is harder to assess and evaluation tends to be more subjective.

A substantial proportion of Australian World Heritage properties were inscribed on the World Heritage List against Criterion (vii) but most of those only invoke the 'exceptional natural beauty and aesthetic importance' element. There are, however, several Australian sites which have invoked the 'superlative natural phenomena' element including:

1. **Uluru-Kata Tjuta National Park**—the superlative natural phenomena of the two massive monoliths.
2. **Great Barrier Reef**—is described 'as an example of superlative natural phenomena' in the statement of significance.
3. **Fraser Island**—invokes Criterion (vii) but the Statement of Significance appears to interpret these as scenic features. There is no doubt that Fraser Island qualifies as a 'superlative natural phenomena' given that it is the world's largest sand island.
4. **Shark Bay, Western Australia**—Criterion (vii) clearly qualifies as containing 'superlative natural phenomenon' to include

   *'stromatolites which represent one of the oldest forms of life on Earth;

   *'Hamelin Pool which is the only place in the world with a range of stromatolite forms comparable to fossils in ancient rocks;' inscribed World Heritage values.

A number of forested World Heritage areas such as Redwood National and State Parks cite Criterion (vii) in relation to the redwood forests, referring especially to the 'tallest living plants'.

Other guidance for interpretation of the 'superlative natural phenomena' component of Criterion (vii) might come from the ordinary meaning of 'phenomena'.

The ordinary dictionary meaning of phenomenon is:

> *Phenomenon*—meaning: noun (plural phenomena /-nə/) 1 a fact or situation that is observed to exist or happen, especially one whose cause or explanation is in question: glaciers are interesting natural phenomena
> —Oxford Dictionary online

Criterion (vii) potentially could be applied to tall eucalypt forests given that IUCN recognises its two distinct ideas. These ideas could be applied to high profile World Heritage sites such as several of the Australian sites with the understanding that 'superlative natural phenomena' is not limited to areas of scenic beauty nor to non-living landscape features.

Indeed, the inscribed values statement for the Tasmanian Wilderness World Heritage Area already cites 'eucalypt tall open forests' against Criterion (vii) 'eucalypt tall open forests including *Eucalyptus regnans*, the tallest flowering plant species in the world … '

This is consistent with the redwoods being similarly cited against Criterion (vii).

The tall eucalypt tree species that make up these forests are globally outstanding for their exceptional tallness. *Eucalyptus regnans* is the tallest flowering plant in the world, recorded at more than 100 metres in height and only eclipsed by the coniferous Californian Coast Redwood with a global record of 115 metres. The five tallest growing eucalypt species are found in the tall eucalypt forests of Tasmania.

It can be argued that tall eucalypt forests have a broader claim to '*superlative natural phenomena*' than the singular focus on *E. regnans* being the tallest flowering plant species in the world. This is dependent on how the 'tall eucalypt forests' are defined (see above).

Tall eucalypt forests are not just another type of forest that happens to include a species that is the world's tallest flowering plant. As outlined above, the term 'tall eucalypt forest' needs to be interpreted according to its global and ecological context.

Interpreted as eucalypts that inhabit rainforest habitat and/or cohabit with rainforest species and/or rainforest, the definition will automatically embrace rainforest species as an essential element of these forests. It is this interaction between these two great forest types—rainforest and eucalypt forest—that is a globally extraordinary feature or phenomenon. Importantly, the relationship between the rainforest and the eucalypts is a dynamic one, resulting in two major forest formations being locked in competition for control of what would otherwise be, based on climate and soil conditions, a rainforest habitat.

Indeed, Tng, Williamson, Jordan et al. (2012) state:

> We argue that because giant eucalypts are restricted to rainforest climates and share traits with rainforest pioneers they should be regarded as long-lived rainforest pioneers, albeit with a globally unique dependence on fire for regeneration.

Tng et al. in conducting a global comparison refer to a similar ecological phenomenon in coniferous forests on the west coast of North America quoted by Busina (2007):

> However, amongst angiosperms this syndrome of a fire dependent forest above a fire intolerant forest is only known in the associations between eucalypts and rainforest. —Tng 2012

They go on to add:

> The resulting syndrome of a fire dependent forest above a fire intolerant forest is only known in the associations between eucalypts and Australian rainforest. These unique ecosystems are of high conservation value, particularly given that clearing and logging has reduced their abundance substantially over the last 150 years. —Tng et al. 2012

Notwithstanding the great genetic and ecological diversity to be found in the huge array of eucalypts, what sets the 'tall eucalypts' apart from all other eucalypt species is that they have evolved the capacity to directly compete with rainforests in rainforest habitat, enabling them to become part of the rainforest from time to time. The combination of uniquely evolved morphological and ecological characteristics (tallness, fast growth rate, low shade foliage, flammable litter, abundant seed in woody capsules protected from fire) and periodic fire maintains this 'superlative natural phenomenon' of global significance.

Tall eucalypt forests, defined in the broader sense to comprise the zone created by the phenomenon of dynamic ecological interaction between rainforests and eucalypts, are arguably a globally outstanding natural phenomenon, 'superlative natural phenomena'.

Conclusion

If tall eucalypt forests are considered just as static forests, then their recognition as 'superlative natural phenomena' is dependent upon the 'giant trees' element as used in the TWWHA documentation: *'Eucalyptus regnans*, the tallest flowering plant species in the world'.

If considered as the product of an extraordinary dynamic process that is ongoing, it is argued that the whole dynamic interaction of the tall eucalypts and rainforest, the 'syndrome of a fire dependent forest above a fire intolerant forest', represents a unique ecological phenomenon, a 'superlative natural phenomena' of global significance—outstanding universal value.

(viii) be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

Interestingly, the inscribed Values of the Tasmanian Wilderness World Heritage Area, the Gondwana Rainforests WHA, and the Wet Tropics WHA, all of which qualified against Criterion (viii) and which contain significant representations of tall eucalypt forests, fail to record any contribution to meeting Criterion (viii) made by eucalypts. This includes the tall eucalypt forests that are intimately mingled with the rainforests that get all the attention in qualification against Criterion (viii).

Yet, the eucalypts are every bit as much a product of Gondwana as the rainforests which tend to take centre stage in Criterion (viii). The eucalypts in general provide graphic evidence of the impact of the breakup of Gondwana and the dramatic changes it inflicted on continents and hence on the evolutionary development of the biota.

Whereas many eucalypt species and communities are products of evolutionary adaptation and radiation to the new warmer and drier environments on the Australian tectonic plate, the tall eucalypts are looking increasingly like the closest facsimile of an ancient coexistence, if not cohabitation, between Gondwanan rainforests and the ancestral eucalypts of Gondwana.

The recent fossil evidence from Argentina, confirming the existence of eucalypts in South America circa 52 million years ago is a revelation of just how ancient the eucalypts are (Gandolfo 2011). Further, the same fossil site demonstrates the coexistence and likely cohabiting of Gondwana rainforest and eucalypts. While the data are still limited, there seems to be every likelihood that the phenomenon of cohabitation and interaction between these two dissimilar communities is also of ancient lineage.

Similarly, the evidence of fire in ancient landscapes is being confirmed in various places so we no longer need to assume that fire is a recent phenomenon on the Australian plate, although fire frequency no doubt increased with human colonisation. If the three players, rainforests, the ancestral eucalypts and fire were present tens of millions of years ago, we have the three essential ingredients for developing and maintaining tall eucalypt forests—tall eucalypt rainforests as some authors prefer (Tng 2012).

When we analyse the distribution of rainforests and tall eucalypt forests in Australia, not surprisingly they are very similar. The notable exception is the tall eucalypt forests of Western Australia where we know on a geological timescale rainforest coexisted with the eucalypts but which has now been lost, presumably to climate change. In eastern Australia, wherever there is Gondwanan rainforest, from Tasmania to northern Queensland, there are tall eucalypts closely associated with them, often intermingled. But Australian tradition, both from a forestry and botanical perspective was for many decades to separate the rainforests from the tall eucalypts while at the same time being aware of the many cases of ‘transitional forests’, or ‘mixed forests’ of the two. The author personally encountered the dilemma in mapping of tall eucalypt forests where there was an expectation to decide whether a forest was rainforest or eucalypt forest when the reality was that it was both! Rainforest with eucalypt emergents or was it eucalypt with rainforest understorey?

Preliminary analysis suggests that the coexistence, cohabitation and dynamic interaction between the Gondwanan rainforests and the ancestral eucalypts is of ancient origin, possibly dating back to pre-break up of Gondwana, tens of millions of years at the very least. Whereas adaptive radiation has seen the proliferation of eucalypt species across the drier parts of the continent, the tall eucalypt forests occupying rainforest sites and mingling with rainforests of Gondwanan origin are very different and are arguably ‘outstanding examples representing major stages of earth's history, including the record of life ... ’:

> … the breakup of Gondwana, the subsequent northward drift of the Australian plate and a record of the biota, including the coexisting rainforests and eucalypts, presently in intimate juxtaposition, a relationship that is reasonably assumed ancient in origin.

It is increasingly evident that tall eucalypt forests, being so intimately associated with rainforests, some saying they are rainforests, more closely representing the ancient Gondwanan forests than any other eucalypt forest in the world. Indeed their unique association with the rainforests adds an additional dimension to our celebration of the rainforests of ancient Gondwanan lineage. The tall eucalypts forests are in reality are a part of that rainforest heritage.

Conclusion

Notwithstanding that each of the Australian World Heritage sites containing tall eucalypt forests (Tasmanian Wilderness, Greater Blue Mountains, Gondwana Rainforests, Fraser Island and Wet Tropics of Queensland) have qualified against Criterion (viii), none cite the tall eucalypt forests as contributing to that criterion. But the rainforests with which they are intimately associated in those sites are cited for their Gondwanan ancestry; the eucalypts of Gondwanan ancestry are not.

Our knowledge and understanding of the ancestry and ecology of tall eucalypt forests has now advanced sufficiently to be able to more readily recognise the Gondwanan ancestry of the eucalypts just as has been the case for the rainforests of Gondwanan origin.

The evidence is increasingly confirming that this is not a recent 'collision' between rainforest and recently evolved eucalypts but rather is an ancient relationship. Given the intimate association of tall eucalypt forests with Gondwanan rainforest, tall eucalypt forests can now be recognised for what they are—an integral element of the Gondwana rainforests and can be considered, along with the rainforests, to be 'outstanding examples representing major stages of earth's history, including the record of life ... ', sharing with the Gondwanan rainforests of Australia, an ancient coexistence and probable cohabitation which dates back tens of millions of years and possibly prior to the final stages of breakup of Gondwana.

As a globally distinct class of forest, the tall eucalypt forests can be demonstrated to qualify against Criterion (viii) and are of global significance.

(ix) be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

Of the three main World Heritage areas in Australia which contain tall eucalypt forests—Tasmanian Wilderness, Gondwanan Rainforests and Wet Tropics—only in the case of Tasmanian Wilderness is tall eucalypt forest even mentioned, albeit briefly, as a contribution to meeting Criterion (ix). In some ways this may be understandable as each was assessed as a specific parcel of protected area rather than assessing tall eucalypts as a globally significant class.

Early evolution of the tall eucalypts to compete with and cohabit with rainforest was limited to Gondwanan derived rainforest but with latitudinal drift northwards, the tall eucalypts have since undergone ecological and biological evolution and adaptation to engage with tropical forests with species of non-Gondwanan plants and animals. Tall eucalypts as a class have been particularly successful in adapting to almost 50 degrees of latitude, from temperate southern Tasmania to the tropical Philippines but at all times sharing the characteristics that facilitate their ability to occupy rainforest habitat.

The tall eucalypt forests as a class therefore provide an 'outstanding example representing significant ongoing ecological processes in the evolution and development of … (forests) ... communities and plants and animals.' (Criterion (ix)

Conclusion

Tall eucalypt forests as a class provide 'outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial … ecosystems and communities of plants and animals;' namely, the ongoing evolution and adaptation of a shade intolerant forest to achieve cohabitation with shading rainforests over a latitudinal range globally unequalled by any other genus of flowering plants.

Tall eucalypts and tall eucalypt forests as a class are globally distinctive, if not unique, and are of global significance.

(x) contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

As with Criterion (ix), the tall eucalypt species are barely mentioned as making any contribution to qualifying against Criterion (x) for the Tasmanian Wilderness, Gondwana Rainforests and Wet Tropics. Wet sclerophyll forests (read tall eucalypts) in the Gondwana Rainforests site are specifically nominated for their contribution but not at all mentioned in the 'inscribed values' listed for the Tasmanian Wilderness.

Given the recent interest in classing tall eucalypt forests as 'rainforest', perhaps what has happened in the past is that so many species of plants and animals recorded in the tall eucalypt forests have been assigned as 'rainforest species' because to field ecologists they understandably perceive at ground level, that they are working in what is, in many respects, a rainforest.

Taking a wider view or global view of tall eucalypt forests, one thing they do demonstrate is a great diversity of eucalypt species, all of which share the unique evolutionary characteristics which facilitate their distinctive role as eucalypts that are capable of occupying rainforest habitat. The eucalypt species of the tall eucalypt forests vary greatly according to climate and soil types, ranging from the *E. regnans* in temperate southern Tasmania to *E. deglupta* in tropical rainforest in the Philippines in the northern hemisphere.

But beyond the dominant eucalypts there is an abundance of plants and animals that are to be found in tall eucalypt forest, albeit many not restricted to this formation. In reality the tall eucalypt forests are a very biodiverse forest community.

The greatest element of biodiversity in the tall eucalypt forest class is arguably their ecological diversity, their adaptation to a range of conditions within the rainforest habitat that they occupy. They have for many decades defied consensus on their definition and delineation for understandable reasons—they comprise a mix of what convention dictates to be two very different plant communities—rainforests and eucalypts. But they are both, and they therefore include much of the biodiversity of each class, combined in an often disorderly and confusing pattern of mix, often the product of the unseen third party in this ecosystem, fire. Fire is an infrequent and sometimes not evident but critically important factor in maintaining the existence of tall eucalypts within the rainforest.

Conclusion

Given that Criterion (x) has been framed to assess a place rather than a class, it is difficult to be definitive about the tall eucalypt forests as a class qualifying against this criterion. However, there can be no doubt that as a class they represent an important suite of global biodiversity, both in terms of eucalypt species diversity and also the many and diverse species of plants and animals they contain. It is therefore legitimate to conclude that tall eucalypt forests as a globally recognisable class represent:

> … important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

Overall conclusion on criteria

While the World Heritage natural criteria were framed to evaluate particular places or protected areas to establish if World Heritage values existed, it is legitimate to apply them to

a thematic class to test the value and significance of a class of natural attributes for World Heritage value and significance.

A previous attempt by an expert panel to evaluate eucalypts as a class was unnecessarily constrained by adopting a thematic approach and the 'sub-theme' had been predetermined by the convenors to be eucalypts. Being further limited to the concept of 'representativeness' it is not surprising that the tall eucalypt forests were not a central focus. The thematic approach was bound never to capture the extraordinary phenomenon of the 'syndrome of a fire dependent forest above a fire intolerant forest' because the theme was already limited to representation of eucalypts.

It should be apparent from the foregoing that as a globally recognised class of forest, the tall eucalypt forests can qualify against most if not all World Heritage criteria, that as a class they are of 'Outstanding Universal Value'—World Heritage.

Hopefully this assessment will contribute to putting to rest the perceived 'cringe' in response to the often-asked question of whether tall eucalypt forests are of World Heritage natural value. Tall eucalypt forests are an ecologically unique class of forest, of 'outstanding universal value' and hence, of World Heritage value.

CAVEAT: The conclusion that tall eucalypt forest are of World Heritage value cannot be interpreted as all tall eucalypt forests being necessarily of World Heritage value. Matters of condition and integrity need to be applied at the place or protected area level. Assessing a stand of forest within a nominated area may end up with different results to an assessment at the class level. Assessment at the site-specific level needs to test and take into account the existence and maintenance of the various elements that make tall eucalypt forest of World Heritage value. For a site to qualify as World Heritage or to contribute to the integrity of the TWWHA, the forests in that site need to qualify against at least one of the four criteria to qualify.

Recommendations

A number of recommendations arise from this preliminary assessment.

1. Recognise the recent advances in knowledge and thinking regarding the origins of the eucalypts and understanding of the ecology of tall eucalypt forests and associated rainforests.
2. Recognise the importance of the natural ecological dynamics of the tall eucalypt forests, in particular the ongoing ecological interaction between the tall eucalypts and the rainforests.
3. Recognise the need to factor in all biological and ecological attributes of tall eucalypt forests and maintaining ongoing natural processes in planning their conservation and management.
4. Consider the concept of a serial nomination* of tall eucalypt forests of Australia.

***NOTE 1:** a serial nomination would endeavor to capture the full biological and ecological diversity of the class. The key sites are likely to be:

- Far North Queensland (most already in Wet Tropics WHA—need to review integrity)
- Northern NSW (most key areas already in Gondwana Rainforest WHA)
- NSW, Barrington Tops (most key areas already in Gondwana Rainforest WHA)
- Victoria (Gippsland and Otway Ranges)
- Tasmania (western Tasmania. Most key sites under consideration for addition to TWWHA and for reservation as Tarkine National Park)
- North East Tasmania (e.g. Mount Maurice relict area).

***NOTE 2**: Considering the conservation of tall eucalypts beyond Australia, *Eucalyptus deglupta* is now uncommon and in many places threatened by logging and clearing in Papua New Guinea, Philippines and Indonesia. The key sites are likely to be:

- PNG, Nakanai Mountains on New Britain Island. Already on World Heritage Tentative List (Nakanai section of Sublime Karsts of PNG) but presently under threat
- Indonesia, Seram, Manusela National Park
- Indonesia, Sulawesi, Bogani Nani Wartabone National Park
- Philippines.

Implications for heritage assessment and reserve design

The main implications of the results of the preliminary assessment of the tall eucalypt forests as a class is that in the design of reserves to protect tall eucalypt forests it is essential to as far as practicable protect the full range of key attributes and to facilitate the ongoing natural processes which maintain those values such as their ecological diversity.

Conserving any plant community or ecosystem must not be seen as a mere 'stamp collecting' exercise where statistical sampling presence/absence considerations subvert ecological considerations.

Tall eucalypt forest is more than just the dominant eucalypts but rather must be recognised as a complex ecosystem in its own right and comprising many other associated plants and animals. When planning to conserve tall eucalypt forest it is important to think of it in terms of an ecosystem and not just a stand of trees as might be done where forestry is the main (commercial) interest. In many cases non-eucalypt components of a tall eucalypt ecosystem may be extend beyond the eucalypts into other habitats such as the rainforest or shrublands, a factor needing to be taken in to account when delineating areas for conservation.

Perhaps more than most plant communities and in particular forest communities represented in Australia, conserving tall eucalypt forest requires special consideration. The dynamics of the interaction between tall eucalypts and rainforest at the wetter end of the ecological spectrum is a case in point. The very survival of tall eucalypt forest, indeed the associated rainforest, may be very dependent upon prevailing climate or climatic events. Fire incidence in particular, will be key to survival of tall eucalypt forest on sites capable of otherwise supporting rainforest to the exclusion of eucalypts.

Given the role that wildfire plays in establishing or regenerating eucalypts within the tall eucalypt forest ecosystem, the eucalypts usually exhibit even age across extensive areas. This means that the eucalypt component may exhibit a relatively few ages and stages in development. It would be ecological folly to rely on conserving a single age class in a tract of forest and so conservation should as far as practicable seek to protect a diversity of age classes as a hedge against incremental ecosystem simplification (loss of species and ecological diversity).

Conserving tall eucalypt forest must therefore take into account the full biodiversity of the forest community, ecological diversity including the ages and stages of the eucalypt communities and above all the natural processes that govern the relationship between the eucalypts and the rainforests. From a World Heritage perspective, providing for the maintenance of natural processes can be very important.

In the context of the verification process for the ENGO-proposed reserves the following key attributes were considered in the assessment process.

Key attributes

Tallness

A good indicator of those areas of forest that best demonstrate the tallness of the tall eucalypt ecosystem is provided in the current official inventory of what are termed 'giant trees' (Giant Trees Consultative Committee 2011). Two important conclusions can be drawn from the current registrar:

- a clear distribution pattern is generally located outside and to the east of the TWWHA
- *Eucalyptus regnans* is especially prominent but not exclusively so.

A significant proportion of the tall trees on the registry are within forest tracts that have been intensively logged and the listed tall trees no longer form part of an intact or near intact ecosystem. Such 'island' trees retain some heritage significance but no longer retain the other heritage values of intact tall eucalypt forest. They are certainly of limited value from a World Heritage perspective. Those 'giant trees' of greatest overall heritage conservation significance are those still embedded within the tall eucalypt ecosystem which is still subject to ongoing natural processes.

'Giant trees' remain in concentrations or core areas in Tasmania, all close to or outside the eastern boundary of the TWWHA, namely:

- Upper Derwent–Lower Florentine Valleys
- Styx River Valley
- Huon Valley.

A fourth very significant outlier area of tall trees and tall eucalypt forest is in the north-east of the state.

Map illustrating the location of concentrations of 'giant trees' The Giant Trees Register provides a valuable indication of the location of those eucalypt forest communities with the greatest height development. All overlap with or are immediately adjacent to temperate rainforest. The greatest overlap with rainforest occurs at

lower elevations in the Weld–Huon–Picton and Styx valleys. Most of the giant trees together with their associated high forests are located immediately adjacent to but outside the TWWHA. See Map 2 at end of report for indicative distribution of tall forest ecosystems and giant trees.

In the Upper Derwent–Lower Florentine there has been extensive logging with many large trees, likely 'giant trees', being destroyed in the past. Of the 'giant trees' remaining, a significant proportion is within largely unlogged tracts of tall eucalypt forest. An estimated six in the Upper Derwent appear to be within the existing TWWHA and a further two in Upper Coles Creek are also within the TWWHA. Some 16 trees on the Giant Trees Registrar are in the Florentine Valley and outside the TWWHA. Eight of the Florentine Valley trees are within tracts of intensively logged forests and are therefore no longer embedded in intact natural forest ecosystem and as such, are of limited heritage significance. On the other hand, the other eight 'giants' are within tracts of forest that are still capable of functioning as natural ecosystems and useful indicators of the stature and condition of the surrounding forest stands.

The three clusters or core areas of 'giant trees' point to three important tracts of forests that extensively exhibit tall growth. Parts or all of these indicated 'tall' forests are in the High Conservation Value (HCV) lands, which are the subject of this assessment (they will also be dealt with at the specific level). Based on the measure of 'tallness', all three tracts contain the cluster of 'giants', potentially contributing to forming a tract of tall eucalypt forest of outstanding universal value.

The assessment takes into account the location of the registered giant trees but this was not considered to be a critical determining factor. More than anything, the concentrations of giant trees were used as an indicator of the best development of the tall eucalypt forest and hence a guide to ecological diversity.

Including exceptionally tall individual trees and forests is important to meeting at least one element of being a 'superlative natural phenomenon'.

The two 'bookends'

There is a zone between pure rainforest, beyond which no eucalypt has penetrated, and dry sclerophyll forest beyond which point rainforest plants do not live. Within this zone, the 'conflict zone' between the two 'bookends', fire and shading forces operate and compete, thereby maintaining the overlap between rainforest and eucalypt species and communities.

a) Interface with rainforest

One of the two 'bookends' to the tall eucalypt forests is the interface of eucalypts with pure rainforest, an important indicator of the full operation of the phenomenon of the shade intolerant species pushing the limits of its interaction with the fire intolerant rainforest.

The interface with pure rainforest is an indicator of the tall eucalypt forest at its current ecological limit in terms of rainfall and/or wildfire incidence. Particular attention was paid in assessment to including the pure rainforest zone where it existed.

b) Interface with dry eucalypt forest

The second 'bookend' of the tall eucalypt ecosystem is the interface with the dry sclerophyll forest. Put another way, this is the point that delimits rainforest habitat, beyond which conditions are not conducive to survival of rainforest species.

Those tracts of tall eucalypt forest that embraced the sequence from the dry sclerophyll forest to pure rainforest, with extensive overlap with rainforest, were assessed as especially valued

both for demonstrating their ecological diversity and for the prospects of being able to maintain ongoing natural processes.

The assessment paid particular attention to including the pure rainforest zone where it existed and was practicable to include. In many situations, commercial timber production has truncated the transition from the dry forests to the wet forests.

Dynamics

Strong consensus exists in the literature regarding the dynamic nature of the relationship between the tall eucalypt forests and rainforest, with fire being the primary driver. However, the precise nature of these dynamics is still a matter for debate and discussion with a number of different models being presented including the successional model (Jackson 1968) and more recently a 'stable state' model. As noted by several authors, the alternative stable state model is not mutually exclusive to succession as it can form a framework for describing the transitions from one stable state to another (Biesner et al. 2003, Walker & del Moral 2008, Cain 2009).

From a conservation perspective, the important thing is to ensure that as far as possible, reserve design facilitates ongoing natural processes, in particular the role of fire in this vegetation complex. Fundamental to that is an understanding of fire behavior at the landscape level and what the author terms 'fire paths'. The very real risk is that truncation of the spatial dimensions of natural fire paths and hence fire intensity and behavior has the potential to trigger changes in the ecology of rainforest—eucalypt forest complex or ecosystem. Any imposed measures that deliberately or inadvertently reduce or increase fire frequency in this vegetation complex has the potential to cause changes, in some cases this could even be substantial. One glance at the successional model illustrates how changed (increased) fire frequency could lead to driving rainforest back through the tall eucalypt stage of succession to buttongrass.

Effective conservation of the tall eucalypt and rainforest complex, especially in Tasmania, cannot rely alone on the more conventional sampling and representation approach where relatively small sample blocks of the different forest communities are protected. Instead, conservation must recognise the ecological dynamics and, as far as practicable, ensure that natural processes, including fire, are facilitated so maintaining the natural evolutionary processes.

The dynamics of the tall eucalypt–rainforest vegetation complex was an important consideration in assessing the value of tall eucalypt forests. Those offering the greatest likelihood of natural processes being maintained were considered of greatest value. These are the areas that will most readily meet the tests set out in the Conditions of Integrity in the World Heritage Operational Guidelines. Where boundaries other than the ENGO ones were recommended, the dynamics of natural processes were used as a guide to identifying appropriate boundaries.

Protected areas that facilitate ongoing natural processes will contribute to recognising the tall eucalypt forests as a 'superlative natural phenomenon'—the phenomenon of a shade intolerant tree surviving in a shading rainforest.

Fire management

When the conservation objective is to protect and maintain an ecosystem as distinct from a stand of trees, it is critically important to ensure that as far as is practicable all natural ecological and other associated natural processes are ongoing. Given that fire is such a key factor in the ecology of tall eucalypt forest, it needs to be given special attention, especially in Tasmania. Fire was a part of the ecology of these forests long before the arrival of the first humans on what is now the island of Tasmania. No doubt human use of fire since earliest

Aboriginal times influenced the disposition and condition of the tall eucalypt forest but to what extent is unclear.

While the tall eucalypt forests of Tasmania are not absolutely dependent upon wildfire for survival, for all intents and purposes, disturbance and exposure of mineral soil to sunlight is usually the result of intense fire. In drier sites, localised fire from lightning strikes or from Indigenous burning had the potential to create conditions conducive to regeneration of the ash type eucalypts. In the wetter habitats such as those that might otherwise be colonised by rainforest, the need for more intense fire is critical. Fire must not just be able to expose mineral soil but be able to destroy any shading rainforest present on a site. Such fire conditions could be expected to arise only rarely when drought conditions, extreme (fire) weather conditions and an ignition source (lightning) coincide.

The more recent advent of industrial forestry and proliferation of roads through the tall eucalypt forest have arguably changed the fire regime in many places. Notwithstanding the changed fire regime, in 200 years of European settlement in Tasmania, significant areas of tall eucalypt forest appear to have escaped fire.

In those forests where the well-developed rainforest occurs as an understorey to the tall eucalypts, the only prospect of those stands being able to replace themselves over time will be as a result of such intense fire as to destroy the rainforest understorey. In some cases, especially in *Eucalyptus regnans*, such fire is likely to also kill the eucalypts.

The great difficulty in officially seeking to accommodate natural wildfire is the juxtaposition of the intact forests with commercially valued regrowth and plantation eucalypt to the east and hence an economically-based policy needing wildfire prevention. Managing the tall eucalypt forest both within and outside protected areas is therefore always likely to be seen to be an integral part of a statewide fire policy.

Notwithstanding the official policies regarding suppression of wildfire, the author has long argued that there will always be the prospect of those naturally ignited uncontrollable wildfires occurring in these forests and which appear responsible for maintaining them. Wildfire in these forests does not necessarily mean tree crown conflagration but can equally be an intense ground fire fueled by the massive build-up of ground fuel, including peat, on the forest floor. Either kind of fire can, on occasions, prove difficult if not impossible to control.

Given the common belief that the maximum life expectancy of tall eucalypts in Tasmania is in around 450 years, such tall eucalypt forest forests would theoretically require only one wildfire event during the life of the stand to achieve the ground conditions needed to regenerate eucalypts on the site.

The advanced age of some existing stands of tall eucalypt forest means that they are already of an age that, within a few hundred years without wildfire, eucalypt occupation of the site may be threatened. The question arises then as to whether a threat like this justifies management intervention to regenerate such a tall eucalypt forest stand. Fortunately, that is not a question that requires an immediate answer but if the primary management objective is to, as far as practicable, maintain natural ecological and associated processes, intervention to regenerate a stand threatened by senescence would be contrary to such management principles.

Taking a longer-term view, if some stands of tall eucalypt forest failed to be naturally regenerated and rainforest took control of the site, this could be viewed as just a part of the longer-term interaction between the rainforests and the tall eucalypt forests, '... ongoing ecological and biological processes in the evolution and development of terrestrial, … ecosystems and communities of plants and animals'. It is for this reason that conservation must ensure that there is sufficient geographic space for the ongoing advance and retreat of the tall eucalypt forest—and rainforest—across the landscape over the long term.

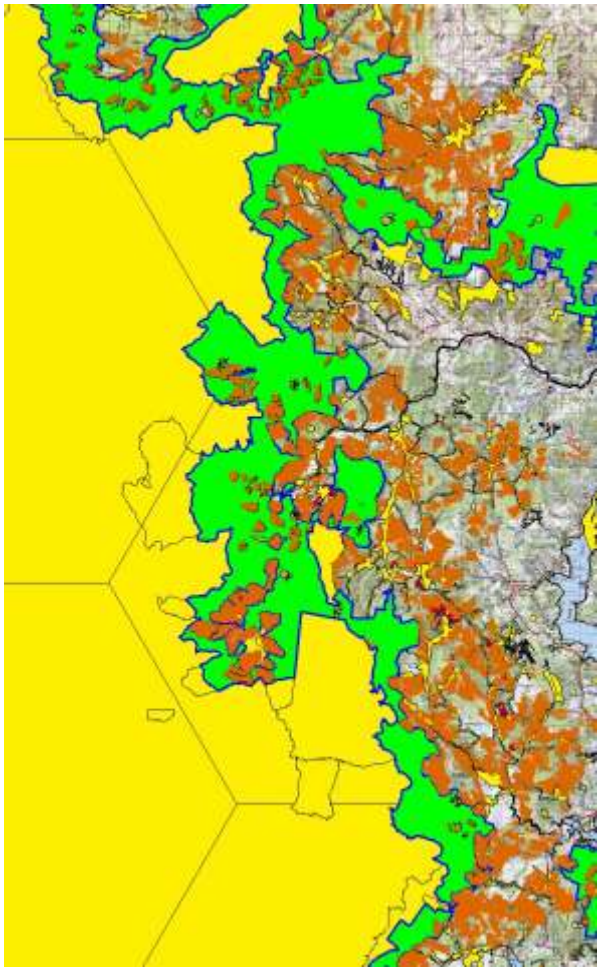
Those narrow tracts of forests on a single slope, where there is little buffering from industrial forestry, such as Snowy Range, will always be the most vulnerable to irreversible impacts by too frequent fire events.

Boundary determination

In assessing the ENGO-proposed reserves, consideration was given to the various factors outlined above. When it came to assessing the adequacy or appropriateness of the proposed boundaries to serve also as permanent Protected Area/World Heritage boundaries, the guiding considerations were nominated as:

- protection of identified key attributes
- ecological diversity
    - range of age classes
    - range of elevation and aspects
    - range of understorey
- eucalypt species diversity
- facilitating ecological processes (catchment, fire)
- needs of non-eucalypt species components
- connectivity (see 'C2C')
- fire management
- adjoining land uses
- visual.

The exercise was constrained by the requirement to assess only those forest areas nominated as ENGO-proposed reserves. Where the logical boundary setting extends beyond those lands, the author has drawn attention to that situation and in some cases made specific recommendations.



Map illustrating the pattern of logging in part of the 'Southern Forests'—most areas outside the ENGO-proposed reserves have been extensively logged (red?) and there are significant inroads of logging into some of the proposed reserves. With the trend expected to continue, the ENGO-proposed reserves (blue edge) offer the last chance to ensure that a substantial representation of tall eucalypt forests is protected as an integral part of the Tasmanian Wilderness World Heritage Area. (Map derived from data supplied by Forestry Tasmania)

Given the importance attached to the 'ongoing natural processes' in valuing the tall eucalypt forests, considerable attention was given to assessing the factors that would likely determine if natural processes would be able to prevail. In attempting to, as far as possible, preserve the option of facilitating ongoing natural processes, a longer-term view was given priority over short-term considerations. Recommendations on occasions included incorporating some logged or degraded lands where the more holistic longer-term view prevailed.

Rehabilitation

In Tasmania today, few tall eucalypt forest stands have survived intact; most have been subjected to commercial timber extraction. The ENGO-proposed reserves are no exception; most have some recent clear fall logging coupes and associated roads.

The small map above illustrates the extent to which recent logging has advanced towards the current boundary of the World Heritage Area. With the trend continuing, the ENGO reserves now represent the last chance to secure substantial representation of tall eucalypt forests as an integral part of the Tasmanian Wilderness World Heritage Area and to provide a prospect of natural ecological and evolutionary processes being maintained.

Clear fall logging destroys some of the important heritage values of the tall eucalypt forests. In assessing the natural heritage values, any logged areas were dealt with by taking a holistic long-term approach to the tract of forest. It was a case of weighing up the short-term negative contribution of clear felled areas against the long-term restoration and maintenance of ecological processes.

The evidence is that areas that have been previously logged will, through a process of natural rehabilitation, eventually acquire many if not all of the ecological characteristics of the surrounding forest.

Obviously as a consequence of incorporating logged coupes and logging roads into the proposed reserves there will be a need to rehabilitate logging coupes and roads. The actual intensity and needs of a rehabilitation program will vary greatly from area to area, in some cases requiring minimal intervention. In other cases introduced species will need to be eradicated such as *Eucalyptus nitens* used in some plantations in areas such as the upper Styx. Closure and rehabilitation of any roads would need to be assessed on a case-by-case basis.

Key sites for conserving tall eucalypt forest in Tasmania

Considering the opportunities for a sustainable tall eucalypt forest ecosystem in Tasmania, the tracts of forest that offer the greatest prospect for conserving tall eucalypt forest at the ecological and landscape level of potential World Heritage significance extends from the Upper Derwent River near Lake St Clair southwards to near South Cape. This tract or corridor is often bounded on the wetter western side by rainforest, and on the drier/lowland eastern side by open eucalypt forest, woodland and grasslands.

It offers scope to substantially demonstrate the biological diversity, in particular the ecological diversity, exhibited by the tall eucalypt forest ecosystem in Tasmania, if not the whole of Australia.

Furthermore, there still exists an effective regional connectivity in the tall eucalypt forest ecosystem extending from sea level in the south to around 1,000 metres above sea level in the centre of the island. That connectivity is regarded as an important consideration in assessing the heritage significance of each component area along its length. The author refers to this corridor as the 'C2C' corridor—derived from **C**ounsel River in the north to **C**ockle Creek in the south.

The tall eucalypt forests of southern Tasmania—the 'Southern Forests'—are of special significance given they adjoin, interact and partly overlap some of the most extensive cool temperate rainforest on the Australian continent. Some of these forests offer good prospects for long-term maintenance of natural processes, although in most cases this will require some rehabilitation for this to be achieved.

While examples of tall eucalypt forest associated with cool temperate rainforest occur in other places such as North East Tasmania, Victoria and parts of New South Wales, **the forests of southern and western Tasmania are by far the most outstanding combination of cool temperate rainforest and tall eucalypt forest in Australia**.

Other important sites for conserving tall eucalypt forest in Tasmania are the Tarkine and the North East of the state (see North East cluster).

The ENGO-proposed reserves represent the last opportunity to protect the full biological and ecological diversity of the tall eucalypt forests of Tasmania, and for their attributes to contribute to their being a 'superlative natural phenomena' of global significance. Commercial timber production is rapidly eliminating options for preserving the 'best of the best' of the tall eucalypt forests. This makes it critically important to finally delimit the boundary between the forests where ongoing natural processes prevail, and the forests where timber production prevails.

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February 2012

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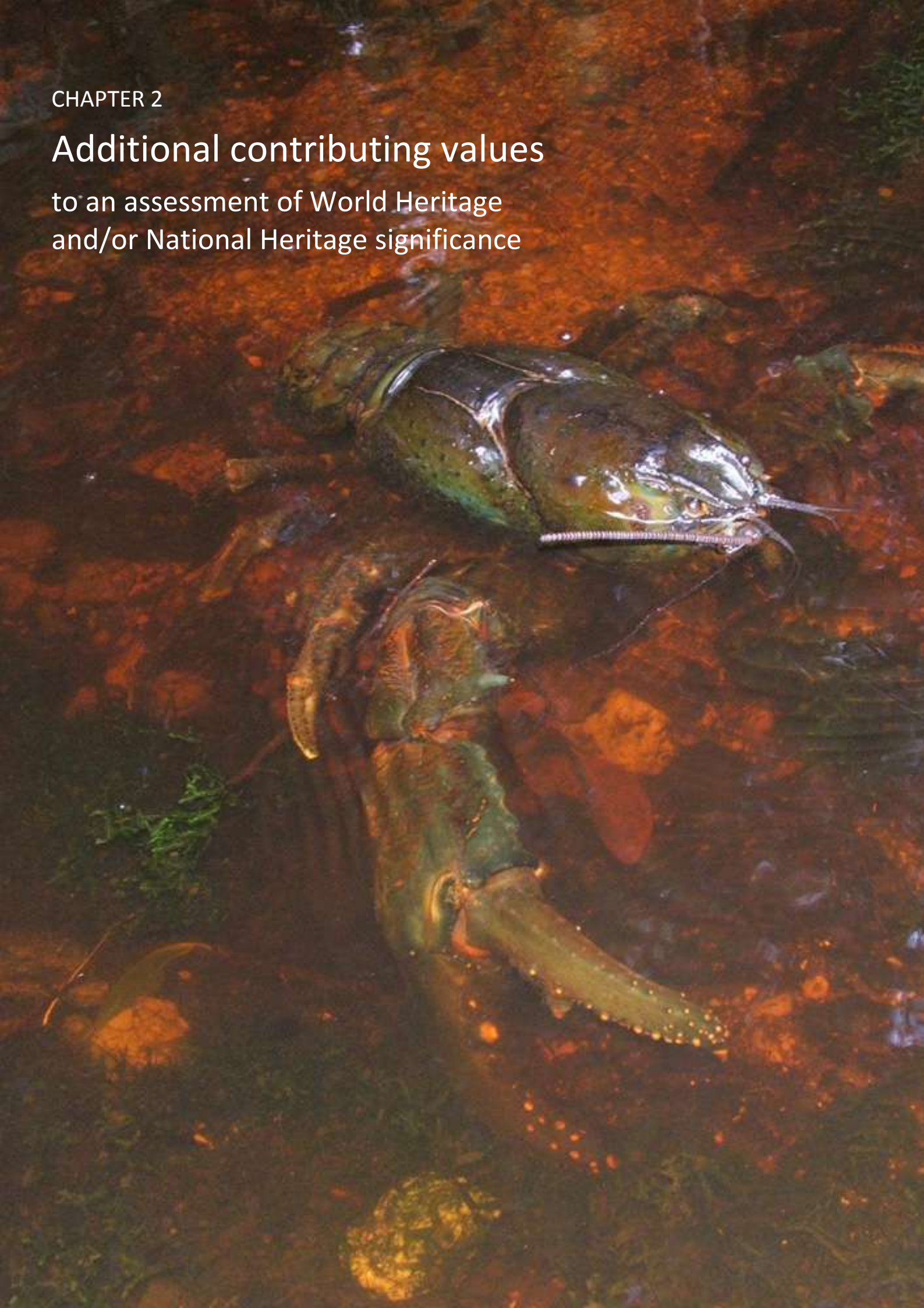
CHAPTER 2

Additional contributing values

to an assessment of World Heritage and/or National Heritage significance



Chapter 2

Additional contributing values to an assessment of World Heritage and/or National Heritage significance

Many of the other projects undertaken for the Tasmanian Forests Independent Verification (IVG) process provide substantive information relevant to any formal World Heritage or National Heritage assessment of the areas recommended for heritage protection in this report. In particular, IVG forest conservation reports 2A, 2B, 3A, 3B, 3C, 3D, 5B, 5C, 7A, 8B and 9A provide information and assessments relevant to heritage assessment. All relevant findings in these reports should be fully integrated into any formal National Heritage and World Heritage assessments, as they contain specific contextual and spatial information pertinent to an assessment of heritage significance

A full analysis of the information contained in these reports has not been possible in the limited time available. All IVG projects were running concurrently and thus the information provided in other reports has only recently been received and has therefore not been fully integrated into this heritage assessment. Some of the more significant findings from other IVG reports are outlined below.

Contributing findings

Relictual fauna

Report 3A assesses the contribution the proposed ENGO reserves would make to protecting the large, highly diverse, ancient and relictual group of Tasmanian invertebrate fauna. The report identifies a significant number of ancient or relictual faunal groups supported in Tasmania and which are described as globally significant.

Figure 1 in the report, illustrates the high invertebrate diversity and high proportion of globally significant, ancient species within the potential TWWHA extension.

The analysis for these species also illustrates ancient, faunal ‘breaks’ or biogeographic demarcations still evident and operating in Tasmania. The report notes that ‘although the processes involved in these features is not always clear they represent important biogeographical phenomenon, ones which have probably been lost in more developed landscapes elsewhere in Australia’.

Figure 2 in the same report illustrates hotspots of phylogenetic interest and the distribution of the crustacean seepage fauna, which intersect with proposed ENGO reserves on the eastern boundary of the TWWHA and in the North West.

Figure 3 illustrates hotspots, which intersect with ENGO-proposed reserves.

Figure 4 illustrates those proposed reserves, which intersect with parapatric boundaries.

Table 2 includes all the potential reserves intersected by the values illustrated in Tables 2 to 4.

Report 9A also documents: ‘The emerging use of invertebrates in defining areas of conservation significance’.

The Tasmania fauna incorporates an extraordinary heritage of invertebrate animals, estimated to number 46,500 species (McQuillan et al. 2009). Evidence collated two decades ago for the World Heritage evaluation of western Tasmania showcased an irreplaceable fauna involving

ancient Pangean and Gondwanan taxa, island endemism, speciation bursts, insular gigantism, rare cave fauna and other globally outstanding phenomena.

Investigations since that time have continued to add further examples of high conservation value. These include:

- the most ancient living dragonfly (*Hemiphlebia mirabilis*) (Lak et al. 2009) recently discovered to occur in NE Tasmania
- the world's largest member of the cabbage moth family (*Proditrix nielseni* Plutellidae) in montane forests (McQuillan 2003)
- a mandibulate moth *Tasmantrix tasmaniensis* of a group which pre-dates the rise of the angiosperms (Gibbs 2010)
- an outstanding representation of ancient spiders (Rix 2005, Lopardo & Hormiga 2008, Rix & Harvey 2010)
- newly-discovered species of endemic Gondwanan stag beetles (Bartolozzi 2003)
- an extraordinary evolutionary pulse in terrestrial flatworms (Sluys 1999) and millipedes (Mesibov 2010).

Many appear to be restricted to consistently humid microhabitats, and the greatest diversity of species exists in temperate rainforests and tall wet forests where moss, thick leaf litter and rotting logs offer refuge and buffered microclimates.

Invertebrates have a special use in defining areas of high conservation value due to their intimate microhabitat requirements and functional relationships with other species (New 2009). Vertebrates or vascular plants are rarely useful for identifying significant areas for invertebrate conservation in temperate latitudes and invertebrate groups can even show poor congruence amongst themselves (Fattorini et al. 2011). Temperate eucalypt forest in Western Australia shows that whereas vascular plants, mammals and frogs have different centres of endemism within an area, centres of endemism for millipedes encompass all of these plus other areas (Moir et al. 2009).

Mountainous areas in Australia are notably rich in invertebrate biodiversity, including ancient taxa, but montane biota is especially vulnerable to rapid climate change (e.g. Wilson et al. 2007). Within Tasmania, several eucalypt dependent moth genera incorporate largely allopatric species pairs that differentiate into a widespread lowland and a more restricted highland form (e.g. *Plesanemma*, *Paralaea*). The influence of topography on species richness is apparent even in areas with modest relief. Millipede diversity and endemism are positively associated with differences in elevation in south-western Australia for example. A species turnover boundary was positively associated with annual rainfall, broadly located in the transition zone of 300–600 mm (Moir, Brennan et al. 2009).

Our relative lack of knowledge on the endemism patterns of invertebrates hampers their ready incorporation into conservation planning. Nevertheless Tasmania is emerging as a global biodiversity hotspot for forest invertebrates (e.g. Sluys 1999; Mesibov 2010) and this knowledge should eventually assist the recognition of essential conservation areas' (pp. 50, 51).

Threatened species

IVG Reports 2A, 2B, 7A and 9A illustrate the potential contribution that the ENGO-proposed reserves would make to the protection of state and federally listed biodiversity (animal and plant species and ecological communities).

Many of the proposed ENGO reserves would improve the protection status of listed and priority species, very significantly for some species, (see figures in these reports).

Refugia

Reports 3A, 3B, 3C and 3D assess the contribution the proposed ENGO areas would make to protecting ecological and evolutionary refugia.

It is clear that a small number of the proposed ENGO reserves in western Tasmania would make a significant contribution to protecting paleo-endemic plants (see page 8 in report 3B). Western Tasmania is a genuine global hotspot for plant paleo-endemics. The species *Athrotaxis* is likely to rate among the 10 most relictual plant groups in the world (*Gingko*, *Amborella*, *Welwitschia* and *Austrobaileya* are among the very few that rate more highly). *Athrotaxis* is in a few of the proposed reserves. *Bellendena* and *Lagarostrobos* also rate respectably highly on an international scale, and both are in a small number of the proposed reserves.

It is also clear that many of the areas proposed for protection have significant value as ecological refugia. Restoring degraded wet forest ecosystems and removing threatening processes such as logging and putting in access roads to forests would greatly improve the overall ecological integrity and function of ecological processes in the TWWHA and other existing protected areas. Many of the ENGO-proposed reserves have considerable potential to act as fire refugia (see IVG Report 3D figure 6). Similarly many of the proposed reserves are valuable as drought refugia.

Report 9A makes the point that the complex topography of Tasmania, along with its marked environmental gradients, has generated a diversity of both local and landscape-scale refugia. This has made it possible for many species to survive long-term:

> Physical refugia from dryness and fire are highly variable in scale and can be scattered across landscapes and regions. Microrefugia support locally favourable climates amidst unfavourable regional climates.'

The report describes important physical refugia from drought and fire (pp. 32–38) notably, cloud forests in eastern Tasmania. Cloud forests create special microclimates near the ground, which support many rare and unusual species with poor tolerance to drought. Many of these forests have been captured in the current formal and ENGO-proposed reserves. A map on page 39 of the report shows the elevation range of the ENGO-proposed reserves.

Rainforest

Reports 5B and 5C are referred to in Chapter 1 of this report. Both reports confirm the global significance of Tasmania's tall eucalypt forests. The distribution of giant eucalypts and tall eucalypt forests is illustrated in Map 2 at the end of this report

Genetic diversity

Report 3C, provides an important assessment of the significance of the ENGO-proposed reserves for maintaining eucalypt phylogenetic and genetic diversity. It also documents noteworthy values within the proposed reserves for various eucalypt species or variants of these species (e.g. natural hybrids, intergrades or atypical populations). The pattern of genetic variation of a number of eucalypts is described, with notable differences evident for some species, e.g. between northern and southern races of *E. globulus*; between western, eastern and Tasman Peninsula populations of *E. obliqua* in maternally-inherited chloroplast DNA; and differentiation in chloroplast DNA in *E. regnans* where unique haplotypes in north-eastern and south-eastern Tasmania suggest the presence of glacial refugia.

The report also describes a dynamic and actively evolving system for neo-endemic species, noting that 'marked changes in environment occurring over short distances in response to rapid changes in aspect, altitude, geology and drainage are often associated with rapid

transitions in the Tasmanian eucalypt flora'. The genetic variation in the group is indicative of the close adaptive response of eucalypts to their environment, an important consideration in the face of global change.

The south-east of the island around Storm Bay is believed to have been a major forest refuge during glacial periods and endemic eucalypt taxa are concentrated in the south east of the island.

Also discussed is the dynamic evolutionary interplay between adaptive radiation and convergence, drift and hybridization as populations have and continue to respond to changing environments and distributions. The global significance of Tasmania's eucalypt flora is well documented, with a long history of scientific research and commercial use. Tasmania's eucalypts include the type specimen for the genus, the world's tallest flowering angiosperm, one of the smallest species and one of the most frost-resistant species. While the island only has 30 species, it has high levels of endemism. Its tall eucalypt forest is internationally known. The eucalypts are important foundation species, important for food, habitat and resources for other dependent biota and are core habitat for a number of nationally threatened species.

Tasmania is an island of rapid environmental turnover, (see Report 1B(i) Ferrier) and these rapid changes in aspect, altitude, geology and drainage are associated with rapid transitions between the eucalypt species and adaptive clines within species.

The report highlights the importance of south-eastern Tasmania for eucalypt diversity and evolution, and this is particularly evident in the east and south-east of the state. The Wielangta area (ENGO-proposed reserve **29**) has some of the highest levels of eucalypt species richness in Tasmania, and includes a range of other values such as disjunct eucalypt populations, variants, and natural hybrids (including possible genetic remnants from the Last Glacial).

Other important proposed reserves with the high richness of eucalypt species include Little Swanport (**45, 39**) and St Marys (**123**) and (in order of decreasing reserve area): **208, 39, 68, 76, 14, 117, 122, 204, 40, 215** and **214**—many representing species disjunctions and outlier records and/or races.

Several proposed reserves in both the north and south of the island (**13, 35, 82**, and **258)** contain relatively large areas of *E. regnans* forest and also include giant trees, as do several smaller proposed reserves (**166, 197**). *Eucalyptus regnans* is relatively rare in the Flinders and King bioregions, and stands in these regions represent geographical/ecological outliers for this south-eastern Australian species.

Report 9A, also contains information relevant to protecting significant genetic diversity within Tasmania (pp 17–23):

> New information on genetic variation now evident in a number of ancient flora and fauna species illustrates the impact of past climate and evolutionary processes on driving genetic diversity. Genetic variation between eastern and western populations for a number of species (e.g. *Nothofagus cunninghamii*, pademelons *Thylogale billardierii*, giant freshwater crayfish *Astacopsis gouldii* and sassafras *Atherosperma moschatum*) is evidence of the influence of deep historical processes.

This report notes that 'the cryptic lineage from north-east Tasmania for *A. gouldii* may … be of extremely high conservation value' and goes on to identify the north-east of Tasmania as a highly significant conservation asset:

> The north-east quadrant is one of the most poorly studied regions of Tasmania for the purpose of biodiversity assessment. Yet, when considered at the community level, the regional combinations of co-occurring species highlight the importance of the north-east as a nationally and globally unique bioregion. For example, beetle communities occurring on Dicksonia tree ferns are notably different in the north-east than elsewhere

> (Fountain-Jones et al. 2012). Similarly, the profile of millipede communities in NE Tasmania is unique to the bioregion and includes local hotspots of endemicity and diversity, and examples of short-range endemism (Mesibov 2006); similar patterns are seen in velvet worms including unusual phenomena such as parapatric boundaries that separate species' distributions. Cryptic lineages in freshwater crayfish also highlight the novelty of the north-east domain (Sinclair 2011). It is noteworthy that various taxa display independent responses to the environment, with Cranston & Trueman (1997) reporting almost no overlap in the species diversity patterns of eleven groups of invertebrates surveyed in NE Tasmania (p. 33).

Biogeographical processes

Report 9A illustrates and describes parapatric boundaries for millipedes and stag beetles (for which Tasmanian has the highest diversity in the world) on p. 28.

The same report also cites newly emerging evidence of both long past and recent evolutionary processes within Tasmania:

> An unusually species-rich and highly endemic soil and litter fauna is only now being revealed. Small animals such as these play important roles in nutrient cycling and soil conditioning. In the last decade significant new species of ants, earthworms, beetles, pauropods and millipedes have come to light (Blakemore 2000; Mesibov 2006, 2009, 2010; Scheller 2009). Earthworm communities in Tasmania are remarkably rich by global standards (more than 200 species).

It also appears that Tasmanian tall forests harbour some of the highest diversity in macro fungi in the world (Gates 2010):

> Knowledge of an entire biotic kingdom within Tasmanian tall forests, the fungi, is only just emerging, but recent inventories of macrofungi alone point to outstanding biodiversity in these habitats (G. Gates, pers.comm.2011). It is noteworthy that these numbers exceed those recorded in the temperate forests of south western China, regarded as one of the world's richest domains for macrofungal diversity (Zhang et al. 2010).

Further the report states:

> Fungi are crucial to many ecosystem functions and have great ecological and economic value.

Many trees have evolved mutualisms with ectomycorrhizal (ECM) fungi that facilitate their phosphorus nutrition. Mycorrhizal fungi depend on photosynthetically fixed carbon produced by their associated trees. Forest resilience, recovery, vigour, and composition are intricately tied to EMF diversity (Amaranthus 1998).

Ratkowsky & Gates (2005) recently documented 360 named species of macrofungi (305 Basidiomycota and 55 Ascomycota) present in Tasmanian forests (mainly wet sclerophyll).

In a benchmark study, Gates et al. (2011a) found 331 ECM species in a limited area of tall *Eucalyptus obliqua* forest in southern Tasmania. The family Cortinariaceae (mainly *Cortinarius*) dominated the communities and covariation of plant and fungal communities was exhibited in the woody perennial plant community and their fungal assemblages. In a further study, Gates et al. (2011 b) showed that litter in these tall forests also supports a rich and diverse mycota, with 146 macrofungal species found fruiting in or on litter in one hectare of native forest, which had a range of fire histories. Regenerating forest after fire (including CBS harvest) is dominated by opportunistic, mainly saprotrophic fungi and has few symbiotic basidiomycetous ectomycorrhizal species that are abundant in the soils of mature forests (Ratkowsky & Gates 2009).

The macrofungi of lowland wet *Eucalyptus obliqua* forest respond to forest succession. Gates et al. (2005) recorded a total of 307 species of macrofungi with 248 species observed in the

mature forest (more than 70 years since wildfire) and 131 in the two or three-year-old regeneration. The large proportion of single records would suggest that many more undetected species might be present. The number of species that were observed exclusively in the mature forest (176) was three times the number observed exclusively in the regeneration (59). Most species known to be mycorrhizal were confined to the mature forest, suggesting that such species may take many years to establish, or reach maturity, following major disturbance. Most macrofungi were associated with either soil or wood, highlighting the importance of these substrates.

Tasmanian and Victorian wet forests contrast to northern hemisphere temperate forests in that *Laccaria* and *Cortinarius* fungi are among the most abundant ECM taxa (Tedersoo 2007). This suggests that these austral lineages may have different ecological roles and importance compared with Holarctic ecosystems (p. 43)

The Peninsulas

Report 9A notes, that:

> … despite their modest area, the Peninsulas are a hotspot of diversity for endemic fauna and flora as well as outliers of remnant rainforest ecosystems. Areas near MacGregor Peak on the Forestier Peninsula and Tatnells Hill on the Tasman Peninsula have been identified as areas indicative of high flora species richness with 14 eucalypt species present within 10km². http://www.parks.tas.gov.au/file.aspx?id=7040
>
> …The Peninsulas' important function as a refuge from past climatic stress is likely related to a benign maritime climate from its proximity to the ocean, relatively high rainfall, and complex topography including elevated peaks offering small scale refuges and various environmental gradients. To exploit these opportunities species must be able to move across the landscape facilitated by good connectivity and large contiguous areas of natural habitat.

Freshwater ecosystems

In terms of assessing the freshwater ecosystem values of the proposed ENGO reserves and the contribution they would make to the quality and quantity of freshwater and overall freshwater ecosystem health an analysis by the Department of Primary Industries, Parks, Water and Environment reveals that the ENGO-proposed reserves would significantly increase protection of these values.

Carnivores

Report 7A notes that:

> Tasmania is globally significant for the largest and most intact guild of marsupial carnivores … With the demise of the thylacine, there are three species in this size structured guild. The Tasmanian devil (6–14 kg), now positioned as the apex predator, is the largest remaining marsupial carnivore (and) is a predator and specialist scavenger. Now restricted to Tasmania, it was extirpated on the mainland by introduced dingoes 4000–5000 years ago. With recent severe disease-induced decline it is now listed as Endangered at state (*Threatened Species Protection Act 1995*), federal (EPBC Act 1999) and International (IUCN) levels. The spotted-tailed quoll (2.5–6 kg) is also found in a patchy distribution along the Great Dividing Range to far north Queensland and is classified as Vulnerable nationally (EPBC Act 1999) and Rare in Tasmania (*Threatened Species Protection Act 1995*). It once occurred much further west into the semi-arid zone but has disappeared from all but the wettest parts of its mainland range. The eastern quoll (0.7–1.5 kg), a carnivore/insectivore, disappeared from mainland Australia between the

> 1930s and the 1960s. Foxes are implicated as a major factor in its extinction. It is listed as Near Threatened (IUCN).
>
> Until recently all these species were secure in Tasmania but are now in decline and in the case of the devil, extremely seriously so. The report identifies where the most potential exists for the proposed ENGO reserves to increase connectivity of reserved habitat in areas that function as refugia. This would be done by providing consistently suitable conditions for co-occurrence of all three species in Tasmania's large carnivore guild. The report identifies three clear hotspots and notes a significant number of proposed reserves 'which would greatly improve the reservation/protection status and connectivity for this carnivore guild.'

Connectivity

Report 9A highlights the importance of protecting extensive elevational gradients and corridors of vegetation that connect populations and maintain pathways from sea level to the mountains. These would provide an essential buffer against impacts of both natural and human-enhanced climate change on native species:

> These should be regionally replicated where possible in order to offer multiple pathways for retreat or expansion. The present distribution of many species and communities in present-day Tasmania is best explained by such migration in the past …

Proposed reserves, which make a good contribution to elevational range are shown on page 39 and 40. The report also notes that 'blocks which abut existing reserves may contribute an even greater collective elevational gradient which further enhances their value.'

Cultural heritage

Significant information has also been provided in relation to important Aboriginal cultural sites, including for significant sites not currently protected in the TWWHA, which require full formal assessment.

Conclusions

A matrix is attached to this report, which notes all values found in IVG assessment projects to be present in all 270 polygons of the ENGO-proposed reserves.

The contributing values described above highlight the rich biodiversity of Tasmania's forests. Recent discoveries add value to the better-known core conservation values, including the many nationally and globally significant heritage values.

The values identified in the above reports coincide with many of the areas identified in here as having National or World Heritage significance. They reinforce the arguments for their protection and overall heritage value.

CHAPTER 3

Southern Forests

Chapter 3

Southern Forests

Introduction

Many of the proposed ENGO nominated reserves identified as a part of the lands to be examined by Tasmanian Intergovernmental Forest Agreement Independent Verification Group either adjoin or are near to the boundary of the Tasmanian Wilderness World Heritage Area.

The boundary and proposed additions to the TWWHA have long been a matter of debate and as a result a number of adjustments have been made to the boundary from time to time. A series of the currently nominated parcels relate to particular themes such as tall eucalypt forests and boundary appropriateness.

Rather than individually assess each parcel, it was decided at least for initial assessment, to group the parcels into aggregates that appeared to share a single theme.

A separate section addresses the global significance of tall eucalypt forest, laying the foundations for assessing the several aggregate areas containing tall eucalypt forest, which relate to the existing World Heritage Area.

A number of separate projects undertaken for the IVG process add to the global significance of this and other areas within the ENGO proposals to extend the TWWHA. A full analysis of the information contained in these reports has not been possible in the limited time available. See Chapter 4 of this report for description of some of the other relevant values that contribute to the overall significance of the proposed areas.

The following clause from the World Heritage Operational Guidelines is particularly relevant when considering the various ENGO-proposed reserves adjacent to the TWWHA.

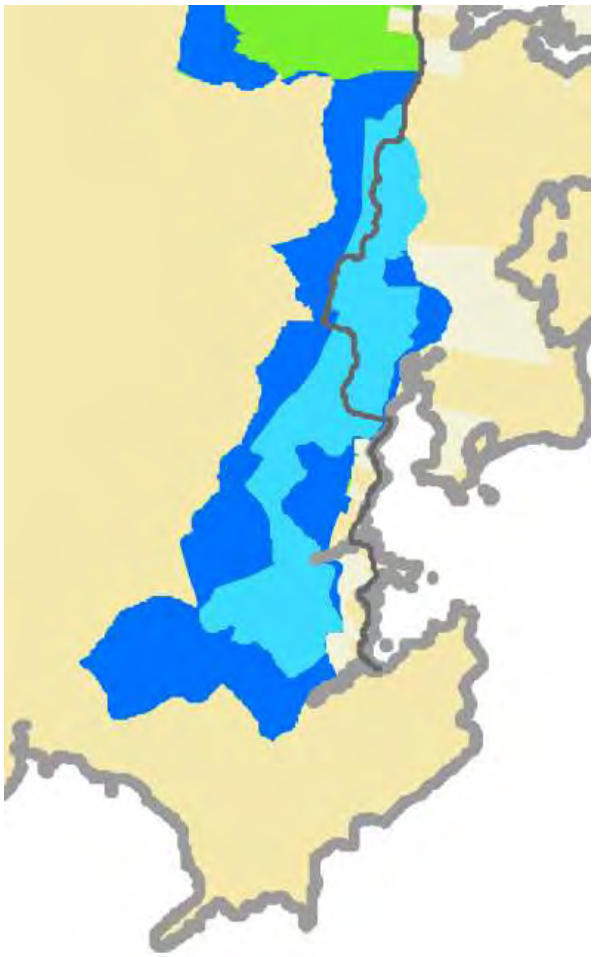
'96. Protection and management of World Heritage properties should ensure that the outstanding universal value, the conditions of integrity and/or authenticity at the time of inscription are ***maintained or enhanced*** in the future.' (emphasis added) —World Heritage *Operational Guidelines* 2008

CAVEAT: The assessments of heritage significance in this report are based on data that the consultancy could access in the limited time permitted and therefore not necessarily based on fully comprehensive data. Any data omitted is only likely to increase the heritage significance of the affected areas rather than invalidate or diminish significance. In a number of cases, assessment has been curtailed when a high level of significance has already been established without resort to greater depth of data analysis.

Recherche Bay to D'Entrecasteaux Catchment assessment area

Introduction

The ENGO-proposed reserves illustrated in the diagram below, extending from Cockle Bay in the south to the watershed between the D'Entrecasteaux and Lune River catchments was initially considered to be a logical aggregate for assessment. It was later divided into two sections, north and south of the D'Entrecasteaux River because of certain complications in the northern section.



ENGO-nominated reserves (dark blue and light blue) in the Recherche Bay and D'Entrecasteaux catchment adjoining the TWWHA (green).

For the section of the boundary of the TWWHA between Cockle Creek in the south and Adamson's Peak in the north, there has been a longstanding issue of the appropriateness of the boundary of the TWWHA. The original boundary was based on an early delineation for the South West Conservation Area, adopting in many cases contours across steep hill slopes quite inappropriate for any major protected area/World Heritage Area. In the past decade some parcels of land along the boundary have been converted to national park improving the situation to some extent but leaving an otherwise illogical and unsustainable boundary. The natural sequence from tall eucalypt upslope to rainforest and beyond that, alpine ecosystems, has been arbitrarily truncated by the contour boundary. This denies the opportunity to maintain natural ecological processes, especially fire driven ecology which is a major determinant in interaction between the eucalypt and rainforest ecosystems.

South of the D'Entrecasteaux River there remains an opportunity to extend protection from the steep hill slope escarpment down slope and to the coastline, therefore mostly preserving the opportunity for natural ecological processes to be maintained or restored across the landscape. One of the important benefits of extending protection to the shoreline would be to shorten and simplify the TWWHA boundary Eliminating clearing and other forest development would greatly enhance the ecological integrity of the Mount La Perouse–Recherche landscape unit within the TWWHA.

North of D'Entrecasteaux River the greater extent of development has all but eliminated the option of maintaining or fully restoring natural ecological processes, particularly fire. Accordingly, the strategy north of the river is to, as far as possible, remedy the defective TWWHA boundary and to improve manageability at the local and landscape level.

NOTE: There are a number of small clusters of waterside settlement along Cockle Creek Road and parts of the western shore of Recherche Bay, for example Moss Glen. The status of these house clusters has not been established and some appear to be located on Recherche Bay State Recreation Reserve. Ideally, management of the forest hinterland adjacent to these settlements should be harmonised with if not integrated with that of the TWWHA forests.

Assessed sub-unit: Recherche Block

[Part FID 002]

The 'Recherche' Unit 1 is described as comprising all unreserved lands in FID 002 south of the D'Entrecasteaux River**.** Because of the similarity and integral relationship of the two land classes, 'Immediate Protection' and 'Interim Protection' zones of the ENGO-proposed reserves, in this instance it was logical to assess them as a single entity.

Notwithstanding a significant amount of past disturbance within the assessed area caused by coupe based logging, the longer term view is that natural rehabilitation can be expected to progressively eliminate both the direct and indirect impacts of those logged coupes. The assessed area comprises mostly coastal lowland rising inland to foothills and is predominantly forested with significant areas of tall eucalypt forest (see diagram below) The ENGO-proposed reserves are bounded in the upslope to the west by the boundary of a tract of protected lands, mostly Tasmania Wilderness World Heritage Area. (It is apparent there may be several small areas of National Park not yet included in the TWWHA. This should be checked.)

The Recherche Bay region has historic significance for the discovery and first formal description of the eucalypts of the world. The first eucalypts collected for science were from the region and the first eucalypt officially described also came from the region (Bruny Island).

On his return to France, Labillardière wrote the first major work devoted to the botany of Australia and Tasmania, *Novae Hollandiae Plantarum Specimen* (Labillardière 1804–1807). In the book, he describes 265 new species, including several eucalypts which he had collected from Tasmania: *E. amygdalina*, *E. cordata* (Photo 2), *E. globulus* (Photo 3), *E. ovata* and *E. viminalis*. Another of his specimens, that of *E. pulchella*, was described by his friend and colleague, René Louiche des Fontaines, director of the Natural History Museum in Paris.

In 1804–06 Labillardiere also identified about 100 new plant species including the blue gum, *Eucalyptus globulus*, now Tasmania's floral emblem. The publication of the botanical material collected by the d'Entrecasteaux expedition represented the first general publication extensively covering Australia's flora to this extent. Much of Labillardiere's Australian material came from Recherche Bay.

National Heritage List: 7 October 2005

Context for assessment

The assessment area is essentially fully forested, mostly tall eucalypt, and has been subject to some past episodes of logging. The assessment area occupies a strategic position between the TWWHA and the shores of Recherche Bay, although in part separated from the shoreline by various public reserves and possibly small blocks of private land.

The adjacent section of the TWWHA incorporates only a disjunct series of remnant tall eucalypt forest, the greater part of the otherwise continuous tract of tall eucalypt forest being located just outside the TWWHA boundary, an artifact of the drawing of the original protected area boundary to exclude the commercially important tall eucalypt forest. The ENGO-proposed reserves include the main corridor of tall eucalypt forest otherwise excluded from this section of the TWWHA. This corridor of tall eucalypt forest is relevant to the concept outlined elsewhere for protection—within the TWWHA—of a regional scale tall eucalypt corridor from Cockle Creek to central Tasmania, (see 'C2C' corridor) as a means of ensuring regional connectivity for the globally significant tall eucalypt ecosystem in Tasmania.

The eastern boundary of the World Heritage Area mostly follows a contour just above the tall eucalypt forest. Then ENGO-proposed reserves would move the boundary downslope to include a strip of tall eucalypt forest.

Given the gross under representation of the ecological diversity of tall eucalypt forest in the Tasmanian Wilderness World Heritage Area, there is a clear case to remedy that situation. The tall eucalypt forests in the lowlands of the Recherche Bay–D'Entrecasteaux coast potentially represents a significant contribution to the ecological integrity of the TWWHA (southern limit, alpine summit to sea sequence on one slope—The 'French transect'—Mount La Perouse to Recherche Bay]. This area provides the best opportunity to capture the full range of elevation values in the TWWHA—of significant benefit to the ecological function and integrity of the TWWHA and particularly important to assist adaptation to climate change.

The existing boundary of the TWWHA south of the D'Entrecasteaux River reflects the history of protected area boundary design superimposed with incremental change. The boundary still includes some lengths of the original contour boundary of the South West

Conservation Area, mixed with a number of straight-line boundaries later created as a result of small parcels being protected and/or added to the TWWHA.

Preliminary heritage assessment

Managing for maintenance of ongoing natural processes in the adjoining section of the TWWHA would be greatly facilitated if other potentially conflicting land uses were excluded from the lowland forest.

Similarly, maintenance of tall eucalypt connectivity in this district would be achievable only if these lowland tall eucalypt forests are protected.

NOTE*:* This assessment has been limited to the landscape level due to serious time constraints. Species level biodiversity was not input to the assessment. However, as noted above, a number of other IVG reports contain relevant information to assist a full World Heritage assessment and it is clear that new information provided in these reports adds to the overall significance of the proposed ENGO areas, especially of old-growth tall eucalypt forest.

Landscape level assessment was considered relevant for addressing maintenance of natural processes and protection of tall eucalypt forest (tall eucalypt ecosystem, connectivity, fire processes).

Attributes

The ENGO-proposed reserves [Part FID 002] south of D'Entrecasteaux River have the following special attributes at the landscape level:

- The eucalypt forests in the assessed area, including some stands of tall eucalypt forest, represent the larger of the two***** **most southerly tracts of eucalypt forest in Australia, indeed the world.** (Tall eucalypt forest extends from north of the equator (Philippines) south to this southern most locality in Tasmania).
- The natural diversity of this small forest complex at the southern latitudinal limits of the Australian eucalypt and rainforest flora and fauna, especially the globally significant eucalypts can be expected to be of enduring **scientific interest**, especially given the historic research conducted by the French scientists in the 18th century.
- The eucalypt forests of the Recherche area would **contribute to the ecological integrity** of the adjoining Tasmanian Wilderness World Heritage Area (TWWHA) by preserving the natural vegetation sequence from sea level to tree limit on Mount La Perouse. This is particularly important for maintaining vegetation conditions conducive to natural fire interaction with the vegetation, especially on foothills and escarpment of the existing TWWHA.
- The eucalypt forests of this narrow lowland corridor are an integral part of a still existing natural connectivity of tall eucalypt, which extends up the eastern side (mostly outside) of the TWWHA, an important element in the long-term conservation of this ecosystem.

(*NOTE: The other isolated smaller 'island' of tall eucalypt stands is on the opposite side of the Mount La Perouse mountain range and has a south westerly aspect and completely cut off from the main tracts of eucalypts on the eastern side of the TWWHA.)

Assessed heritage significance

Those parts of the ENGO-proposed reserves, comprising mostly unlogged or little disturbed forest (some recent logging coupes) are of clear: *National Heritage Significance*: (c) because of their contribution to the integrity of the adjoining National Heritage listed TWWHA.

World Heritage

The same areas would make a significant contribution to Criterion (ix) (ongoing natural processes); criterion (vii) (superlative natural phenomena of exceptional natural beauty …); criterion (x) (the most important and significant natural habitats for in-situ conservation of biodiversity …); and possibly criterion (viii) (outstanding examples of major stages of earth's history, including the record of life …)

NOTE 1: As noted in Chapter 4 of this report there are other *in-situ* biodiversity values that need to be assessed.

NOTE 2: Two recorded Aboriginal cultural sites were noted in this preliminary assessment.

Boundary considerations

Protection of the assessed area for conservation purposes and its addition to the adjoining TWWHA would have the benefit of greatly shortening (in the order of 25 kilometres) and simplifying (seashore, river) the boundary of the TWWHA, thereby greatly enhancing the manageability of this important protected area. Adoption of the seashore and a river as a boundary, instead of the existing difficult cross-country boundary, the boundary definition and manageability of this section of TWWHA would be greatly improved.

The Recherche assessment sub-unit is dominated by tall eucalypt forest. The TWWHA boundary largely excludes the best-developed tall eucalypt forest—in the ENGO reserve. The tall eucalypt forests of the Recherche Bay—Cockle Bay area are some of the southern most tall eucalypt forests in Tasmania, indeed the world.

NOTE: The intention is to include the Recherche Bay State Recreation Area in the same protected area as the assessed area. The actual tenure is less important than the need to ensure 'seamless ecologically based management' in the Recherche landscape, from seashore to tree line (from Recherche Bay to Mount La Perouse).

Presentation considerations

Protection of all forest south of the D'Entrecasteaux River would greatly enhance the perception of natural landscape values for any visitor to Australia's southern most forested lands. Crossing the D'Entrecasteaux River on the South Cape Road provides a 'sense of arrival' for visitors traveling south into the TWWHA, including South Cape, the southern most point of Tasmania and hence Australia.

Consideration should be given to consolidation of protection in this southern coastal precinct of Tasmania, linking up the World Heritage Area, Southport Lagoon Conservation Area and the National Heritage listed Recherche Bay area. The cultural heritage value of the Recherche Bay area would make a significant contribution to the integrity of the TWWHA.

Bibliography

http://www.recherchebay.org/

http://www.environment.gov.au/heritage/places/national/recherche/information.html

Assessed sub-unit: Recherche 2 (R2)

This area comprises mostly lower foothills extending north from the D'Entrecasteaux River in the south to watershed between the Lune and D'Entrecasteaux catchments in the north. The area comprises areas described by ENGOs as both 'Immediate Protection' and 'Interim Protection' proposed reserves.

ENGO-proposed reserves 'immediate protection'

These lands comprise a narrow corridor along the eastern boundary of the TWWHA. As such it is expected that they would contribute to the ecological integrity of the TWWHA and improve the boundary.

Much of the lands in this unit are eucalypt forest, including stands of globally significant tall eucalypt forest and often adjoins non-eucalypt (mostly rainforest) in the immediately adjoining TWWHA. As such, this fringe of eucalypt forest contributes to the ecological integrity of this section of the TWWHA and so, is strongly recommended to be protected and included in the TWWHA. These forests make an important contribution maintaining a regional connectivity corridor for tall eucalypt forests along the eastern margin of the TWWHA.

Heritage assessment findings

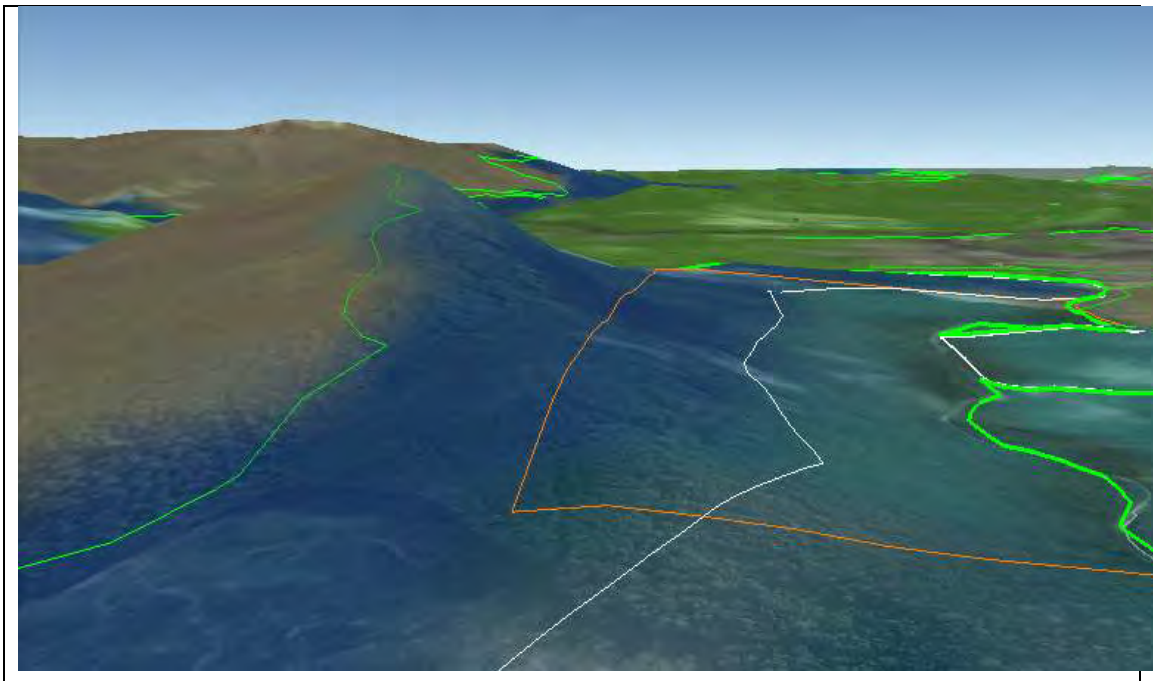
The assessed forests:

- contribute to ecological integrity (transition sequence from lowland tall eucalypt to rainforest) of the adjacent section of TWWHA
- contribute to ecological integrity (connectivity) along the eastern side of the TWWHA—see 'C2C'* tall eucalypt corridor
- contribute to boundary definition and manageability of TWWHA.

*** NOTE:** 'C2C' is a concept designed to maintain/restore effective long distance connectivity of tall eucalypt forests derived from **C**ounsel River to **C**ockle Creek—the two approximate extremities of this natural linear corridor of eucalypt forest. (P Hitchcock 2008 unpublished)

ENGO-proposed reserves 'interim protection'

These lands have been subject to a long history of logging and have mostly been subject to clear felling in recent decades. For the most part they don't appear to retain significant naturalness or biodiversity value. (*Caution:* Species records should be checked in detail as a routine precaution)



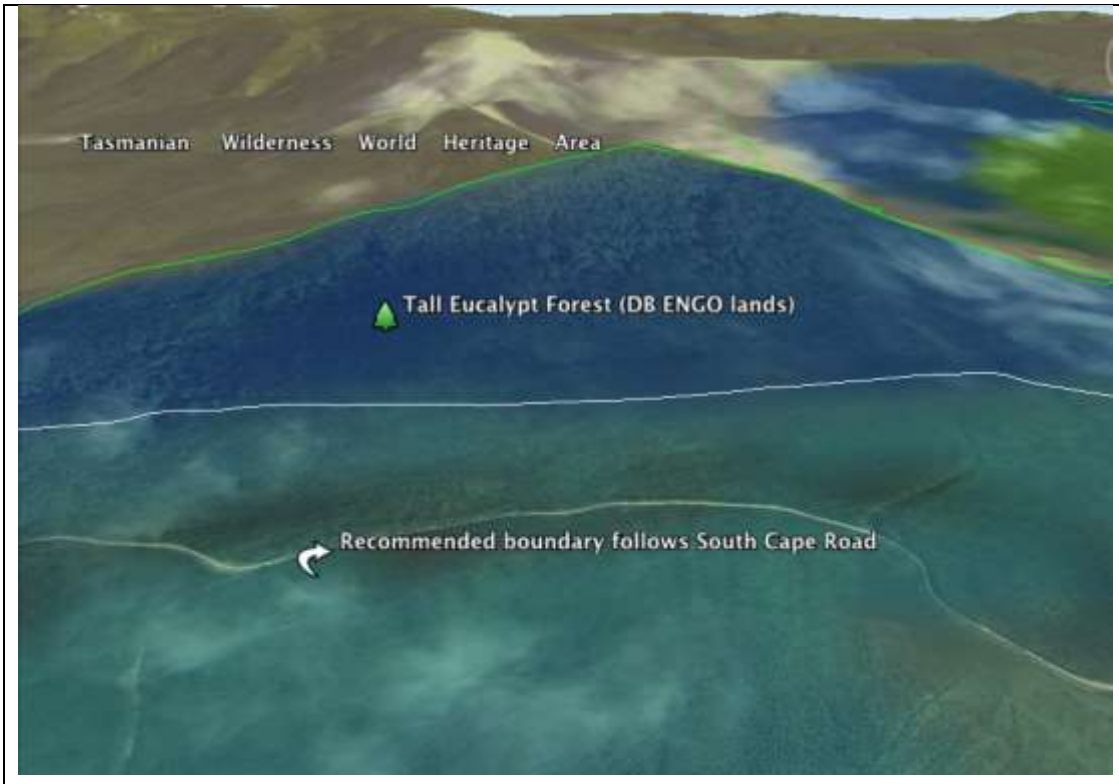
Multiple tenures, multiple boundary options. WHA boundary (left), Fossicking Area (orange), 'Immediate protection' (white) and South Cape Road (light green). The most appropriate and sustainable boundary is likely to be the main road. (But note complications with the Fossil Reserve—see below)

Boundary considerations

Incorporation into the TWWHA of the ENGO-proposed reserves between D'Entrecasteaux River and the Lune watershed provides the opportunity to significantly improve the manageability of the existing TWWHA boundary by relocating it from hill slopes and ridge top to a more accessible location on the lower slope.

One option is to adopt a section of the South Cape Road, ensuring a well-defined and more appropriate field management boundary (but see below)

However, by protecting the full east-west extent of the ENGO-proposed reserves in this locality, there is the opportunity to provide a direct link to the Southport Lagoon Conservation Area, securing habitat connectivity between the TWWHA and this important formal reserve. Although this link is not important to the TWWHA, it is good conservation planning and enhances the value of Southport Lagoon CA.



That part of the 'Interim Protection' lands (light blue) west of the South Cape Road would, if added to the TWWHA, improve boundary definition and simplify field management. One option is to adopt the South Cape Road for a section of new TWWHA boundary. The preferred option is to protect all of the ENGO-proposed reserve lands in FID 002, thereby providing habit connectivity to the Southport Lagoon Conservation Area.

Summary—Recherche to D'Entrecasteaux—Lune Divide (not including Lune Fossil Sites)		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(ix) (Outstanding examples of ongoing evolution) (vii) (superlative natural phenomenon) (viii) (outstanding examples of major stages of earth's history	Contributes to ecological diversity of already cited World Heritage values '*pristine tall eucalypt forests* (Australian Heritage database) *See Chapter 1 for rationale for this criterion.* *Possible value. See Chapter 1 for discussion of relevance to this value.*

Tall eucalypt forest	Criterion (x)	Tall eucalypt forests are of world heritage significance; this area contributes an additional value to the WHA. Contributes to the integrity of the TWWHA.

Assessed sub-unit: Lune River fossil sites

The ENGO-proposed reserves include two nationally* significant fossil sites which have been formally recognised. The two sites are the only known in situ sites of Jurassic age fossils in Tasmania and have yielded many important plant fossils. (See Sharples 1995 and Calver 2009)

Both sites are within state forest and both have been previously logged, cleared and regenerated. Notwithstanding that much of the ecological value has been lost from the sites, they are of such geoconservation heritage significance that they deserve formal high-level protection and, most importantly, appropriate management.

* Tasmanian Geoheritage List 2009

Heritage significance

National Heritage

Criterion (b) and (c) '… the place's possession of uncommon, rare or endangered aspects of Australia's natural … history; ...' and '… the place's potential to yield information that will contribute to an understanding of Australia's natural … history;'

Two of the Lune River fossil sites/features have been listed on the Tasmanian Geoconservation Database (TGD) as being of national significance namely:

Lune River in situ Jurassic plant fossils	Southern Tasmania, Lune River
Lune River large silicified Jurassic logs	Southern Tasmania, Lune River

In *State of the Environment Report* 2008

Given that the Lune River fossil sites are already known, have been studied and professionally evaluated as being of at least national significance, preliminary assessment is that they have the potential to meet both criteria (b) and (c) of the National Heritage criteria.

World Heritage

Criterion (viii) ('...to be outstanding examples representing major stages of earth's history, including the record of life, …'

Assessed in the context of the adjacent Tasmanian Wilderness World Heritage Area, the Lune River Fossil Sites would make an important contribution to the integrity of the already cited outstanding geo-heritage values and significance of the Tasmanian Wilderness World Heritage Area.

Reference

http://www.mrt.tas.gov.au/mrtdoc/dominfo/download/UR2009_02/ur2009_02.pdf

Apart from the significant conservation values of the two Lune River Fossil Sites, this assessment failed to find other significant values.

(Caution: Species records should be checked in detail as a routine precaution).

Oblique view showing relationship between Tasmanian Wilderness World Heritage Area (TWWHA) boundary, 'Immediate Protection; (beyond white line), 'Interim Protection' lands (forward of white line and Lune River fossil sites. Proposed boundary is bright green and steps around the two fossil sites to incorporate them into the TWWHA.

Heritage assessment

Summary—Lune River Fossil Sites		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Lune River in situ Jurassic Plant Fossils	Criterion (viii)	Contributes to the integrity of already cited geoheritage values of TWWHA by adding unique new dimension to geodiversity.
Lune River Large Silicified Jurassic Logs	Criterion (viii)	Contributes to the integrity of already cited geoheritage values of TWWHA by adding unique new dimension to geodiversity.

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Lune River in situ Jurassic Plant Fossils	(b) and (c)	Already assessed as national significance on Tasmanian Geoconservation Database(TGD)
Lune River Large Silicified Jurassic Logs	(b) and (c)	Already assessed as national significance on Tasmanian Geoconservation Database(TGD) and therefore meeting criteria for National Heritage.

Heritage summary—Lune River Fossil Sites

World Heritage: Assessed in context of adjacent TWWHA, addition to the WHA would contribute significantly to the integrity of the geoheritage values of the WHA, adding a unique new dimension.

National Heritage: Meets criteria (b) and (c) as National Heritage.

Protection and boundary considerations

The Lune Jurassic fossil sites present a situation that may require special attention. Firstly, there is no doubt about the heritage significance, secondly the area has been subjected to intense forestry activity and thirdly, the two already reserved sites are adjoined by a designated public fossicking area.

The fossil sites could be added to the adjoining/adjacent Tasmanian Wilderness World Heritage Area and in so doing they would definitely contribute to the integrity of the TWWHA (Jurassic fossil sites that would complement the already cited 'fossiliferous Ordovician limestone' in the TWWHA.

Arguably the designated fossil sites deserve a greater level of formal protection. The options are that the fossil sites be either added to the adjoining TWWHA or the adjoining Southport Lagoon Conservation Area.

Withdrawal of forestry activities and regeneration of the eucalypt forest would provide the opportunity to permanently re-establish habitat connectivity between the TWWHA and Southport Lagoon Conservation Area, enhancing the conservation value and integrity of the Conservation Area and the Tasmanian Wilderness World Heritage Area.

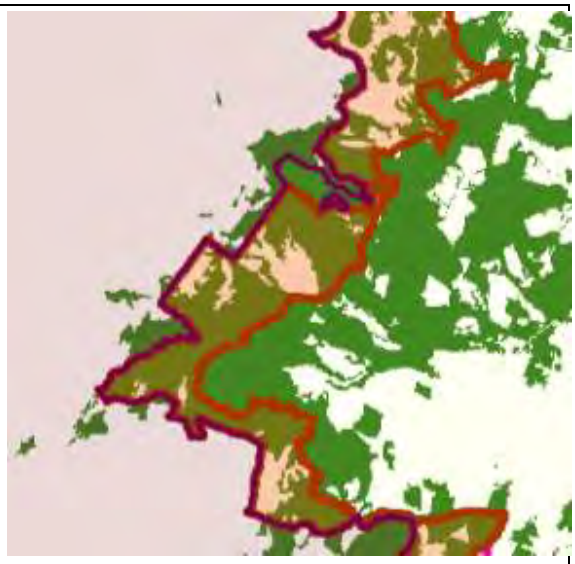
Recommendation

1. Add the Lune Fossil Sites as currently configured to the TWWHA (not including that part of the Fossicking Reserve east of the South Cape Road).

Lune–Hastings Cave assessment area

LH1 (Lune Divide north to Hastings Cave)

ENGO reserve FID 02 is bounded in the west by the unsatisfactory boundary of the WHA. If added to the TWWHA, the proposed reserve would move the boundary of the TWWHA to an accessible location on the coastal lowlands.



ENGO reserve FID 02 embraces much of the remaining tall eucalypt forest along the escarpment, mostly outside the TWWHA.. Protection of the forests in the proposed reserve would also contribute to regional connectivity for tall eucalypts right along the eastern side of the TWWHA.

NOTE: There appear to be some boundary discrepancies in between the TWWHA and ENGO-proposed HCV boundaries. As they are essentially 'internal', they have no impact on the recommendations.

Context for assessment

In this region, the natural sequence of forest communities from east to west (dry to wet, low elevation to higher elevation) is progression from eucalypt forest and treeless areas with impeded drainage on the lowlands, through a band of tall eucalypt forest (mixed forest) to rainforest and/or subalpine and alpine vegetation on Adamson's Peak. In the vicinity of Hastings Caves and north of Hastings Caves the globally significant tall eucalypt forest is all but excluded from the TWWHA. Good heritage conservation planning should seek to remedy this situation by including the tall eucalypt forest zone in the TWWHA to as far as possible protect a corridor of tall eucalypt forest **within** the TWWHA. (See Chapter 4 on the heritage significance of tall eucalypt forests)

This section of boundary of the TWWHA has undergone a number of small changes since original listing, primarily to protect the limestone karst areas of Exit Cave and the vicinity of Hastings Caves. The current boundary remains variable, at times high on ridge tops and in other places at the break of slope. This section of TWWHA boundary suffers the often-repeated deficiency up the eastern boundary of the TWWHA of all but excluding the tall eucalypt forest. A glance at a forest community map will reveal that the existing boundary completely excludes the tall eucalypt ecosystem in this locality. Protection of the tall eucalypt forest of the ENGO-proposed reserves, as well as adding an additional ecological dimension

to the TWWHA (extending from alpine on Adamson's Peak down to coastal lowland eucalypt forest) also makes a significant contribution to maintenance of a north-south connectivity in the eucalypt ecosystem. It is recommended that they be fully protected.

Mining On Hastings

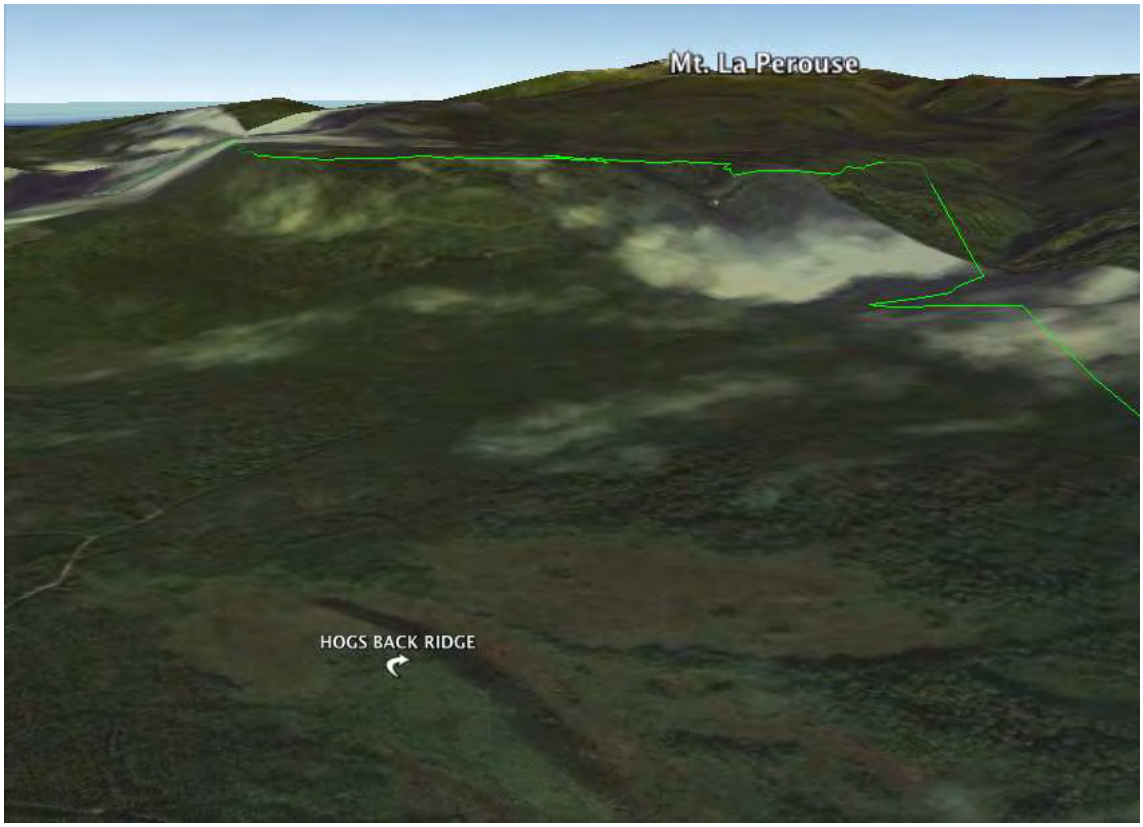
Plain

At the Boar's **Back**, on the Hastings Plain, a gang of men under Mr. R. Hav ls mining ferro-slllcon, and another gang ls building a tram line for about three quarters of a mlle to bring tho material to the cave mad for conveyance to Ida Bay for transhipment tn Electrona.

lt ls believed that several hundred tons are required for. a bulk assay. The In- dustry, ir established, will be of grtat benefit to the district

(Hobart Mercury 14th May 1940)

An interesting feature within the Interim Protection area south of Hastings Caves is a distinctive ridge known as the Hog's Back, rising above the treeless Hog's Back Plain. It falls within Sharples' Southeastern complex karst valleys (Area 12) of fluvial environmental domain mosaics found in or adjacent to the Tasmanian Wilderness World Heritage Area. (Sharples, based on Jerie et al. 2003). The Hog's Back is a siliceous sandstone ridge, which includes a stratum assaying as 98 per cent silica. During World War II high quality silica was quarried from the site for use in ferro-silica metallurgy. The reserves of quartzite have been tentatively assessed at four million tonnes (Summons 1981).



Looking across Hogs Back Plain towards the North Lune valley. Note that TWWHA boundary (green) follows a contour and then descends (right) to straight lines down spurs and across foothills. The current boundary all but excludes the tall eucalypt forest from the TWWHA. Adding the ENGO-proposed reserves to the TWWHA would enhance the integrity of the TWWHA and greatly improve the manageability of the boundary (North Lune Road on left).

Heritage significance and contributions

World Heritage

The 'inscribed values' statement for Tasmanian Wilderness World Heritage Area only specifically cites tall eucalypt forest as a value against Criteria (vii) and (ix) and omits any reference under Criterion (x) for example:

> … eucalypt tall open forests including *Eucalyptus regnans,* the tallest flowering plant species in the world; (Criterion (vii)

The citation fails to acknowledge that the important natural ecological interaction between eucalypt ('fire forests') and the rain forests, together with the 'ongoing natural processes' have been seriously truncated in many places along the eastern boundary.

The ENGO reserve forests along the Hastings Caves–Lune section of TWWHA boundary have important contributions to make to the World Heritage conservation values of the TWWHA including:

- contributing to the value and integrity of the World Heritage values of the TWWHA, in particular to the globally significant tall eucalypt ecosystem
- contributing to the maintenance of natural ecological processes of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest and maintenance of regional scale ecological connectivity (tall eucalypt forests)

- contributing to facilitatingfield management of the TWWHA.

Given the significant identified values and contribution to the value and integrity of the TWWHA, a substantial part of the ENGO-proposed reserves between the D'Entrecasteaux–Lune watershed and in the vicinity of Adamson's Peak in the north are considered to be of such National and World Heritage significance as to warrant permanent protection and inclusion in the TWWHA.

National Heritage

The tall eucalypt forest of the TWWHA is cited as a component of the National Heritage values of the TWWHA. However, the citation fails to acknowledge that the natural ecological transition from the eucalypts ('fire forests') to the rain forests has been truncated in many places along the eastern boundary.

The ENGO-proposed forests along the Hastings Caves–Lune section of the boundary would make important contributions to the conservation values of the National Heritage listed TWWHA, namely:

- contribute to the value and integrity of the World Heritage values of the TWWHA, in particular to the globally significant tall eucalypt ecosystem
- contribute to the maintenance of natural ecological processes of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest and maintenance of regional scale ecological connectivity (tall eucalypt forests)
- contribute to facilitation of field management of the National Heritage listed TWWHA.

Summary Lune–Hastings Caves		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii), (ix) and (x)	Contribution to the integrity of the TWWHA (ecological diversity and connectivity)
Karst	(viii) Outstanding examples of stages of earth's history.	Contribution to the integrity of the already cited karst values of the TWWHA
Glacial features	(viii) Outstanding examples of stages of earth's history.	Contribution to the integrity of the already cited glacial values of the TWWHA

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Eucalypt forest including Tall Eucalypt ecosystem	(a) and (d)	Contribution to the integrity of the TWWHA as a place of National Heritage significance (ecological diversity and connectivity)

Heritage summary

While no specific feature or process was identified as being unique to the section of ENGO proposals between the D'Entrecasteaux–Lune divide and Hastings Caves, the lands have been assessed in the context of the immediately adjoining Tasmanian Wilderness World Heritage Area which is both on the National Heritage List and the World Heritage List. As such, the ENGO-proposed reserves make an important contribution to **enhancing the values and integrity** (as defined in the World Heritage Operational Guidelines) **of the TWWHA** and concurrently to that of the National Heritage listed values of the TWWHA.

The ENGO proposals extend the vegetation sequence to more clearly incorporate the poorly represented tall eucalypt zone in the sequence from the alpine vegetation on Adamsons Peak to the coastal lowlands, thereby contributing to the ecological diversity and integrity of the TWWHA. Further, coupled with other adjacent important areas to the north and south, the ENGO-proposed reserves contribute to maintaining regional connectivity in the tall eucalypt ecosystem extending down the eastern margins of the TWWHA from central Tasmania to the south coast (see 'C2C' connectivity).

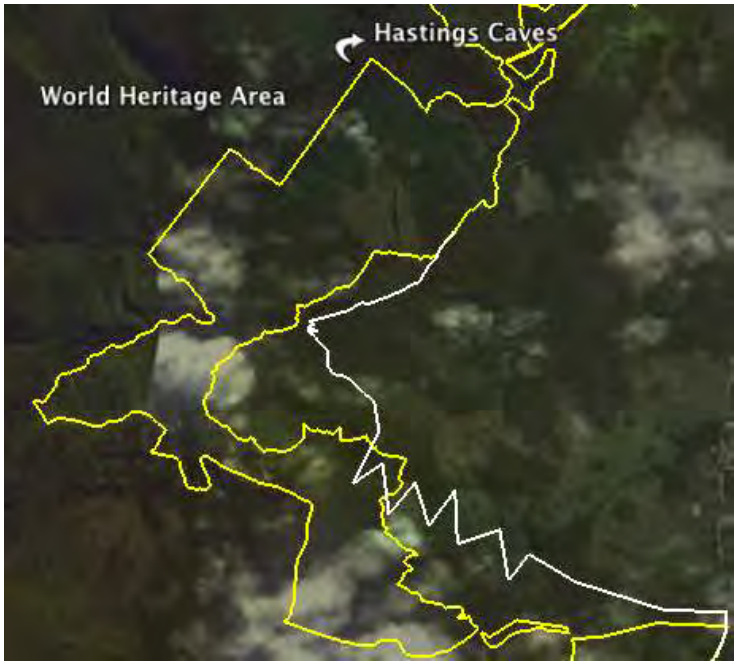
Boundary considerations

Considered in the context of the TWWHA, the ENGO-proposed reserves between Exit Cave and Hastings Caves are considered to be of World Heritage significance given the important contribution that they make to the integrity and hence value of the immediately adjoining TWWHA. That value is sufficiently important to recommend adding the land to the TWWHA.

That leaves the question of the appropriateness of the resultant new boundary that would be created. The eastern boundary of the ENGO proposals appears intended to be the North Lune Road but the small scale maps provided show some departure from this alignment, excluding a block of regrowth eucalypt north-west of the road. The preferred long-term boundary for the TWWHA would be to consistently follow the North Lune Road south-westwards from the Hastings Caves Road. The intent of the proposed new boundary is twofold—to capture a continuous tall eucalypt forest zone on the foothills and lowlands and to create a more appropriate and manageable boundary, which is readily recognisable and accessible in the field.

The section of boundary contained in kmz files which appear as a zigzag are indicative only and subject to detailed determination consistent with the indicated intent of the boundary. The proposed boundary varies in a few places from the boundary proposed by ENGOs, including small areas of state forest not identified as ENGO reserves, and conversely, excluding small areas of ENGO reserves.

Recommended additions to TWWHA incorporating mostly HCV (Immediate protection) lands—eucalypt forest including tall eucalypt forest on lowland and foothills. Recommended boundary is mostly accessible by road—converting a combination of contour and straight-line boundaries to create a permanent boundary that follows roads and natural features. The TWWHA boundary is yellow. Proposed new boundary is white. The zigzag sections indicate more field detail is needed to design a boundary.



The recommended most appropriate TWWHA boundary extends outside the ENGO-proposed reserve boundary.

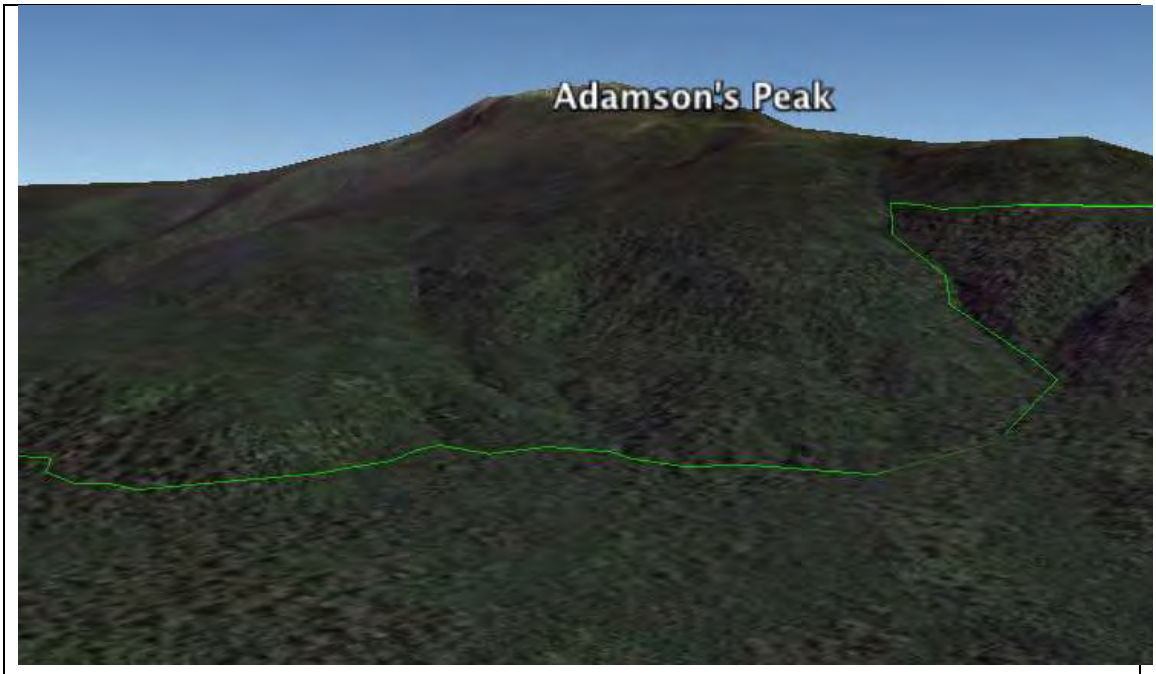
Hastings Caves to Hartz National Park assessment area

Part FID 25

Introduction

The section of boundary of the Tasmanian Wilderness World Heritage Area (TWWHA) between Hastings Caves in the south and Hartz National Park in the north epitomises the boundary deficiencies of much of the eastern boundary of the TWWHA. The entire length of this section of boundary is defined by a contour, mostly on steep slopes. The boundary is an artifact of an earlier period where boundaries were drawn for political expedience rather than capture of important conservation values, ecological processes or manageability.

Not surprisingly, the contour boundary is an artifact of excluding the commercially significant tall eucalypt zone at the time of creation of the South West Conservation Area, South West National Park and hence the TWWHA rather than the product of a carefully designed protected area boundary.



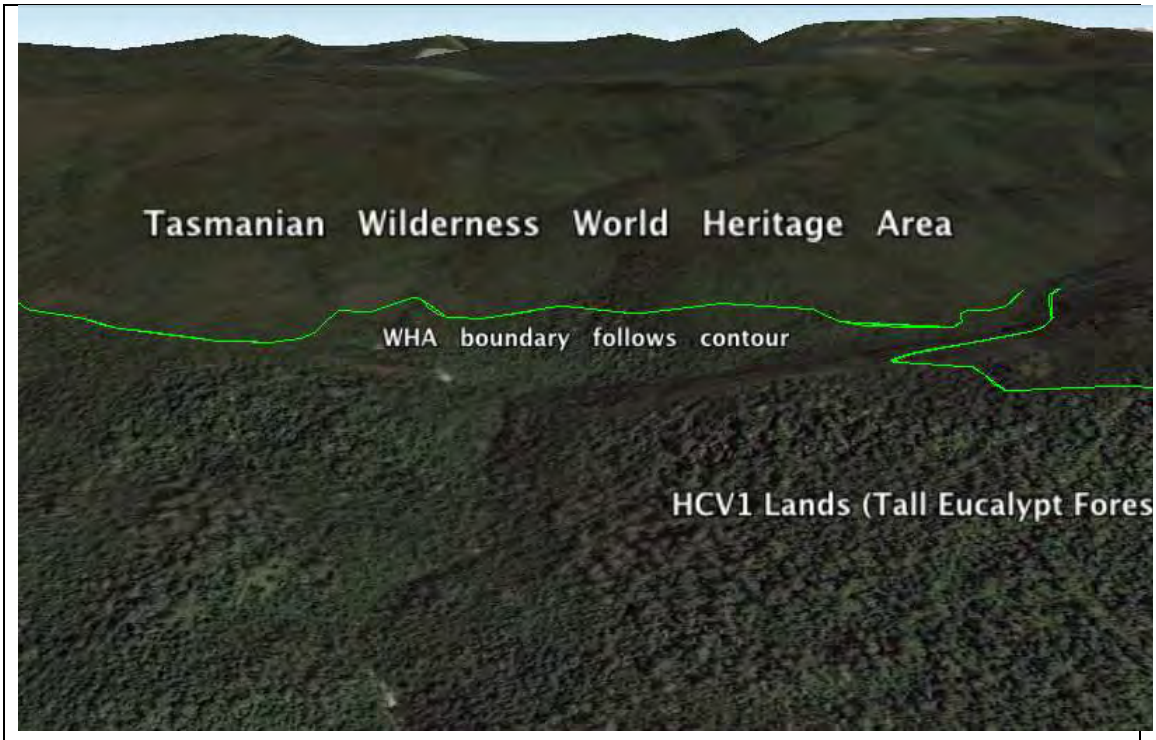
The boundary of the World Heritage Area adjacent to Adamson's Peak clearly demonstrates the deficiencies of much of this eastern section of boundary; first the boundary is a mix of footslope and contour lines on steep topography, second, it effectively excludes the tall eucalypt forest zone, thereby truncating the otherwise natural connectivity of the tall eucalypt forests along or adjacent to the eastern boundary.

Context for assessment

The forests extending along and adjacent to the eastern boundary of the TWWHA between Hastings Caves and Hartz National Park is part of the same corridor of globally significant

tall eucalypt forest which extends northwards from Recherche Bay and so the context for heritage assessment is very similar to that of other areas to the south.

One consequence of the existing contour boundary of the TWWHA is that it cuts across the flow of key natural processes such as water drainage, nutrients, soil, debris and propagules which tend to flow downslope and fire which has its maximum impact when traveling upslope. While the downslope driven processes flow from the TWWHA, it is fire that is of most importance in terms of flow direction into the protected area. Fire plays a profound role in maintaining the eucalypt component of the eucalypt–rainforest ecosystem and can strongly influence, if not dictate, the dynamics of the interaction between fire sensitive and fire tolerant species and associated communities of plants and animals. A substantially modified fire regime within the downslope tall eucalypt forest will have longer-term ecological consequences for upslope communities, in this case within the TWWHA. Maintenance and restoration of conditions conducive to maintaining natural processes, in particular natural fire **pathways,** is considered a priority for protecting natural processes within the TWWHA.



The boundary of the TWWHA between Hastings Caves and Hartz National Park comprises a contour across mostly steep terrain. The setting of this contour has ensured exclusion of the tall eucalypt forest zone from the TWWHA. As such the natural sequence from dry eucalypt, through tall eucalypt forest (wet sclerophyll) to rainforest has been denied.

Protection of a corridor of tall eucalypt forest between Hastings Caves and Hartz Mountain would greatly contribute to the values and the ecological integrity of the TWWHA. It would also contribute to maintaining connectivity along the 'C2C' tall eucalypt corridor from the southern tip of Tasmania—the world's most southern eucalypt forests—to central Tasmania.

Heritage assessment

Unit HH1 comprises that part of the ENGO-proposed reserve [FID 25] between Hastings Caves and Hartz Mountains National Park. Most is eucalypt forest, much of that tall eucalypt forest. Some coupe-type logging has occurred in the area.

It was highly relevant to conduct the heritage assessment in the context of the immediately adjacent TWWHA.

The heritage conservation significance of the forests at the landscape level comes mostly from their juxtaposition with the Tasmanian Wilderness World Heritage Area. Species level attributes, which are likely to exist, are described in other IVG reports outlined in Chapter 4 of this report.

As presented elsewhere, the tall eucalypt ecosystem is under represented in the TWWHA, those stands of tall eucalypt present in the TWWHA are often 'islands' with little or no guarantee of long-term connectivity to the wider eucalypt landscape. Neither do the tall eucalypt forests within the WHA reflect the full biodiversity or ecological diversity that exists in these forests in Tasmania. By adding a selection of the tall eucalypt forest ecosystem into the TWWHA, the value and integrity of the TWWHA will be greatly enhanced. Ensuring as far as practicable that those tall eucalypt forests so protected are ecologically connected, provides a greater prospect of long-term ecological survival of this globally important ecosystem.

The effective connectivity along the 'C2C' regional corridor not only enhances long-term ecological survival but also, by its nature, embraces a substantial part of the ecological diversity of the tall eucalypt forest ecosystem in Tasmania.

World Heritage

HH1 is critically important to the long-term natural integrity of the eastern margin of the World Heritage Area. In particular, protection of this forest unit would:

- contribute to the value and integrity of the World Heritage values of the TWWHA by increasing the **ecological diversity** of the TWWHA, in particular of the globally significant tall eucalypt ecosystem
- contribute to the maintenance of natural **ecological processes** of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest (the eucalypt–rainforest interaction) and maintenance of regional scale ecological connectivity (tall eucalypt forests)
- contribute to facilitation of ecologically based **field management** of the World Heritage listed TWWHA.

National Heritage

(**NOTE**: Where it is apparent that an area has World Heritage significance, National Heritage values have not been detailed.)

The National Heritage significance of the Tasmanian Wilderness World Heritage Area will be significantly enhanced by protection of a continuous corridor of tall eucalypt forest ecosystem in the adjacent HC1 lands. In particular, such forests will:

- contribute to the value and integrity of the National Heritage values of the TWWHA by increasing the **ecological diversity** of the TWWHA, in particular of the tall eucalypt ecosystem
- contribute to the maintenance of natural **ecological processes** of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest (the eucalypt–rainforest interaction) and maintenance of regional scale ecological connectivity (tall eucalypt forests)
- contribute to facilitation of ecologically based **field management** of the National Heritage listed TWWHA.

Summary–Hastings Caves to Hartz National Park		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii), (ix) and (x)	Contribution to the integrity of the TWWHA. (added ecological diversity and connectivity)

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Eucalypt forest including Tall Eucalypt ecosystem	(a) and (d)	Contribution to the integrity of the TWWHA as a place of National Heritage significance (ecological diversity and connectivity)

Boundary considerations

As indicated above, the contour boundary is a highly unsatisfactory boundary for a protected area both from a management perspective and in terms of maintaining natural ecological processes. From a conservation perspective, the more important issue along this section of boundary is to protect and incorporate into the TWWHA, a continuous corridor of tall eucalypt forest.

The complexity of logging and roads in the area, makes it somewhat difficult to select a new boundary which permanently reserves a continuous corridor of tall eucalypt forest along the eastern margin of the TWWHA and creates a more appropriate boundary which is more readily identifiable in the field. Notwithstanding this difficulty, the benefits of improving the values and integrity of the TWWHA far outweigh the status quo.

Short of moving the boundary east to more accessible lowlands, conservation objectives for the tall eucalypt ecosystem can be substantially achieved by adopting a sub-optimal boundary within the tall eucalypt zone. The recommended 'compromise' boundary is still superior to the existing contour boundary high up on the mountain slopes above the eucalypt zone.

The proposed new boundary can be 'finetuned' using local knowledge providing the guiding principle is to protect a continuous north-south corridor of tall eucalypt forest and there is no significant reduction in the corridor width relative to the boundary recommended in this report.

An indicative boundary (a 'give and take' boundary) excising some ENGO-proposed areas and adding in some non-ENGO state forest is provided in the section relating to the Hastings Caves–Hartz boundary proposal.

Recommendation

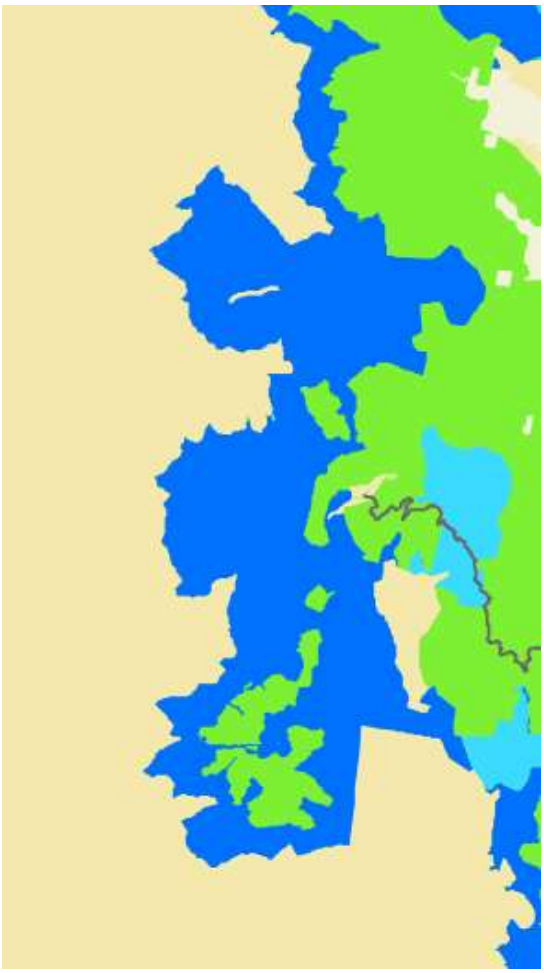
1. Recognise that a continuous corridor containing tall eucalypt forest adjacent to the TWWHA boundary between Hastings Caves and the north boundary of Hartz National Park makes an important contribution to the integrity of the TWWHA.
2. Develop detail of the precise boundary based on the indicative boundary presented in file 'HASTINGS CAVES–HARTZ Boundary proposal copy.kmz' provided separately.

The recommended boundary (white) generally follows the proposed-ENGO boundary but varies in places. This would be a much more appropriate Tasmanaian Wilderness World Heritage Area boundary than the present unsatisfactory contour boundary.

Three Valleys assessment area (Weld–Huon–Picton valleys)

Introduction

To assess and delineate boundaries, the lower sections of the Weld and Picton valleys, together with the closely associated middle Huon Valley, were dealt with as a single entity. They each have many shared attributes and values. The tall eucalypt forests in this area are collectively part of the largest single tract of tall eucalypt forest ecosystem extant in Tasmania. They are also intimately linked through natural processes such as fire, drainage and water flow.



ENGO-proposed reserves (dark and light blue) in the 'Three Valleys'. Note the convoluted boundary, mostly contours, of the TWWHA (green).

The three valleys—Weld, Huon and Picton—have been the focus of considerable debate over the heritage significance of the tall eucalypt and rainforest in these areas and the appropriateness of this section of the boundary of the Tasmanian Wilderness World Heritage Area. In effect the state forests in the three valleys intrude into the boundary of the TWWHA and contributed to criticism of the boundary by IUCN. This was the section of the Tasmanian Wilderness World Heritage Area boundary that IUCN was particularly concerned about in the

first assessment of major additions in 1988 when it advised 'IUCN's main concern relates to the boundaries ...' and that the boundary of the nomination 'does not follow natural features as is evident from its complex convoluted design'.

Since 1988, as a result of various agreements between the Tasmanian and Australian Governments, a number of relatively minor additions have been made to the TWWHA in this locality, with associated changes in the boundary. However, the end result is that the boundary of the TWWHA remains problematic and important conservation values remain outside the TWWHA. The ENGO-proposed additions to the TWWHA are so positioned that they have the potential to provide a final resolution of the various issues relating to the TWWHA.

The 'Three Valleys'—Weld, Huon and Picton—represent a concentration of tall eucalypt forests immediately adjoining the Tasmanian Wilderness World Heritage Area. Some areas have been subject to coupe logging.

This section of ENGO-proposed reserve is almost encircled by the mountains of the TWWHA.

Context for assessment

'Three Valleys'—Unit TV1—comprises an area delineated as Weld, Huon and Picton river valleys by ENGO. Most is eucalypt forest, much of that tall eucalypt forest of a range of size/age classes. Significant areas have been subject to coupe type logging.

The 'three valleys' are a centre of development of tall eucalypt forest and demonstrate great ecological diversity including altitudinal ranges from about 50 metres asl up almost to the

local treeline. There is substantial interaction with temperate rainforest including many eucalypt 'islands' within rainforest-dominated landscapes (Weld). The concentration of registered 'giant trees' (Huon) in the precinct is an indicator of the exceptional development of the tall eucalypts in this area.

Because of the varied terrain and slope direction, each of the valleys exhibits evidence of a diversity of fire regimes. The Weld has the greatest development of rainforest but there are islands of tall eucalypt scattered within the rainforested landscape. The Huon on the other hand is much more open and with an east-west orientation, is conducive to the passage of fire along the valley from either direction.

The Picton, being a shorter valley is almost a 'blind valley' hemmed in by alpine and rainforest communities on three sides so the pattern of eucalypt and rainforest communities and their interactions are different again to the Huon and especially the Weld. These characteristics are illustrative of the substantial ecological diversity evident in the tall eucalypt and rainforest communities in the 'Three Valleys'.

Each of the valleys has experienced various episodes and scales of glaciation with evidence of glaciation extending almost to the confluences of the valleys.

Both the Weld and the Huon have important karst resources together with important evidence of Ice Age Aboriginal use of caves in the area.

The very convoluted boundary of TWWHA, creates an intimate relationship between activities in the lower valleys and the TWWHA which is everywhere upslope from such activities. Much of the TWWHA boundary is defined by an arbitrary contour line that in many places truncates the natural altitudinal vegetation sequence and offers a boundary that is difficult to identify in the field without the use of instrumentation.

The Warra Long Term Ecological Research Site is located partly within the TWWHA and partly within the ENGO-proposed additions to the area.

As will be outlined below*, in addition to outstanding natural heritage values, the 'Three Valleys' precinct also has very important cultural heritage site(s) of World Heritage significance.

* Subject to official access to the report Household et al (undated).

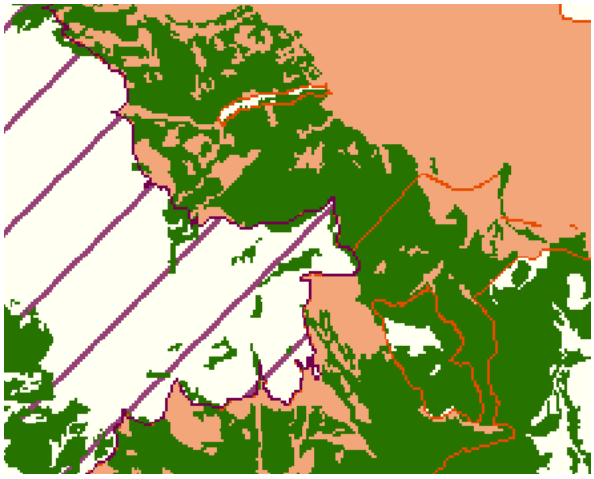
Heritage assessment

Heritage assessment of the 'Three Valleys' has been at the landscape level in the context of its location relative to the TWWHA.

Tall eucalypt

The tall eucalypt forest in the ENGO-proposed reserves is obviously a key attribute of the 'Three Valleys' area, with near continuous tall eucalypt forest across the valley floor and lower slopes of each of the valleys.

This is one of the few precincts in Tasmania where there is a major concentration of tall eucalypt–rainforest ecosystem and where the forests are mostly intact with potential for ongoing natural processes to operate. Notwithstanding that some parts of the forests have been subject to coupe logging, the combination of the intact forests and the option of being able to naturally rehabilitate the logged areas, means the 'Three Valleys' forests still offer outstanding potential for conservation, including maintaining natural processes.



The green represents the tall eucalypt forest in the lower Weld and Huon Valley. Much of the boundary of the TWWHA (diagonal hatched) mostly follows a contour, which closely correlates, to the upslope limit of the tall eucalypt forest, thereby excluding the tall eucalypt forest from the protected area. The boundary is flawed both in the truncation of the natural hillslope sequence and in the impracticability of managing to such an artificial boundary.

In particular, the 'Three Valley' forests would contribute new ecological diversity of the globally significant tall eucalypt and eucalypt–rainforest ecosystems represented in the TWWHA. For example, on the north side of the Weld River, the tall eucalypt forest is both well-developed and intimately mixed with temperate rainforests. In the Picton there is long low gradient transition up valley from the forest floor. By contrast, the Huon Valley gives way upstream to isolated treeless buttongrass moorland areas and eventually to wide expanses of moorland.

The soil substrates are also very varied and in the Weld and Huon include soils derived from karstic limestone and dolomite.

This area is home to possibly the highest recorded fungi diversity in the world and would make a significant contribution to protecting globally significant populations of ancient, relictual fauna (see Chapter 4 of this report).

Giant trees

Contribute to the integrity of tall eucalypt ecosystem in TWWHA by including superlative examples of individual trees (more than doubling the number of recorded giant trees in the TWWHA).

Wilderness

Importantly, all of the ENGO-proposed additions in these valleys back onto the wilderness of the TWWHA. Parts of the ENGO-proposed reserves in all three valleys are an integral part of that major tract of wilderness, which is in many ways the key heritage value of theTWWHA. That is, parts of these areas have wilderness values, which would clearly enhance or contribute to the integrity of the TWWHA's wilderness values. Rehabilitation of some areas would enhance the wilderness of the TWWHA.

Karst

Karst has been located in the floor and lower slopes of all three valleys. The TWWHA section of the Weld karst is regarded as being independently globally significant, especially as a major system where all natural processes operate and the whole catchment is fully protected. That karst extends downstream into the ENGO-proposed reserves (partly in the TWWHA, partly out).

Karst of special significance is located in the ENGO-proposed additions in the Huon valley. The Riveaux–Blakes system is listed as nationally significant on the Tasmanian Geoconservation Database and is described as being in Southwest National Park, that is the TWWHA. However, recent mapping demonstrates that the karst extends further downstream from the TWWHA, into part of the ENGO-proposed reserve, both on the north and the south side of the Huon River. The karst includes cultural heritage sites of World Heritage significance.

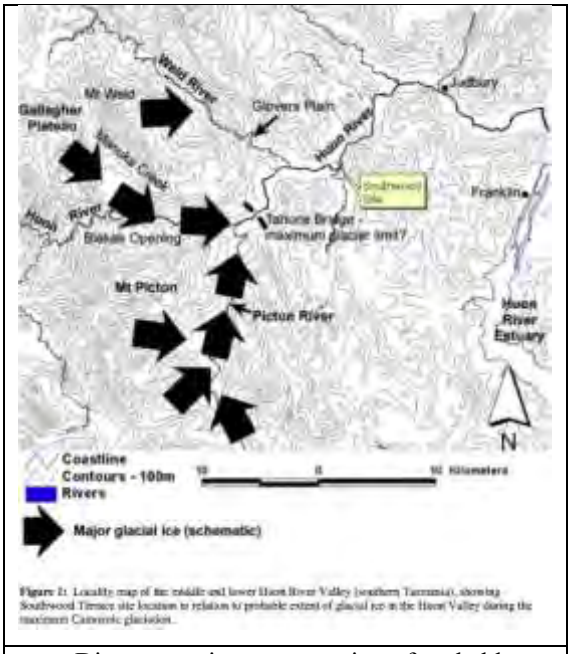
It is understood that the Geoconservation Listed 'Picton River karst' extends from within the TWWHA downstream into both the ENGO-proposed reserves and notably into the logged coupe 'inholdings' along the Picton River (see below):

> The likely direct physical and hydrological contact between the Blake's Opening and Riveaux karsts suggests that a common tenure and management regime, or sympathetic cross-tenure management regime, would be the appropriate means of managing these adjacent karsts. Irrespective of this potential link, however, the undisturbed nature, significant extent and contents of the Riveaux karst and catchment, and its proximity to the recommended Blake's Opening TWWHA extension (Section 3.3) means that the karst contributes significantly to karst World Heritage themes of the adjacent TWWHA. —Sharples, C (2003)

Karst is also found in the Picton Valley and is listed on the Tasmanian Geoconservation Database in 2008.

Glacial

The internal report by Household et al. (undated but circa 2008), Forestry Tasmania provides substantial evidence of scientifically important glacial (Geoheritage) features that are associated with the karst which contain a definite highly significant cultural heritage site of World Heritage significance.



Diagrammatic representation of probable extent of Cainozoic glaciation (Sharples 2002)

Evidence of glaciation and glacial outwash deposits has been found in all three valleys and at least three glaciations have been recognised. Evidence of the last and penultimate glaciation is largely confined to the upper mountains and valley heads (e.g. Farmhouse Creek, Picton) and so are mostly within the TWWHA. However, evidence of glacial features assigned to an earlier and more extensive glaciation has been identified in the lower valleys (see Slee 2011) and so extend into the ENGO-proposed lands.

Sharples has identified glacial outwash deposits at the Southwood mill site on the Huon and has tentatively identified potential related features at various sites, notably just north of the Weld–Huon junction.

Recent investigations have revealed cavernous karst in the lower Weld Valley in Eddy Creek catchment, not far above the Weld–Huon confluence (Crackell 2007).

Cultural attributes

The evidence of Pleistocene human occupation sites in this particular locality is of great significance. This area has a unique suite of attributes that appear linked in time and space. The use of a site during the last glaciation, the downstream limit of which is evident in this locality and in the interaction of glaciation with the karst systems, potentially allow reconstruction of the environment and conditions experienced by humans at that time. The co-location of this suite of features in a tall eucalypt forest is a reminder of the environmental change invoked by climatic warming since the Pleistocene. This may be a classic site which appears to have been habitable during the last glacial but, with climatic warming and increased rainfall, forest vegetation advanced into the landscape just as has been established on the northern steppes of Asia, in Borneo and in New Guinea.

The identified Aboriginal cultural sites in the ENGO-proposed reserve lands in the Huon Valley would make a very real contribution to the integrity of the TWWHA in respect of values already recognised under Criterion (vi):

> ... archaeological sites including Pleistocene sites, which demonstrate the adaptation and survival of human societies to glacial climatic cycles and periods of long isolation from other communities (e.g. the human societies in this region were the most southerly known peoples on earth during the last ice age). —inscribed values against Criterion (vi) (directly associated with events or living traditions)

World Heritage

The 'Three Valleys' area is critically important to the long-term natural integrity of the eastern margin of theTWWHA.

The precinct has multiple values of World Heritage significance as well as National Heritage significance. These can be summarised as follows:

Tall eucalypt forest

- Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing the **ecological diversity** of the TWWHA, in particular of the globally significant tall eucalypt ecosystem.
- Contribute to the maintenance of natural **ecological processes** of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest (the eucalypt–rainforest interaction) and maintenance of regional scale ecological connectivity (tall eucalypt forests).
- Contribute to facilitation of ecologically based **field management** of the TWWHA.

Karst

- Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of the already cited value of karst.

Glacial

- Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of the already cited value of glacial features.

Cultural

- Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of the already cited* value of Pleistocene human occupation sites.

* ... archaeological sites including Pleistocene sites, which demonstrate the adaptation and survival of human societies to glacial climatic cycles and periods of long isolation from other communities (e.g. the human societies in this region were the most southerly known peoples on earth during the last ice age).

NOTE: The co-location of the karst-glacial-fluvial-cultural features, in a tall eucalypt forest, results in a mutual value adding of the already very significant attributes.

National Heritage

The National Heritage significance of the Tasmanian Wilderness World Heritage Area will be significantly enhanced by protection of a continuous corridor of tall eucalypt forest ecosystem in the adjacent TV1 lands. In particular:

Tall eucalypt forest

- Contribute to the value and integrity of the National Heritage values of the TWWHA by increasing the **ecological diversity** of the TWWHA, in particular of the tall eucalypt ecosystem.
- Contribute to the maintenance of natural **ecological processes** of the forests along the eastern margins of the TWWHA, including interaction between tall eucalypt forest and rainforest (the eucalypt–rainforest interaction) and maintenance of regional scale ecological connectivity (tall eucalypt forests).
- Contribute to facilitation of ecologically based **field management** of the National Heritage listed TWWHA.

Summary—Weld, Huon, Picton 'Three Valleys'		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii) (superlative natural phenomena)	Contributes to integrity 'eucalypt tall open forests including *Eucalyptus regnans,* the tallest flowering plant species in the world;' (including 9 registered 'giant trees'.
Tall eucalypt forest	(ix) (Outstanding examples of ongoing evolution)	Contributes to ecological diversity of already cited World Heritage values '*pristine tall eucalypt forests;*'
Tall eucalypt forest	(ix)	Contributes to the integrity of tall eucalypt forests in the TWWHA by preserving regional connectivity.(ongoing processes)
Tall eucalypt forest	(x)	Contributes additional value in respect of tall eucalypt forest and, together with other Tall Eucalypt additions, facilitates Tall Eucalypt forest qualifying as an official value against World Heritage Criterion (x).
Karst	(viii) Outstanding examples of stages of earth's history.	Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of already cited value of karst. (additional glacio-karstic in Huon and karst which extends from TWWHA into HCV lands (Huon and Weld) ['*karst systems including glacio-karstic features;'* *'karst geomorphology and karst hydrology;*' (inscribed values)

Summary—Weld, Huon, Picton 'Three Valleys'		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Glacial	(viii) Outstanding examples of stages of earth's history.	Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of already cited value of glacial features. (Huon and Weld, probably also Picton). '*glaciation, including glacial deposits of the Late Cainozoic, Permo-Carboniferous and Precambrian;* (inscribed values)
Cultural	(vi) Directly associated with events or living traditions	Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of already cited* value of Pleistocene human occupation sites.
Combination: (Pleistocene cultural site, glacial features, karst and present day tall eucalypt forest)	WH Integrity	The close association of Pleistocene cultural sites, glacial and karst features and the present-day tall eucalypt forest is potentially of great scientific value with potential for researching understanding each component attributes as well as the interaction of each in response to climate change.

Boundary considerations

ENGO-proposed reserves are forested lands between the two white lines. The top line is also the boundary of the TWWHA, a contour line that closely coincides with the tree limit. The lower line delimits previous logging but would be only marginally better as a TWWHA boundary than the present (top line) but would at least extend protection downslope into intact forest.

Conservation planning, including boundary delineation is inherently difficult in such an advanced stage of forest exploitation but in the long-term interests of the TWWHA, it is essential that such planning or re-planning is undertaken.

Including the main block of ENGO-proposed additions in the Tasmanian Wilderness World Heritage Area would meet most if not all, of the key conservation objectives in this locality for major improvement to the TWWHA. In particular it would mean better representation of the ecological diversity of the tall eucalypt ecosystem in the TWWHA and contribution to the ecological integrity, including ongoing natural processes, of the tall eucalypt and rainforest communities in this precinct of the TWWHA. The external (eastern) boundary of the ENGO-proposed reserves would be a much more appropriate boundary for the TWWHA, although not without some problems in the interface with commercial forest use.

An option for an appropriate boundary has been developed during the verification process and a kmz file is available. Rather than adopt the eastern boundary of the ENGO-proposed reserves, a more appropriate and defensible boundary has been developed which has the effect of 'give and take' between the proposed ENGO and non-ENGO state forest.

Enclave issue

Notwithstanding that a reasonably appropriate external boundary has been devised, there remains another serious issue, that of the 'inholdings' or enclaves within the external boundaries of the ENGO-proposed reserves.

The largest 'enclaves' are located on the Picton but there is a small one on the access to the Weld, which is probably within the Warra Long Term Ecological Research Reserve. It is apparent that these 'inholdings' were created by excluding previously logged coupes, in some cases possibly now converted to eucalypt plantation. The rationale for proposing this is unknown to the author.

As a long-term arrangement it would be inappropriate to retain these inholdings surrounded by World Heritage Area. Their existence and management for industrial forestry purposes would always represent a threat to the ecological integrity of the surrounding TWWHA by being a potential source of fire, introduced species (such as use of *E. nitens* for plantation). Perhaps the intentions were fine in proposing to exclude these areas of regrowth forest but they fail any reasonable scrutiny on the basis of ecological integrity, boundary appropriateness and manageability for the TWWHA. Accordingly, it is strongly recommended that in addition to the nominated parts of ENGO-proposed reserves (including the proposed 'give-and-take' along the eastern boundary), the forestry inholdings within that external boundary be added to the TWWHA and rehabilitated.

Ecologically based conservation planning and protected area design must look to the very long-term so that the lack of important heritage values in these inholdings in their present ecologically degraded condition is no bar to them being incorporated into the surrounding forest ecosystem and the TWWHA. Over a sufficiently long time scale (generations of forest) current degradation can be expected to progressively lessen, with the area ultimately being fully integrated into the ecology of the surrounding forest.

It should be noted that one large parcel of ENG-proposed land to the east of the area designated as HCV1 has not been included in the assessment and in the absence of any data to the contrary, this parcel is not recommended for inclusion in the TWWHA.

NOTE: This does not mean that is does not have heritage conservation value or heritage significance but based on the apparent absence of any important biodiversity data, it is unlikely to be a candidate area at either World Heritage or National Heritage significance level. This assessment may change once the information contained in other IVG reports is properly integrated into the heritage assessments.

The protection of this large block of land could be weighed up against the need to eliminate the 'inholdings' from the section proposed for adding to the adjoining TWWHA.

Warra Long Term Ecological Research Reserve

A substantial proportion of the Warra Long Term Ecological Research Reserve is assessed as having the potential to make a significant contribution to the integrity of the adjoining TWWHA, including some quite specific attributes. Consequently a review will be needed of the opportunities for harmonising the addition of further parts of the reserve to the TWWHA. Some but not all of the research being conducted in the Warra is beneficial and relevant to developing a greater understanding of the Tasmanian Wilderness World Heritage Area (part of Warra is already in the TWWHA). What is not supported is any proposal for any **new** logging and **re-logging** of previously logged areas within the nominated boundary for addition to the TWWHA.

There should be no objection to monitoring and recording natural process recovery in any previously logged areas that fall within the recommended boundaries. Parts of the Warra Reserve will remain outside the proposed new TWWHA boundary and there should similarly be no objection to ongoing research activities on these sections, including logging.

Summary of heritage assessment

1. The ENGO proposals in the Weld–Huon–Picton valleys ('Three Valleys') are considered to possess important natural and cultural heritage values that relate particularly to World Heritage values of the adjoining Tasmanian Wilderness World Heritage Area. In particular, these lands contribute a new complementary 'lowland' or lower valley manifestation of attributes already within the TWWHA, for example glacial, karst, tall eucalypt forest and rainforest.
2. If added to the Tasmanian Wilderness World Heritage Area, the ENGO proposals would contribute very significantly to the integrity of theTWWHA.

Recommendations

1. Add the ENGO-proposed reserves identified as having World Heritage related values in the Weld–Huon–Picton to the TWWHA using the recommended boundaries.
2. Give special attention to the longer-term objective of removing and rehabilitating the previously logged coupe enclaves within the proposed new boundary of the TWWHA.
3. Give special attention is paid to the Warra Long Term Ecological Research Reserve to ensure that as far as possible ongoing non-destructive research and monitoring continues for that part of the reserve within the proposed boundaries.

East Snowy Range assessment area—SNE1 (from Weld–Russell watershed in south to Styx–Russell watershed in the north)

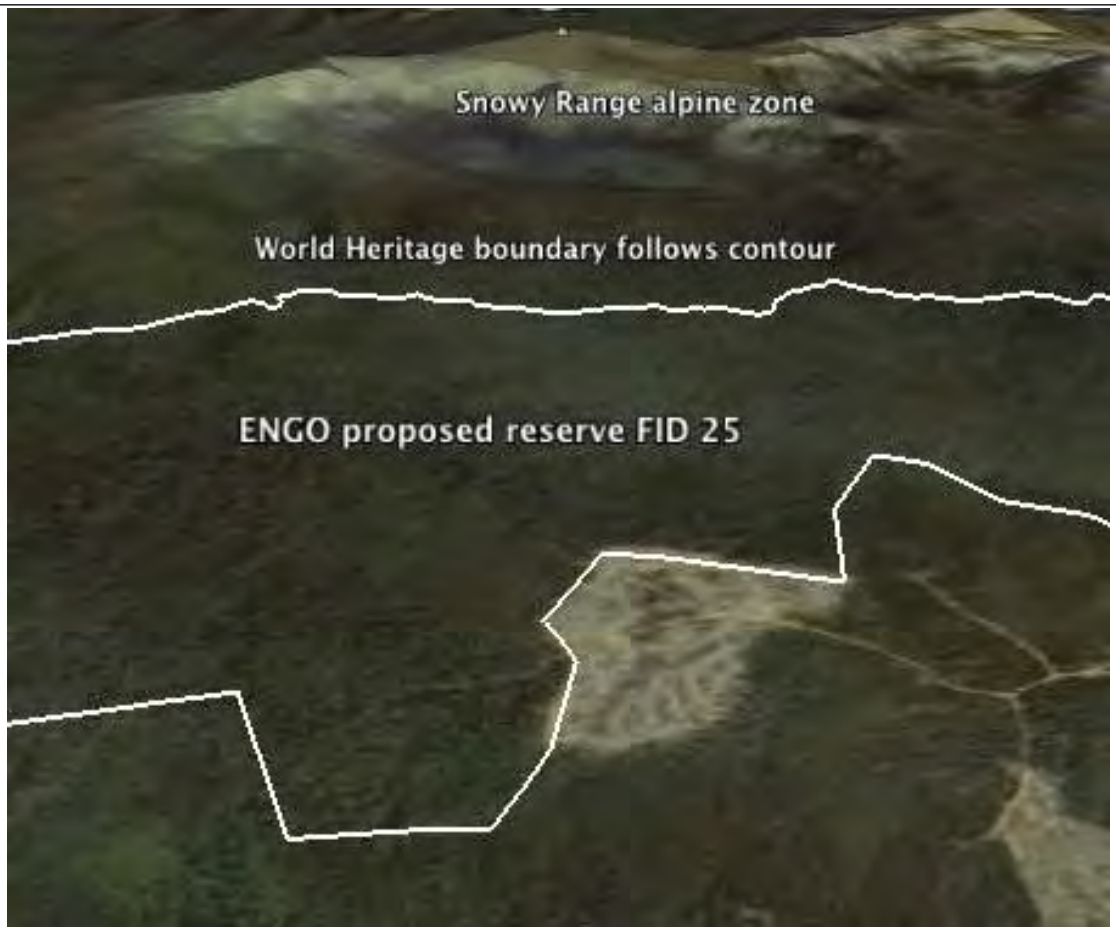
Part only of FID 263

Introduction

The high elevation contour boundary (about 800 m asl.) raises serious questions about the appropriateness of this boundary as a World Heritage boundary both in terms of capturing the natural vegetation sequence (ecological diversity) and the practicability of managing to a boundary which is not readily apparent in the field.

There has been long held concern about the vulnerability of the alpine communities of the Snowy Range to the impacts of industrial forestry operations on steep slopes immediately below the alpine communities (see recent coupes in satellite image below). Escape of fire from forestry activities is an ongoing threat to the TWWHA and is a particular threat to the alpine environment.

The 'East Snowy' ENGO-proposed reserve (blue) adjoins a section of the TWWHA boundary (green), which is entirely a contour boundary.



For the length of the Snowy Range, the boundary of the WHA is almost entirely upslope of the tall eucalypt forest. ENGO-proposed reserve (white line) downslope of the TWWHA are especially important in adding a new dimension to this part of the TWWHA as well as securing regional connectivity for the tall eucalypt ecosystem.

The longer-term effect of ongoing logging on the steep slopes downslope of the TWWHA will be to completely change the natural vegetation thereby modifying the natural fire filtering/barrier processes, leading to what Lindenmayer et al. (2011) describes as a 'landscape trap', an irreversible change in an ecosystem. Logging modifies the forest (fuel characteristics) conditions for natural fire and the resultant flammable regrowth eucalypt, being more conducive to crown fire, creates potential new and different uphill pathways for wildfire.

Context for assessment

The critical context for assessing the ENGO proposals along the eastern fall of the Snowy Range is that it they are immediately adjacent to the eastern boundary of the Tasmanian Wilderness World Heritage Area where the current boundary (for its entire length) is on a contour of 800 metres. The boundary truncates the natural altitudinal sequence from tall eucalypt forest on the lower slopes, with a transition through a range of vegetation communities, culminating with the alpine communities that extend most of the 17 km length of the Snowy Range.

Heritage assessment

NOTE: This assessment has been limited to the landscape level due to serious time constraints. Species level biodiversity has not contributed to the assessment, although other IVG reports suggest that the area could be highly significant for biodiversity (see Chapter 4). Landscape level assessment was considered adequate for addressing key issues such as protecting and restoring natural processes and protecting globally significant tall eucalypt forest.

Managing for maintenance of ongoing natural processes in the adjoining section of the TWWHA would be helped considerably if other potentially conflicting land uses were excluded from the downslope forests. Industrial logging has already converted much of the tall eucalypt forest in the lower slopes to logged coupes and/or plantation.

The prospect remains of being able to retain the tall eucalypt forest on at least the upper slopes towards the TWWHA boundary. The forests in the ENGO-proposed lands represent such an opportunity although some logged coupes have already pushed well upslope.

Similarly, maintaing tall eucalypt connectivity in this district would be achievable only if the tall eucalypt forests in the ENGO-proposed lands are protected, thus maintaining a tall eucalypt connectivity corridor between the Weld Valley in the south and the Styx Valley in the north, part of the larger 'C2C' regional corridor.

If added to the immediately adjoining Tasmania Wilderness World Heritage Area, the ENGO-proposed reserve lands would contribute to the integrity of theTWWHA, in particular by:

- extending protection of the full natural ecological/vegetation sequence downslope from the alpine environment into the regionally dominant eucalypt forests
- facilitating natural ecological processes, including fire over a greater altitudinal range than is presently the case
- facilitating maintenance of ecological connectivity in the tall eucalypt ecosystem within the (recommended new) boundaries of the TWWHA.

The forests in the ENGO-proposed lands on the upper eastern slopes of the Snowy Range represent an important opportunity to enhance the value and integrity of the TWWHA.

Further, adding these lands provides an opportunity to establish a more appropriate World Heritage boundary than an arbitrary contour line across the face of a mountain range.

NOTE: The assumption has been made in this and other instances that when a parcel of ENGO-proposed land has been verified as possessing attributes that make a significant contribution to the integrity of the World Heritage Area, it will make a similar contribution to National Heritage values of the same protected area. Hence the area is equally important for its contribution to World Heritage values and integrity as to National Heritage values and integrity.

Summary—East Snowy Range		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(ix) (Outstanding examples of ongoing evolution)	Contributes to ecological diversity of already cited World Heritage values '*pristine tall eucalypt forests;*'

Summary—East Snowy Range		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(ix)	Contributes to the integrity of tall eucalypt forests in the TWWHA by preserving regional connectivity (ongoing processes)
Glacial	(viii)	Contributes to the integrity of the TWWHA (glacial features on Snowy Range extend downslope across boundary)

Summary of heritage values

The ENGO-proposed additions along the eastern fall of the Snowy Range have been assessed in the context of the immediately adjoining Tasmanian Wilderness World Heritage Area.

First and foremost, the ENGO-proposed reserves on the eastern fall of the Snowy Range are a significant area of tall eucalypt forest and as such add value to the representation of the tall eucalypt ecosystem in the TWWHA. The HCV1 forests, extending some 15 km along the eastern fall of the Snowy Range, together with the immediately adjoining TWWHA represents an outstanding example of the natural ecological transition from the once ubiquitous tall eucalypt forest through to the relatively extensive alpine environment cited in the listing of the TWWHA.

Protecting the ENGO-proposed forests from development would provide an important ecological buffer between industrial forestry land use and the TWWHA.

Protecting this continuous corridor of mainly tall eucalypt forests will make an essential contribution to maintaining regional connectivity in the forest ecosystem (see 'C2C Corridor').

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Eucalypt forest including Tall Eucalypt ecosystem	(a) and (d)	Contribution to the integrity of the TWWHA as a place of National Heritage significance (ecological diversity, maintenance of natural processes and regional connectivity)

Boundary considerations

The primary objective of the boundary relocation on the Snowy Range is to secure a continuous corridor of eucalypt forest for the length of the range. A secondary objective is to adopt a more appropriate sustainable boundary which facilitates ecologically based management and is as far as practicable readily definable on the ground. It is apparent however, given the constraints imposed by commercial forestry interests on the lower slopes of the range that an ideal boundary based on natural features would be elusive. Instead, a boundary has been designed which at least meets the primary objective and can be resolved into a practical boundary.

> ***96***. Protection and management of World Heritage properties should ensure that the outstanding universal value, the conditions of integrity and/or authenticity at the time of inscription are maintained or ***enhanced*** in the future.
>
> World Heritage Operational Guidelines 2008

The contour boundary almost totally excludes tall eucalypt forest (brown) from the TWWHA for the length of the Snowy Range.

The proposed boundary (yellow) mostly follows the ENGO HCV boundary (white) but does deviate in places where superior boundary design is possible. TWWHA is green line.

The designed boundary mostly follows the eastern boundary of the ENGO proposals but in several places departs from that boundary where it is apparent that a superior boundary is available.

The boundary designed and recommended for this precinct makes extensive use of man made features such as roads and edges of logging coupes. In several places there is no obvious boundary alignment so these are left with 'zigzag' sections that can be later developed in more detail, consistent with meeting the primary conservation objective.

In several places previously logged coupes have been included inside the boundary where it is apparent that the width of the eucalypt corridor would be compromised.

Providing the overriding objective of the boundary relocation is respected, there is scope for flexibility in boundary fixing, at least at the detail level. Under the circumstances, roads and short sections of straight lines are acceptable boundaries.

The designed boundary is provided separately in the form of a kmz. file.

Recommendations

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1. Recognise all those ENGO-proposed reserves along the eastern fall of the Snowy Range, as identified by yellow edge in the above diagram for outstanding natural heritage value and their potential contribution to the integrity of the TWWHA
2. Recognise that the boundary for protection and addition to the TWWHA agrees with the yellow line in the above diagram but develop detail at field level for those indicative sections shown by zigzag lines.
3. Maintain the principle of connectivity for the tall eucalypt forests for the full length of the Snowy Range.

Styx River Valley assessment area—SR1 (Tyenna and Styx River catchments)

Part of FID 25

Introduction

The SR1 assessment area comprises a complex of ENGO proposals designated as either 'immediate protection' or 'interim protection' within the Styx River catchment and in the adjoining Tyenna River catchment. The overall heritage significance of the 'Styx' aggregate area (i.e. SR1) has been assessed and the relative significance of the separate 'immediate protection' and 'interim protection' indicated where appropriate.

The two catchments represent a logical land unit for considering heritage significance at the landscape level. Similarly, for initial assessment, no distinction was made between the 'immediate protection' and 'interim protection' lands.

That part of FID 25 north of the Gordon River Road was assessed as part of the Upper Florentine assessment area (see elsewhere in report).

That part of FID 25 extending along the watershed of the Russell and Styx Rivers towards the Wellington Ranges was assessed separately (see West Wellington).

Context for heritage assessment

The SR1 assessment area is strategically located adjoining and adjacent to the Tasmanian Wilderness World Heritage Area and is also a major node on the main north-south corridor of globally significant tall eucalypt forest extending from central Tasmania to the south coast.

A large permanent Forest Reserve, North Styx Forest Reserve, and two smaller reserves, 'Big Tree Forest Reserve' and 'Tall Trees Forest Reserve', are embedded in the assessment area, almost completely surrounded by ENGO-proposed reserves. The existence of these reserves and their outstanding heritage values is an important part of the context for assessing the heritage significance of the surrounding HCV lands. The reserves are considered to be of national and international heritage significance in their own right and thus have an important bearing on assessment of the heritage conservation significance of the surrounding ENGO-proposed reserves.

Heritage assessment

Assessing the natural heritage significance of the ENGO proposed reserves was undertaken at the landscape level and had full regard for all of the forests in the precinct, irrespective of

whether an area was identified as an ENGO proposed reserve or not. While it would be possible to disaggregate the assessed area into its various component parts according to current land tenure, land use history and condition, such a reductionist approach would be of little benefit and would tend to confuse and perpetuate the piecemeal approach which has prevailed to date.

The most important natural heritage values of the Styx Valley forests is most apparent at the landscape level, which, in addition to the ENGO-proposed lands, also includes the several existing permanent forest reserves, namely the 'North Styx', 'Big Tree' and 'Tall Trees' Forest Reserves.

Giant trees

While there are multiple conservation attributes in this assessment area, it is renowned for its tall eucalypt forests, in particular its stands of very tall *Eucalyptus regnans.* One of the three main clusters of registered 'giant trees' in Tasmania is centred on the Styx Valley (the other two are in the lower Florentine–Derwent in the north and the Huon Valley in the south). Of the total of a little over 100 registered giant trees in Tasmania, about 28 are found in the Styx River catchment. An impressive 8 of the 10 tallest recorded trees in Tasmania, read Australia, are found in the Styx valley, in what ENGOs call the 'Valley of the Giants', and elsewhere in the valley.

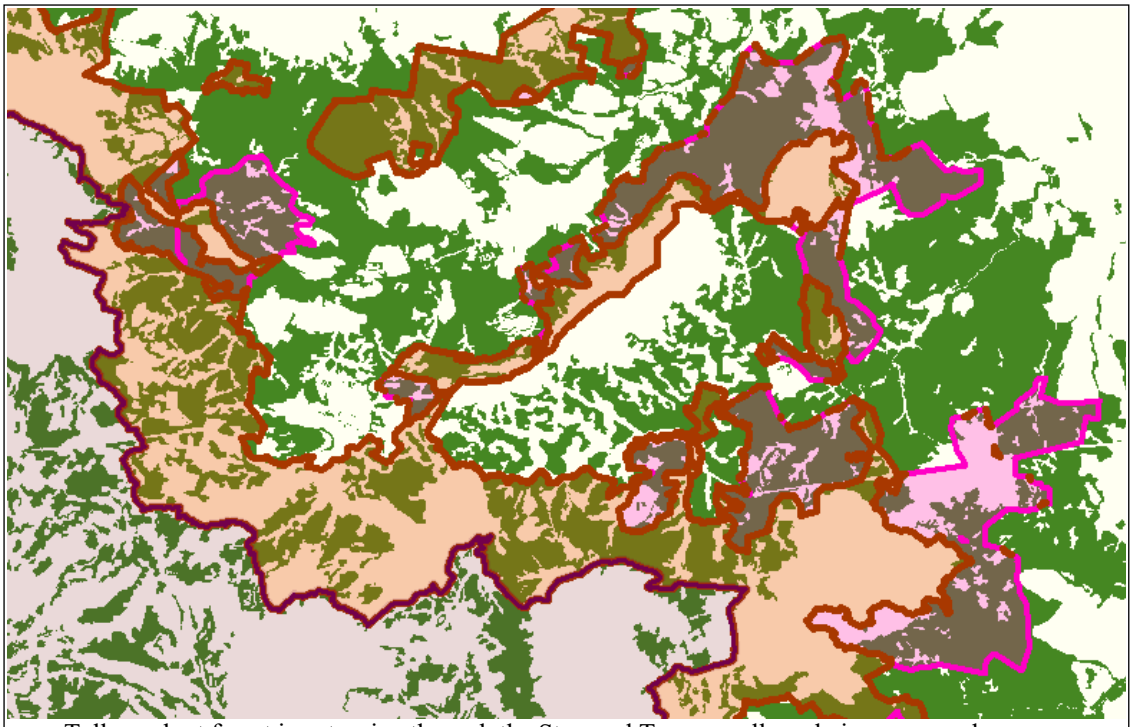
The Styx–Tyenna assessment area is strategically located adjoining the Tasmanian Wilderness World Heritage Area and is also an integral part of the main corridor of tall eucalypt forest extending from central Tasmania down the eastern edge of the TWWHA to the south coast. A major formal reserve, the North Styx Forest Reserve, forms the core of the assessment area.

The registered giant trees alone must be regarded as a superlative phenomenon and therefore of definite heritage significance; indeed they are of World Heritage significance given that the tallest eucalypts are in reality the tallest flowering plants in the world.

Of course very tall 'giant trees' need to be seen as rather transitory in the longer view of a particular eucalypt forest and some of the tallest trees in the Styx are already entering senescence and will decrease in height as they disintegrate. Notwithstanding, it is very apparent from the diversity of age classes in the Styx that some stands will in future produce very tall trees and likely ones that will qualify to be registered on the giant trees register. That is, the significance of the Styx as a place of world record tall eucalypt trees will likely persist well beyond the life of the existing individual record holders.

Tall eucalypt forest

The impressive Giant Tree concentration in the Styx valley is also an indicator of the development of tall eucalypt forest communities in the area. As well as hosting some of the tallest trees in the southern hemisphere, the Styx Valley also hosts some outstanding examples of tall eucalypt forest communities, exhibiting a substantial ecological diversity such as a range of ages and stages of forest ecology.



Tall eucalypt forest is extensive through the Styx and Tyenna valleys, being more or less continuous in the lower eastern part of the valley, but more discontinuous upslope and further west as the eucalypt becomes more intimately mixed with rainforest or low eucalypt forest, woodland and moorland. Purple = World Heritage Area, brown = 'immediate protection' and pink = 'interim protection'

The North Styx Reserve includes some particularly impressive stands of very large mature trees over well-developed rainforest together with some adjoining pure stands of rainforest, fully demonstrating the often intimate relationship between the eucalypts and temperate rainforest and rainforest species described in Chapter 1. Younger age classes are also present within and adjacent to the reserve. Together with other forests of the Styx Valley, the North Styx Reserve and associated Tall Trees Forest Reserve represent outstanding examples of the tall eucalypt forest ecosystem.

While the iconic *E. regnans* is a feature of the Styx Valley and tends to be the species of most registered 'giant trees' in the valley, *E. delegatensis* is also well represented and may be found in the form of some very impressive dense younger (mature) even-aged stands.

Connectivity

At the regional scale, the Styx forests are a major node along the main continuous corridor of globally significant tall eucalypt forests extending from the Upper Derwent south along the Florentine valley, the Styx and on southwards to the Weld, Huon and Picton and reaching their (global) southern limit near the southern most tip of Tasmania.

Because of the sometimes-extreme fire and other natural events in tall eucalypt forests, conservation planning needs to factor in both facilitating natural processes in the forest ecosystem but also ensuring that in the long term, the full genetic and ecological diversity of these forests is maintained. One such conservation strategy, that is very relevant to Tasmanian tall eucalypt forests in and immediately adjacent to the Tasmanian Wilderness World Heritage Area, is the objective of maintaining regional connectivity. The one obvious regional scale connectivity corridor which extends through the full altitudinal range of the tall eucalypts as well as the three main ash eucalypt species, extends from central Tasmania (i.e. Counsel River) south to the south coast (i.e. Cockle Creek) described by the author as 'C2C'.

The Styx River forests are a critical link in that regional corridor and already intensive logging has significantly eroded the connectivity of natural forest communities around the northern end of the Snowy Range. The critical link for connectivity through the Styx valley is the narrow corridor between the end of the Snowy Range and the Styx River. Logging has already significantly impacted on this narrow corridor and in the long term is likely to transform into increasingly intensive logging and plantation. At this point in the history of the TWWHA, the boundary is located upslope of any tall eucalypt forest so there is no tall eucalypt forest within the adjacent section of the TWWHA.

Protecting the ENGO-proposed forests in the Styx would not only make a major contribution to the value and integrity of the TWWHA in relation to tall eucalypt forests but would also help maintain regional connectivity of tall eucalypt forests.

Restoring and protecting the natural sequence of vegetation from the tall eucalypts of the Styx valley, upslope through the rainforests and then the alpine communities on the Snowy Range section of the TWWHA, is important for ensuring that as far as practicable, fires burning upslope from valley eucalypt forests do so via natural pathways through natural vegetation sequences. For example, protecting the rainforests, in particular providing an important natural 'filter' for upslope traverse of fire burning from the eucalypt forest, maintains as far as possible the ecological integrity of the existing TWWHA consistent with the listing of the area against World Heritage Criterion (ix):

> (ix) to be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; (Criterion (ix) — Operational Guidelines 2008.

From a heritage conservation perspective the objective is neither to prevent all fire nor to facilitate frequent fire; rather the objective is to facilitate natural fire behavior, particularly in the case of naturally occurring fires.

The condition of integrity applying to areas qualifying against Criterion (ix) require that:

> Properties proposed under criterion (ix) should have sufficient size and contain the necessary elements to demonstrate the key aspects of processes that are essential for the long-term conservation of the ecosystems and the biological diversity they contain … Para 94:

This is particularly relevant to the Styx and Snowy Range precincts where the 'processes that are essential for the long-term conservation of the ecosystems and the biological diversity ... ' of the alpine and rainforest ecosystems of the Snowy Range (alpine ecosystem 'wholly within', rainforest ecosystem 'partly within and partly out' of the TWWHA) are dependent on maintaining natural processes, in particular (as far as practicable) natural fire behavior. Providing maintenance of such processes is simply not achievable if ongoing intensive forestry activities continue to operate immediately downslope of the rainforests/World Heritage boundary and continuously modify the vegetation condition and pattern.

Of particular importance in the Styx and well demonstrated in the North Styx Forest Reserve is the transition from well-developed eucalypt forest through transitional forest with rainforest understorey to pure temperate rainforest with no eucalypt.

The Styx River precinct is sufficiently topographically and ecologically diverse to ensure that to a significant degree, it will be possible to maintain ongoing natural processes and thereby also maintain the natural ecological diversity of the globally significant tall eucalypt–rainforest ecosystem in this precinct.

Other attributes

Karst

A dolomite karst system, listed in the Tasmanian Geoheritage Database as the 'Upper Styx Karst Systems' [ID 3038] occurs in the upper catchment of the Styx River. The preliminary mapping of the Upper Styx Karst included in the Tasmanian Geoconservation Database reveals this dolomite karst feature is partly within the TWWHA and partly within the ENGO-proposed reserves.

Sharples (2003) refers to the Styx River catchment in the context of the then endorsed proposed additions to the TWWHA.

> *Karst* theme and sub-themes: well developed karst in Precambrian dolomite, including the only polygonal karst currently known in Tasmanian Precambrian dolomite.

Finding published details of the Upper Styx Karst proved elusive but it is clear that there is significant mapped karst within the ENGO-proposed lands. Caves are reported within the ENGO-proposed section of the dolomite karst.

Adding the karst sections of the Styx catchment to the TWWHA would contribute to the value and integrity of the Tasmanian Wilderness World Heritage Area. Indeed, combining the identified and potential karst in the ENGO-proposed reserves would greatly enhance the value and integrity of the already impressive karst values of the TWWHA.

Summary—Styx River Valley		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii) (superlative natural phenomena)	Contributes to integrity of 'eucalypt tall open forests including *Eucalyptus regnans*, the tallest flowering plant species in the world;' (inscribed values)
Tall eucalypt forest	(ix) (Outstanding examples of ongoing evolution)	Contributes to ecological diversity of already cited World Heritage values 'pristine tall eucalypt forests;' (inscribed values)
Tall eucalypt forest	(ix)	Contributes to the integrity of tall eucalypt forests in the WHA by contributing to preservation of regional connectivity between existing and proposed tall eucalypt forest additions (ongoing ecological and evolutionary processes).

Summary—Styx River Valley		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(x)	Tall eucalypt is presently conspicuous by its absence from Criterion (x) in 'inscribed values' Therefore, the tall eucalypt ecosystem contributes a new World Heritage value together with other tall eucalypt forest additions, facilitates tall eucalypt forest qualifying as an inscribed value against World Heritage criterion (x). '… *to contain the most important and significant natural habitats for in-situ conservation of biological diversity …* '
Karst	(viii) Outstanding examples of stages of earth's history	Contribute to the integrity of the World Heritage values of the TWWHA by increasing representation of already inscribed values of karst.

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Not specifically assessed because of evidence of higher order World Heritage significance.		The natural attributes in the area contribute to the integrity of the already National Heritage listed Tasmanian Wilderness World Heritage Area.

Summary of heritage values

In the document 'Tasmanian Forest Agreement Verification: Advice to Prime Minister and Premier of Tasmania, Interim Reserve Boundaries' the attributes of the Styx Valley are described as:

- having World Heritage significance
- having extensive areas of contiguous old growth forest (including with the Tasmanian Wilderness World Heritage Area)
- being a superlative example of the tallest flowering plants in the world (*E. regnans*)
- being a superlative example of tall eucalypt forest (*E. regnans* with transition to *E. delegatensis*) intimately associated with Gondwana cool temperate rainforest

- containing seven of the state's 10 tallest trees (Giant Trees Consultative Committee, 2004)
- being the habitat for threatened species including Tasmanian wedge-tailed eagles, Tasmanian devils and spotted-tailed quolls
- having visual amenity, including from Tourism icons.

—Tasmanian Forest Agreement Verification: Advice to Prime Minister and Premier of Tasmania, Interim Reserve Boundaries)

That description is considered to be a fair representation of the heritage significance of the Styx Valley.

The tall eucalypt forest ecosystem* of the Styx Valley, including the registered 'giant trees' is considered to represent a superlative example of the tall eucalypt forest–rainforest ecosystem of Australia, in particular outstanding examples of *Eucalyptus regnans*, both as individual trees and as forest stands, and ecosystems juxtaposed with cool temperate rainforest.

* Including ENGO-proposed reserves and existing forest reserves

The tall eucalypt forests of the Styx are unquestionably of outstanding universal value—World Heritage. The combination of the two existing forest reserves and the HCV1 and HCV2 tall eucalypt forests could conceivably qualify as worthy of independent nomination as World Heritage, based on being a superlative example of a eucalypt forest (Criterion (vii) '...to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'

However, the Styx forests take on even greater value and World Heritage significance when considered in the context of the adjoining WHA because of the value-adding contribution these forests would make to the value and integrity of the existing World Heritage Area.

The ecological diversity of the tall eucalypt forest–rainforest ecosystem is presently poorly represented in the TWWHA. Adding the Styx River forests would make a critically important contribution to remedy that deficiency.

If included in the adjoining TWWHA, the tall eucalypt forests of the Styx assessment area would make a very significant contribution to the inscribed World Heritage values of the TWWHA and contribute to its integrity. The ecological diversity of tall eucalypt forest already in the TWWHA would be substantially increased. The Styx forests would also make an important contribution to tall eucalypt forests qualifying against criterion (x) as an inscribed value. ('*... to contain the most important and significant natural habitats for in-situ conservation of biological diversity ... '*) —Operational Guidelines 2008

Recommended boundary in Styx and Tyenna valleys. ENGO-proposed reserve lands are tinted yellow. 'Zigzag' sections of boundary require more detailed consideration. **NOTE:** the external boundary embraces the North Styx Forest Reserve as well as several smaller forest reserves.

If protected, the Styx would also make a critically important contribution to protecting and maintaining regional connectivity in the tall eucalypt forests of Tasmania. The 'C2C' represents the largest and longest (160+ km) single tall eucalypt corridor in Tasmania, a substantial part of which is recommended be included in the Tasmanian Wilderness World Heritage Area. **Only then can it be truly claimed that Australia has protected the 'best of the best' of the tall eucalypt forest ecosystem of Tasmania, indeed Australia, in a World Heritage Area.**

Modified forest

The development of logging and timber plantation in the Styx has resulted in a scatter of roads, logging coupes and timber plantations across the landscape. While in general terms it would be desirable to exclude highly modified forest, especially plantation, the scatter of such areas would make it impracticable or undesirable to exclude all such areas. Rather than create a 'Swiss cheese' design protected area, the longer-term view was adopted in the assessment process and boundary design.

In the longer-term, through a process of ecologically determined logging and/or plantation removal, natural rehabilitation of previously logged coupes can be expected to incrementally succumb to the prevailing ecology of the surrounding undisturbed forest. In some instances the process of rehabilitation can and should be accelerated by intervention such as drainage remediation on roads. Where introduced or genetically modified species have been used in plantations, it is essential that intervention attempt to eradicate such introductions. For example, it is understood that non-Tasmanian species *E. nitens* has been introduced into plantations within the ENGO-proposed areas adjacent to the existing TWWHA. In this case intervention would be required to eradicate this vigorous introduced species to avoid invasive spread.

Including some logged or plantation areas in recommended additions to the TWWHA must not be interpreted as accepting logging within a protected area. The more important consideration is longer-term restoration and maintenance of ongoing ecological processes in this landscape.

Boundary considerations

Notwithstanding the inappropriateness of much of the existing boundary of the Tasmanian Wilderness World Heritage Area, the primary objective of the proposed additions of the Styx to the TWWHA is about contributing important **values**, indeed World Heritage values, to the adjoining TWWHA. However, in delineating the highest heritage value forests, the proposed boundary is not without its problems. The de facto boundaries that would be created by adopting the ENGO-proposed boundaries would be acceptable but some improvements could be made to achieve a final workable boundary, some of which have been taken into account in designing the recommended boundary presented here.

Overall, the recommended boundary is generally much more accessible and definable on the ground than the existing Tasmanian Wilderness World Heritage Area boundary.

In proposing the boundaries to the Styx–Tyenna area, a range of factors were taken into account including:

- high conservation value forest
- catchment protection
- connectivity
- fire management/control
- ready identification in the field
- manageability
- presentation
- logged or plantation.

Parts of the boundary delineation were problematic and so sections indicated by ‘zigzag’ lines are intended to be subject to closer consideration and subject to on-ground realities.

The details of the recommended boundary are available as a kmz file.

Presentation considerations

Given the existing access roads, the Styx Valley provides a rare opportunity for the public to readily access some of the most outstanding examples of individual trees and outstanding stands of tall eucalypt forest. There are no comparable opportunities in the existing World Heritage Area, and few such outstanding examples of tall eucalypt in the TWWHA, let alone examples that are accessible. Some parts of the Styx are now publicly promoted for tourism, in particular some of the ‘giant trees’.

The TWWHA presently suffers from the double bind of having little of the outstanding tall eucalypt forest and then, most is not readily accessible for public presentation. Both deficiencies could be remedied by adding the Styx River forests to the TWWHA where there is definite potential for further development of public access. This could be an important way of presenting the Tasmanian Wilderness World Heritage Area.

West Wellington Range assessment area

Part [FID 25]

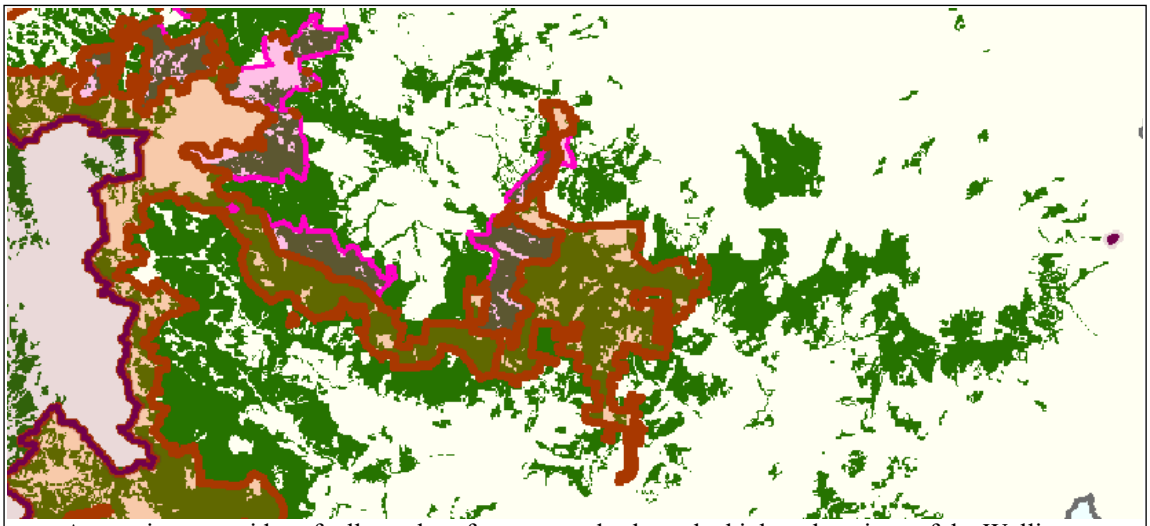
Introduction

The West Wellington Range assessment area (WW1) comprises a composite elongated block of areas described by ENGOs as HCV1 and HCV2. Although the HCV1 and HCV2 were assessed as a single entity in the first instance, explanatory notes of the relative heritage significance are provided separately.

Context for assessment

The highly relevant geographic context for the assessment included:

- proximity to TWWHA
- proximity to Wellington Park
- eucalypt forest connectivity to each of the above.



A prominent corridor of tall eucalypt forest extends along the higher elevations of the Wellington Range from the Snowy Range in the west to Mount Wellington overlooking Hobart at the eastern end of the range. The Wellington Range includes a substantial area of tall eucalypt forest as well as providing biological connectivity along a 40 km long corridor. HCV1 (red), HCV2 (pink) and TWWHA (purple) Map: ERIN

Heritage attributes

The WW1 block is a very significant area of largely intact tall eucalypt forest as well as a few other vegetation communities. Logging within the assessment block is reportedly only a recent development.

The furthest west part of the WW1, where it merges into the Snowy Range and Styx River assessment areas, contains tall eucalypt forest which is an integral part of the main north-south tall eucalypt corridor (C2C) extending from central Tasmania to the southern-most coast. As such it is regarded as contributing to the integrity of the TWWHA and as also contributing to the value of the tall eucalypt forest ecosystem from a conservation perspective.

Information sources

- Part previously listed on the National Estate Register

'Wellington Range Area, Pinnacle Rd, Fern Tree, TAS, Australia' in Australian Heritage Database. http://www.heritage.gov.au/cgi-bin/ahpi/record.pl?RNE10949.com

- ENGO 'West Wellington: High Conservation Value Submission'
- West Wellington Protection Group Facebook http://www.wwpg.info

The West Wellington assessment area comprises part of an essentially continuous corridor of tall eucalypt forest extending from the Russell River and Styx valleys in the west (part of the main north south regional corridor of tall eucalypt forests in southern Tasmania) eastwards to and including Mount Wellington, the very prominent mountain range behind the state capital, Hobart. As such the WW1 forests are an obvious consideration in relation to tall eucalypt forest conservation in Tasmania.

The tall eucalypt forest in the 'White Timber' Mountain area reaches a comparable altitudinal limit (circa 800 m. asl.) as found further west on the Snowy Range. However, unlike the forests on the Snowy, the tall eucalypts occupy the highest elevation on this section of the Wellington Range so there is no opportunity to support alpine vegetation communities. The tall eucalypt forest therefore crosses the range from one side to the other, only punctuated by numerous small montane bogs and treeless 'plains' on the plateau surface for example, White Timber Plain.

The eastern-most larger block of around 5,000 ha of diverse forest, including extensive regrowth tall eucalypt forest, is largely intact and is of obvious potential interest for conservation as surrounding lands are increasingly developed. The greater part of the eastern 'bulb' is mapped as tall eucalypt forest (ERIN based on TasVeg 2.0) and therefore potentially plays a significant role in the conservation of the tall eucalypt forest ecosystem. The immediately adjoining Wellington Park greatly enhances the conservation potential of the area.

NOTE:
There was found to be a significant amount of published and unpublished documentation of specific conservation attributes relating to the Mount Wellington Reserve and the eastern half of the corridor connecting back to the Snowy Range but documentation of the western end of the corridor was limited. Recent documentation by Mallick (2012) indicates that the western corridor, which he refers to as the 'Russell Forests Link', has records of 5 threatened plant species and 6 threatened animal species. Viewed at the landscape level this linking corridor is vitally important in terms of maintenance of connectivity of the tall eucalypt forest ecosystem along the length of the Wellington Range. The tall eucalypt forests which form a near intact continuous corridor connecting from Mount Wellington west to the Snowy Range, and hence the Tasmanian Wilderness World Heritage Area, were assessed as being of considerable natural heritage significance. Although contributing to the ecological integrity of the TWWHA, especially if the regional scale connectivity of intact forest is maintained, it is not appropriate as an addition to the TWWHA but is considered of National Heritage significance and well worth permanent protection complementary to the World Heritage Area.

Mount Wedge assessment area

FID 18, 19 and 20

Introduction

The Mount Wedge assessment area comprises mainly areas described by ENGOs as HCV1 and several small areas described as HCV2. They are all part of the larger Lake Gordon enclave in the Tasmanian Wilderness World Heritage Area. It is made up of three parcels of ENGO-proposed reserves [FID 18, 19, 20] generally with a north-westerly to westerly aspect overlooking and draining into Lake Gordon hydroelectric impoundment.

ENGO HCV lands (white edged, yellow shaded) in the Mount Wedge landscape. TWWHA boundary is green. Mount Wedge summit is light green triangle.

Most of the proposed area is forested but ranges from patches of tall eucalypt through several types of rainforest to some exposed treeless heaths around the summit of Mount Wedge.

In the past there has been a common belief that the heavily logged lands associated with the immediate catchment of the Lake Gordon water pondage should not be included in the Tasmanian Wildernesss World Heritage Area. This view has been based on the extent of heavily impacted forest as a result of past logging and the fact that Lake Gordon is an artificial element in an otherwise wilderness landscape. Although some of the more readily accessible parts of the Mount Wedge land unit have been logged, the greater part of the ENGO proposals are intact forest.

Context for assessment

The three parcels of ENGO-proposed reserves are part of a much larger 'enclave' inside the external boundary of the Tasmanian Wilderness World Heritage Area. The inholding is centred on the artificial pondage known as Lake Gordon. The ENGO-proposed reserves are part of a larger area of state forest between the TWWHA boundary and Lake Gordon.

The largest ENGO-proposed parcel is traversed by or has an extended frontage onto the Strathgordon Road and is visible from this road.

An important part of the context for assessing the Mount Wedge ENGO-proposed reserves is its close proximity to the Upper Florentine catchment, being separated only by a narrow isthmus of the Adamsfield Conservation Area section of the Tasmanian Wilderness World Heritage Area. This proximity is very relevant in terms of fire management in this landscape and habitat connectivity.

Mount Wedge, a prominent isolated peak of more than 1,000 metres asl. is a well-known destination for day trip hikers from Hobart and is renowned for its panoramic views, including southwards into the TWWHA. It has a walking track managed by Forestry Tasmania.

Heritage assessment (preliminary landscape level only)

Detailed data was unable to be accessed apart from geoconservation and threatened plant communities. Hence the area has been assessed only at landscape level. Other IVG reports may well reveal important conservation values for this area.

With the exception of the summit area of Mount Wedge, the visual focus of the ENGO-proposed reserves is towards Lake Gordon rather than into the TWWHA. Logging which has occurred has mostly been low in the landscape and adjacent to the Strathgordon Road and of low or no visibility from within visitor frequented areas of the TWWHA.

Mount Wedge is listed on the Tasmanian Geoconservation Database on the basis of its residual capping of dolerite (ID 3070) and for glacial features (ID 3071). Imagery reveals evidence of minor glaciation on the east (Boyd River) and south side (Huon catchment) of the summit of Mount Wedge with a combination of a small terminal moraine (east side) and some incipient lateral moraines on the south side, apparently extending over the TWWHA boundary into dense rainforest slopes.

The forests on the slopes of Mount Wedge are contiguous with the forests of the TWWHA, indeed are integral with those forests, the TWWHA boundary being very much an artificial subdivision of the landscape.

The main conservation attributes of the Mount Wedge proposals are the tall eucalypt forests and associated rainforests. Indeed there is an interesting sequence from the tall eucalypt forests low on the slopes of Mount Wedge, with a transition to rainforest and ultimately to low shrubby sub-alpine scrub on the upper slopes of the mountain—a common transition but here short and readily accessible.

The upper slopes of Mount Wedge have an array of conservation values which are particularly relevant to the immediately adjoining Tasmanian Wilderness World Heritage Area, including the residual dolerite capping (geoconservation significance), glacial landforms and montane heath together with the visual prominence of the mountain viewed from all sides, including from within the TWWHA.

The smaller ENGO-proposed land parcel to the north-west [FID 15] remains mostly forested but about 20 per cent has been recently logged. It is surrounded by roads, stored waters and various tracks and was assessed at the landscape level as not possessing important heritage conservation values. There is a mapped threatened plant community in treeless lands just outside the ENGO proposed boundary.

Summary—Mount Wedge		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest		Contribution to integrity of the adjoining TWWHA
Rainforest		Contribution to integrity of the adjoining TWWHA

Summary—Mount Wedge		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Geoconservation values		*Glacial*: Contribution to integrity of the TWWHA *Geoconservation*: Contribute to the integrity of the TWWHA

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
		Not yet assessed but the area south of the Scotts Peak Road would contribute significantly to the integrity of the immediately adjoining National Heritage listed Tasmanian Wilderness World Heritage Area.

Boundary considerations

The primary consideration in determining the boundary within this precinct is to capture the important heritage values of the rainforest–eucalypt forest complex.

Also to be considered is the potential of that section of the precinct along the Strathgordon Road, which may help provide additional visitor opportunities, and so improve presentation as part of the (new) Tasmanian Wilderness World Heritage Area.

Adding the ENGO-proposed reserves south of the Strathgordon Road to the TWWHA is valid. It would improve the appropriateness of the boundary that is presently partly along a watershed and then inappropriately crosses over the shoulders of Mount Wedge. The Strathgordon Road would be an appropriate boundary for the TWWHA.

Logging has heavily impacted that part of the ENGO proposal north of the Strathgordon Road. Its addition to the TWWHA is problematic and would result in a much less appropriate boundary than the present ridge line/viewshed/watershed. It is not recommended.

Recommendations

1. Add those ENGO-proposed reserves south of the Strathgordon Road [FID 19] to the TWWHA, adopting the road as a new boundary to the TWWHA.
2. Retain those ENGO-proposed reserves north of the Strathgordon Road as state forest (including small isolated area near lake shore—FID 18 and 20])

Clear Hill West assessment area

FID 30

Introduction

The Clear Hill West assessment area comprises an aggregate of four small areas adjoined on three sides by stored waters of Lake Gordon and on the fourth by the Tasmanian Wilderness World Heritage Area. It was decided therefore that logically all of the four parcels of land should be assessed as a single unit but if relevant, the relative merits of component parcels should be separately reported.

Context for assessment

The aggregate area is all but surrounded by the TWWHA but in reality, it is part of a larger enclave within the external boundaries of the TWWHA. It is adjoined on two of its three sides by the stored waters of the artificial impoundment of Lake Gordon.

The whole of the assessment area is steep hilly land that is visible from many directions, including from within the immediately adjoining section of the TWWHA. Much of the area would be visible from the waters of Lake Gordon and from sections of TWWHA further afield to the west. Clear Hill is visible from many parts of the TWWHA.

Clear Hill West assessment area comprises 'Immediate protection' (dark blue) and 'Interim protection' (light blue) lands and which are essentially surrounded by TWWHA. Map derived from Environment Tasmania website.

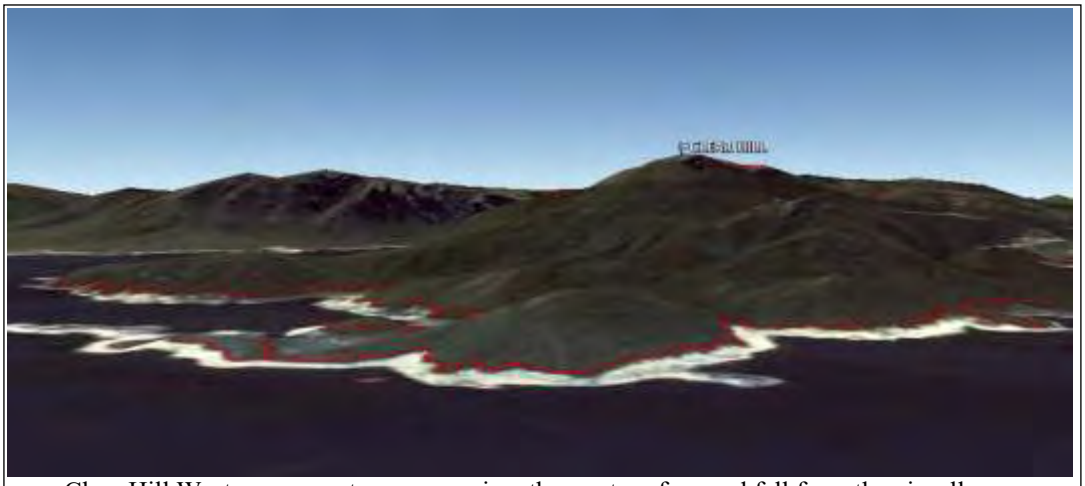
The ENGO-proposed reserve (yellow tint) on Clear Hill is mostly forested and some has been logged.

Heritage assessment

Time constraints prevented accessing any detailed biodiversity data for the precinct. This assessment therefore does not draw any conclusions on the heritage significance based on biodiversity considerations. As noted in Chapter 4, other IVG reports may well provide useful insights into the area's biodiversity value.

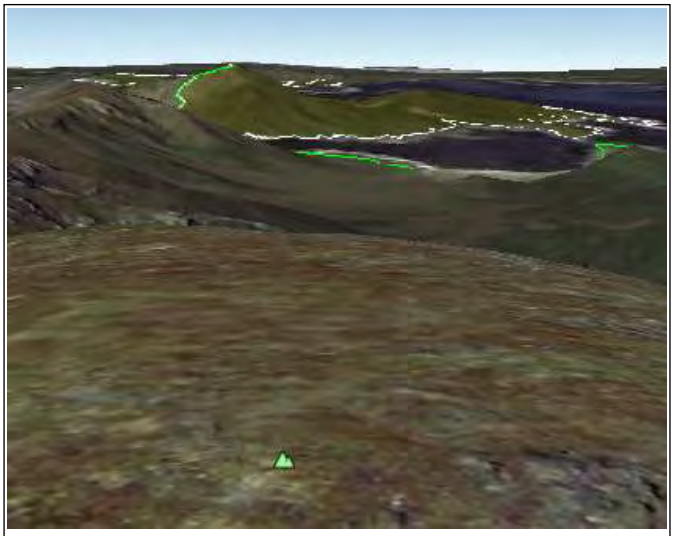
The most obvious heritage attribute identified is visual prominence in an otherwise open and largely treeless landscape.

In the context of the surrounding TWWHA, the visual attributes of the Clear Hill West area are not insignificant. Visually, much of Clear Hill is an integral part of the scenic landscape of the adjoining TWWHA, especially from the north and east.



Clear Hill West assessment area comprises the western face and fall from the visually prominent Clear Hill down to the shores of Lake Gordon. The rocky escarpment to the left is in the TWWHA. Image created using Google Earth.

Given that the Clear Hill West assessment area is an integral part of a scenic landscape that is otherwise included in the TWWHA, adding it to the TWWHA would contribute to the (visual/scenic) integrity of the TWWHA.



Clear Hill West ENGO HCV lands are clearly visible from the southern end of the Denison Range (foreground) in the TWWHA—an integral part of the scenic landscape otherwise substantially within the TWWHA.

Unlike the section of hill slope immediately north of the Strathgordon Road (see Mount Wedge assessment area), which is hidden from most parts of the TWWHA, much of the Clear Hill land is more visible and more closely associated with the outstanding scenic landscape of the Denison Range section of the TWWHA.

The Clear Hill West ENGO proposed reserves contain significant stands of eucalypt forest, including tall eucalypt, albeit an 'island' of eucalypt in a landscape otherwise dominated by treeless moorland. Some forest has been logged in recent years. The natural processes operating on the forests of the Clear Hill area have been significantly truncated by the flooding of the lands to the west so that there are now fewer direct fire approaches.

While the tall eucalypt forests are isolated from other tall eucalypt forest in the adjoining TWWHA, adding the area to the Tasmanian Wilderness World Heritage Area would contribute to the integrity of the TWWHA, at least in respect of the tall eucalypt forest ecosystem.

Addin the Clear Hill area to the TWWHA would contribute to the integrity of wilderness in the TWWHA, as it is an integral part of the wilderness landscape extending north into the Gordon Valley and Denison Range.

Summary—Clear Hill West		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Scenic landscape	Criterion (vii)	Contributes to the (visual/scenic) integrity of the Tasmanian Wilderness World Heritage Area (wilderness).
Tall eucalypt forest		Contributes to the integrity of the WHA (tall eucalypts).
Biodiversity (species level data not readily available)		Not assessed.

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Scenic landscape		Contributes to the (visual/scenic) integrity of the Tasmanian Wilderness World Heritage Area.

Heritage conclusions

In the absence of any detail data being accessed, the key element in the assessment of the heritage conservation significance of the Clear Hill West area is its visual prominence in the landscape. Visually it is an integral part of the essentially natural landscape, which is mostly protected in the Tasmanian Wilderness World Heritage Area.

Adding the area to the Tasmanian Wilderness World Heritage Area would significantly contribute to the TWWHA's integrity.

Boundary considerations

If the whole of the Clear Hill West assessment area were added to the TWWHA, the boundary of the TWWHA would be significantly simplified and threats of visual impacts from forestry activities eliminated. No purpose would be served by adding only parts of the assessment area to the TWWHA.

Recommendations

1. Add the whole of the Clear Hill West assessment area, to the TWWHA.
2. Phase out logging in the Clear Hill West precinct in favor of permanently protecting the area and withdrawing and rehabilitating the visually scarring road access to the area.

Upper Florentine assessment area

FID 23 and part of 33

Context for assessment

The Florentine River valley is one of three valleys with headwaters on the slopes of Mount Mueller—the Florentine, which flows north, the Styx flowing east, and the Weld south-easterly.

The 'Upper Florentine' ENGO-proposed reserve (white edge, yellow tint) with Gordon River section of the WHA to its west and north-west and the Weld River section of the TWWHA to the south-east. Unlike the lower Florentine valley to the north-east, most of the Upper Florentine has not been logged. The area readily accessible, being traversed by the Gordon River Road.

Most of the Upper Florentine assessment area is a broad shallow basin with an extensive karstic limestone basement. The area contains significant areas of karst, including caves.

The vegetation of the Upper Florentine is a complex mosaic of eucalypt, including significant stands of tall eucalypt, eucalypt woodland and moorland. Rainforest is rare but there are

patches of tall eucalypt forest with well-developed rainforest understorey, such as adjacent to the start of the Tims Track.

Unlike most other tracts of tall eucalypt forest adjacent to the eastern side of the TWWHA, the Upper Florentine landscape has low amplitude topography exposed to fire from all directions, particularly from the west. Most other well-developed tall eucalypt stands are located in steep hilly terrain, providing greater protection from fire with many more fire refuges. The Upper Florentine has relatively few topographic derived fire refuges.

Important cultural heritage sites have been recorded in the Upper Florentine.

An important context is the relationship between the Upper Florentine assessment area and the immediately adjoining Mount Field National Park (see below for section of this report on Mount Field National Park precinct).

A tributary catchment, the 'Little Florentine' is already a part of the TWWHA.

Heritage assessment

The main attributes of the Upper Florentine for consideration in any heritage assessment include:

- tall eucalypt forest
- karst/geoconservation site
- archaeological cultural sites
- scenic landscape.

View across the Upper Florentine (immediate forested foreground) and tributary catchment of the Gordon River section of TWWHA (forested ridge and treeless areas beyond) towards Saw Back Range and prominent peak, The Thumbs. View from The Needles near Gordon River Road. Image: www.lukeobrien.com.au

Tall eucalypt forest

The Upper Florentine has been previously recognised for its conservation value, particularly for tall eucalypt forest. Rather than forming extensive stands, the tall eucalypt forest ecosystem in this precinct is represented by a complex mosaic in a matrix of moorland and eucalypt woodland. This includes significant stands of well-developed tall eucalypt forest, mainly of *Eucalyptus delegatensis* and also some *Eucalyptus obliqua* and occasional *Eucalyptus regnans*. The World Heritage Expert Panel convened to report on forests of prospective World Heritage value as part of the Regional Forest Agreement in 1997 reported:

> The Panel as another possible best expression of the eucalypt sub-theme identified a large stand of tall, undisturbed eucalypt forest in the Upper Florentine. The Upper Florentine forests are of exceptional diversity. They are also characterised by three dominant overstorey species: *Eucalyptus regnans*, *Eucalyptus delegatensis* and *Eucalyptus obliqua*. The Panel recommended that the Upper Florentine eucalypt forests warrant further investigation as a best global expression of the Eucalypt sub-theme in wetter southern temperate areas (emphasis in original report). —Tasmania–Commonwealth Regional Forest Agreement Background Report Part 1: World Heritage Report: Record of the Tasmanian World Heritage Expert Panel meeting June 1997).

The tall eucalypt forests of the Upper Florentine derive their natural heritage value on several levels; first their intrinsic value as an ecologically diverse mosaic of stands of intact tall eucalypt forest, and second because of their strategic location in the natural tract of tall eucalypt forests which stretch from central Tasmania to the southern-most part of the island.

The forests in the Upper Florentine occupy a distinct landscape unit that contrasts with the main tracts of tall eucalypt in the Styx–Weld–Huon–Picton to the east and south and the adjacent parts (Gordon and Weld catchments) of the existing TWWHA. Parts are likely similar to the once extensive tall eucalypt forests further down the Florentine Valley but which have now been extensively logged and converted to regrowth or plantations. The Upper Florentine forests contrast with the relatively few small stands of well-developed tall eucalypt forest already represented in the adjacent sections of the existing TWWHA to the west (Gordon catchment) and south (Upper Weld).

The mosaic pattern of the tall eucalypt forests of the Upper Florentine, flanked to the east and west by extensive tracts of moorland and buttongrass, is a clear indication of the ongoing and frequent role of fire in this landscape. Any change in climate and/or fire regime here could be critical to the survival of the tall eucalypt forests of the Upper Florentine precinct. Topography provides some fire shadow refuges from natural fire paths from both west and east that offer good prospects for longer-term survival of tall eucalypt in the precinct.

The combination of extensive mid-elevation low amplitude topography and frequent fire in the Upper Florentine results in ecological diversity that differs greatly from that of much of the tall eucalypt forest elsewhere in both the TWWHA (e.g. Upper Coles Creek, Counsel River) and in other ENGO-proposed reserves containing *E. regnans*/*E. obliqua*/*E. delegatensis* tall eucalypt forests (e.g. Styx, Weld, Huon, Picton)

Adding the tall eucalypt forests of the Upper Florentine would make a very important contribution to the ecological diversity and hence integrity of the Tasmanian Wilderness World Heritage Area and so are well worthy of World Heritage recognition (see Chapter 1 of this report).

The Upper Florentine tall eucalypt forests occupy a key location in the natural corridor of tall eucalypt forest extending from central Tasmania to the south coast of the island. As such it is a key link to maintaining and protecting a regional 'connectivity corridor' which the author refers to as 'C2C'—a forest corridor from the vicinity of the Counsel River in the north to Cockle Creek in the south. The Upper Florentine tall eucalypt forests are in a critical location in that regional corridor, the remaining intact stands occupying a 'choke' or narrow isthmus section in the corridor, pinched by fire paths from both east and west. Similarly, protecting and maintaining ecological connectivity at the regional level, of necessity including the Upper Florentine, would make an important contribution to the ecological sustainability of this distinctive forest ecosystem. It was also make an important contribution to the World Heritage value of the TWWHA.

In conclusion, the tall eucalypt forests of the Upper Florentine, as part of a complex mosaic of natural vegetation, have high heritage conservation value, especially in the context of the total distribution of tall eucalypt forest in Tasmania and in the context of the existing adjoining Tasmanian Wilderness World Heritage Area.

Karst

The Florentine River valley floor and some side slopes comprise an extensive basement of limestone with significant areas on the valley floor exhibiting karst formation, including numerous caves.

> The Junee–Florentine karst is developed in an extensive belt of Ordovician limestones that underlie the major portion of the Florentine Valley. Limestone also extends into the neighbouring Tyenna River valley, approaching the township of Maydena to the southeast ('Junee area'). The total area of limestone and potentially karstic terrain is in the order of 18,500 ha. —Eberhard 1998

The karst of the Florentine valley is very extensive across the broad valley floor, extending from the Upper Florentine in the south and to within a few kilometres of Wyld's Craig in the north. Much of the valley floor has been extensively and intensively developed for industrial forestry such that much of the karst is no longer in a natural condition or a natural setting.

Some particularly noteworthy karst features are known and have been documented. Parts of the Florentine River catchment have been subject to stream capture by underground streams which divert waters eastwards into the Junee River, flowing under Mount Field National Park to discharge in the Tyenna valley. Similarly, some areas of karst in the eastern side of the valley have been traced to flow underground westwards to the main stream of the Florentine River.

Some 14 km of underground stream captures surface flow in the Florentine Valley and is ducted underground by river caves to the Junee Cave in the Tyenna Valley.

> The Junee River catchment provides a spectacular illustration of the enigmatic nature of many karst drainage systems, with approximately half of the river catchment above Junee Cave located beyond an apparent drainage divide between the Florentine Valley and the headwaters of the Tyenna River ... The total catchment of the Junee River is now thought to be in the order of 5,500 ha. About half of this catchment lies within the apparent catchment of the north-flowing Florentine River, although the Junee River itself flows southwards as a tributary to the Tyenna River. Flow velocities recorded during many of the water-tracing experiments were extremely rapid and provide an indication of the degree of conduit integration within the Junee River aquifer. —Eberhard 1998

Those sections of the Florentine Valley mapped as being captured underground by the Junee River cave system appear to be wholly within that part of the ENGO-proposed reserves adjacent to the western boundary of Mount Field National Park and are further dealt with under the Mount Field assessment area.

The documented karst within the ENGO-proposed reserves in the Upper Florentine would make a particularly valuable contribution to the integrity of the karst values of the existing Tasmanian Wilderness World Heritage Area. In particular the catchment of the Junee River cave system represents an outstanding example of subterranean stream capture which would make an important contribution to the integrity of the karst of the TWWHA. These karst areas also have a number of associated documented important archaeological sites (see below) and represent particularly important sites of significant (and shared) natural and cultural heritage value.

Archaeological cultural sites

The Florentine Valley has already made an impressive contribution to archaeological research of the Tasmanian Aboriginal use of the landscape. Sites include:

- Nanwoon Cave (now known as Nanwood)—located adjacent to the Florentine River in the centre of the Upper Florentine forests, is a highly important archaeological cultural site of World Heritage significance (Jones et al. 1987)

- Nunamira (previously known as Bluff Cave) is located adjacent to the Florentine River and is a confirmed Pleistocene (ice age) site with the oldest occupation level dating back some 30,000 years.
- Tiata Mara Kominya (Beginners Luck Cave) has been subject to archaeological research revealing this to be a most important archaeological site and hence of cultural heritage importance.

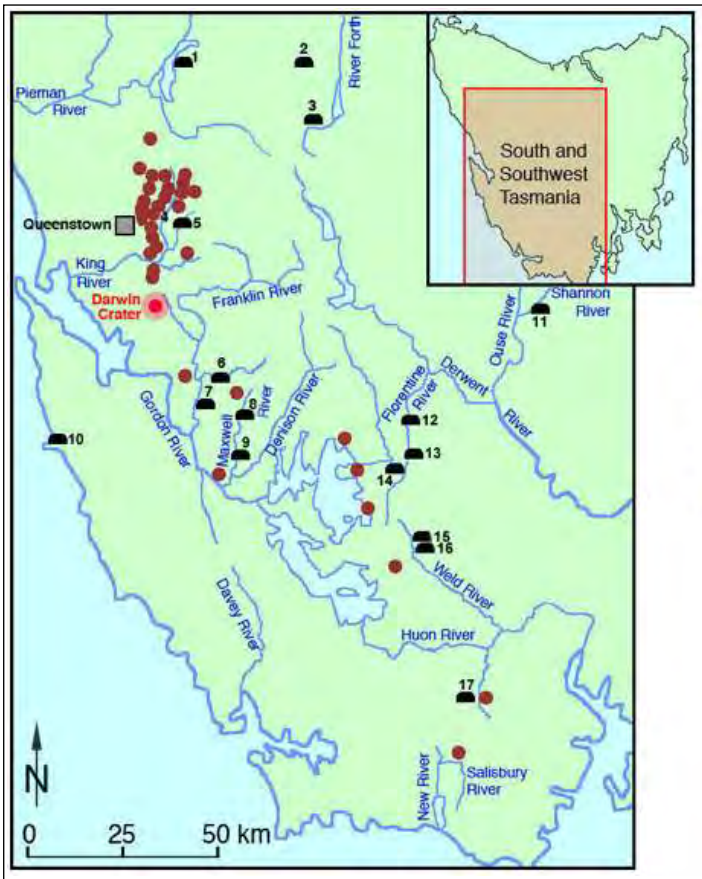
Nanwood (Nanwoon) Cave site is confirmed as being within the ENGO-proposed reserves. Among the Pleistocene archaeological sites of Tasmania, Nanwood yielded the first human remains—a fragment of skull. Circumstantial evidence suggests a date of more than 12,000 years with a date of 16,000 years obtained for some near surface bone.

Nunamira (Bluff) Cave is located 800 metres east of a parcel of ENGO-proposed reserve in the Upper Florentine, some 1,600 metres from the existing boundary of the TWWHA.

The presence of the distinctive tool types and impactite raw material from the Darwin Crater on the western side of the TWWHA raw materials and tool types at Nunamira (Bluff Cave) links it into a network of human activity centered on south-west Tasmania during the Pleistocene period (Cosgrove 1989). Nunamira makes an important contribution to the integrity of the cited Pleistocene human occupation sites already protected in the TWWHA. Indeed, linking it directly with the Darwin Crater makes an important contribution to the TWWHA.

Tiata Mara Kominya (Beginners Luck Cave) was originally thought to be a site of cohabitation of macro fauna and Tasmanian Aboriginal people. Subsequent more precise dating, however, established that the macro fauna material was circa 40,000 years and predated local Aboriginal occupation of the site. As such, the cave is both a significant archaeological site and a fossil site. Its addition to the Tasmanian Wilderness World Heritage Area would contribute to the integrity of the area's boundaries, in particular in relation to human occupation sites and (sub) fossil sites.

The combination of the karst attributes and known archaeological sites in the Upper Florentine strongly suggests that this area requires much more attention and archaeological investigation. The precinct is potentially important for providing more evidence of the climatic influence on both macro fauna and Aboriginal occupation during and after the Pleistocene. It is possible that a significant heritage precinct exists, extending from at least Tiata Mara Kominya in the north to Nanwood in the south.



Overview map:

A selection of the most important southwestern Tasmanian archaeological sites:

Brown: open sites (mostly holocene)
Black: caves and rockshelters (mostly pleistocene)

1. Macintosh site
2. Parmerpar Meethaner site
3. Warragarra site
4. King River Valley open sites (see Holocene sites)
5. Maneena Langatick Tattana Emita site (Nelson River)
6. Acheron site
7. Kutikina (Fraser) site
8. Warreen site
9. Ballwinne site
10. Pt. Hibbs site
11. ORS7 site
12. Beginners Luck site
13. Nunamira site
14. Nanwoon site
15. Bone Cave site
16. Keyhole site
17. Wargata Mina site

Darwin Crater

Most important archaeological sites in south west Tasmania. Note strategic inland location of the three Florentine sites (12,13 and 14). (from Andaman.org)

Recommendations

Archaeological sites in the Florentine Valley

The suite of archaeological sites in the Florentine Valley is of sufficient national and international significance to warrant their permanent protection. The following recommendations are made.

1. Add the ENGO-proposed reserves, including the Nanwood archaeological site to the TWWHA.
2. Design conservation precincts and permanently protect the Nunamira and Tiata Mara Kominya sites.
3. Add the Nunamira site to the TWWHA (physical linking is desirable but not essential but could be achieved by reconfiguration of the ENGO-proposed reserves just 600 metres to the west.
4. Conduct a comprehensive archaeological survey of the Florentine River, in particular along and adjacent to the river, particularly between the Nanwood and Nunamira sites.

Scenic landscape

Apart from the hilly prominence of Mount Tim Shea in the east, most of the ENGO proposed reserves are of relatively low topography and so do not exhibit the spectacular landforms of some of the surrounding landscape. However, the Upper Florentine is an appealing landscape to view from those surrounding high points such as Mount Tim Shea, The Needles, The

Thumbs and particularly from Mount Field National Park. Accordingly the Upper Florentine contributes to the scenic landscapes—see for example the image above where the low relief foreground (Upper Florentine) provides the contrast for the treeless plain and rugged Thumbs range beyond.

Summary—Upper Florentine		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii) (superlative natural phenomena)	Contributes to integrity of 'eucalypt tall open forests including Eucalyptus regnans, the tallest flowering plant species in the world;' (inscribed values). Additionally, this locality provides contributory evidence of 'the syndrome of a fire dependent forest above a fire intolerant forest' being a 'superlative natural phenomena'.
Tall eucalypt forest	(ix) (Outstanding examples of ong oing evolution)	Contributes to ecological diversity of already cited World Heritage values 'pristine tall eucalypt forests;' (inscribed values —OV)
Tall eucalypt forest	(ix)	Contributes to the integrity of tall eucalypt forests in the TWWHA by contributing to preservation of regional connectivity between existing and proposed tall eucalypt forest additions. (ongoing ecological and evolutionary processes)
Tall eucalypt forest	(x)	Tall eucalypt is presently conspicuous by its absence from Criterion (x) in 'inscribed values' Therefore, the tall eucalypt ecosystem contributes a NEW World Heritage value together with other tall eucalypt forest additions, facilitates tall eucalypt forest qualifying as an official value against World Heritage Criterion (x). ' … to contain the most important and significant natural habitats for in-situ conservation of biological diversity … '
Tall eucalypt forests	(viii) '..outstanding examples representing major stages of earth's history,….'	It should be noted that at a generic level, all of the tall eucalypt forests contribute to the likelihood that tall eucalypt forests as a class can meet Criterion (viii). The contribution is not necessarily recognisable at the site specific level.
Karst	(viii) Outstanding examples of stages of earth's history	Contribute to the integrity of the World Heritage values of the TWWHA by increasing representation of already cited value of karst.

Summary—Upper Florentine		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Archaeological sites	(iii) 'demonstrating the sequence of human occupation at high southern latitudes during the last ice age'. OV (vi) '...Pleistocene sites, which demonstrate the adaptation and survival of human societies to glacial climatic cycles…' OV	Contribute to the value and integrity of the World Heritage values of the TWWHA by increasing representation of already cited* value of Pleistocene human occupation sites. *(Criteria (iii) and (vi)

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Not specifically assessed because of evidence of higher order World Heritage significance.		The natural and cultural attributes in the area contribute to the integrity of the already National Heritage listed Tasmanian Wilderness World Heritage Area.

Heritage summary

The Upper Florentine ENGO-proposed reserves comprise a landscape that contains a number of natural and cultural heritage attributes that are particularly relevant to the adjoining Tasmanian Wilderness World Heritage Area. The complex mosaic of natural forests and moorland, which includes significant stands of well-developed tall eucalypt forest, would add important new ecological diversity to the TWWHA, thereby contributing to the area's value and integrity. The tall eucalypt forests would contribute to recognising new values against Criterion (viii) and Criterion (x).

Similarly, the karst areas and archaeological sites would make a significant contribution to the value and integrity of the TWWHA.

Overall, the Upper Florentine ENGO-proposed reserves include values, which in the context of the adjoining TWWHA, are of World Heritage significance.

Boundary considerations

NOTE: The area referred to in this report as 'Upper Florentine' merges with the ENGO proposed reserves dealt with under 'Mount Field' (north east) and 'Styx River' (south east). Adding the whole of the ENGO-proposed reserves in the Upper Florentine to the Tasmanian Wilderness World Heritage Area will substantially consolidate the TWWHA and have a major impact on the boundary, converting the existing very narrow corridor (the Adamsfield corridor) into a broader link between the Weld River section in the south and the Gordon River section in the north. Overall this will greatly improve and simplify the boundary although this will be offset to some degree by the necessity to adopt a 'point-to-point' boundary across the valley floor of the Florentine.

A particular boundary improvement resulting from adding the ENGO proposed reserves is to eliminate the current inappropriate TWWHA boundary south of the Gordon River Road. Operational field management would benefit from having a road frontage on the Gordon River Road rather than an ill defined boundary cutting across the landscape and in places following contours.

NOTE: The boundary across the Florentine resulting from adoption of the proposed ENGO boundary could be adjusted at the detail level to improve on-ground definition. However, it should be noted that this report recommends more detailed analysis of the karst and archaeological attributes in the area, which may need further adjustment. The intention is to at least include the Nunamira (previously known as Bluff Cave) archaeological site and to explore the practicability of also including Tiata Mara Kominya (Beginners Luck Cave) (Pleistocene site with the oldest occupation level dating back some 30,000 years) in the TWWHA.

NOTE: Including in the TWWHA these site-specific features in a modified landscape does not necessarily require physical linking to the TWWHA.

It is important that the narrow strip of ENGO proposed land up the western boundary of Mount Field National Park is at least added to the park and in turn, included in the TWWHA, as it ensures greater surface protection of the catchment of the outstanding Junee Cave (see Mount Field section).

Recommendations

1. Recognise that the whole of the 'Upper Florentine' ENGO proposed reserves, in the context of the adjoining Tasmanian Wilderness World Heritage Area, is of World Heritage value and significance (note the link with the recommendations for the Mount Field National Park).
2. Add the whole of the 'Upper Florentine' ENGO proposed reserves to the adjoining Tasmanian Wilderness World Heritage Area (note the link with the recommendations for the Mount Field National Park).
3. Recognise the Nunamira and Tiata Mara Kominya archaeological sites outside the ENGO-proposed reserves as being of at least national cultural heritage significance and consider the feasibility of their inclusion in the TWWHA.
4. Conduct a comprehensive archaeological survey of the Florentine River, in particular along and adjacent to the river, particularly between the Nanwood and Nunamira sites.

Gordon Range assessment area—Florentine–Gordon watershed

FID 32 and 34 (was FID 26, 27 respectively)

Introduction

The Gordon Range (GR1) assessment area comprises two parcels of the ENGO proposed reserves [FID 32 and 34] on the Gordon Range—Tiger Range, mostly within the Coles Creek and Florentine River catchment. The Coles Creek catchment flows directly into the Upper Coles Creek section of TWWHA.

Much of the GR1 in the Coles Creek catchment has been coupe logged in recent decades.

The southern most ENGO-proposed block [FID 32] is entirely within the Florentine catchment and appears not to have been logged.

The ENGO-proposed reserves (white edged) have been assessed together with the intervening section of state forest in the Gordon River catchment. The intent of the recommended TWWHA boundary (yellow line) is to follow the prominent ridge-line comprising the Coles Ck-Florentine watershed in the north and in the south the Gordon-Florentine watershed.

Context for assessment

The TWWHA boundary in this precinct is an artifact of past flawed protected area boundary determination. Instead of using scientific and management principles and logically following the watershed it deviated into the Gordon River catchment around areas of commercial forest. Although much of that forest in Richea Creek catchment on the Gordon fall has now been logged, there is a need to reconsider for the longer term, the appropriateness of the boundary and the heritage significance of the land involved.

The southern ENGO block is within about 600 m of an important archaeological site on the Florentine River and hence need to include that site in the context of assessment—see earlier section on Upper Florentine.

Some visibility questions arise because of the public use of the adjacent Vale of Rasselas (Gordon River Valley) and the Denison Range.

Heritage assessment

World Heritage

Notwithstanding that most of the ENGO-proposed land is mapped as tall eucalypt forest, most of the northern block [FID 34] has been clear fell logged in recent years. Its main heritage value depends on its longer-term contribution to the values and integrity of the immediately adjoining TWWHA and recommended additions. It:

- contributes to maintenance of integrity of catchment and other natural processes within the TWWHA
- contributes to ecological integrity by maintaining connectivity of the tall eucalypt forest ecosystem within the TWWHA ('C2C' tall eucalypt forest ecosystem corridor).

Location of Nunamira Cave archaeological site on the Florentine River relative location to ENGO reserve parcel [FID 32] (white edge)

The southern ENGO-proposed block [FID 32] in the Florentine catchment is intact tall eucalypt forest and can make a useful contribution to maintaining regional connectivity in the tall eucalypt ecosystem. Although its position in the corridor of tall eucalypt forest is important to connectivity, which in turn is important to the integrity of the TWWHA, the issue is more about protecting the forest rather than being included in the TWWHA. There is some logic in adopting the well-defined Gordon-Tiger range as the most appropriate boundary for this section of the TWWHA (see 'Boundary considerations' and 'Recommendations'). Further consideration of the future of the Nunamira Cave archaeological site, however, has some bearing on the future of [FID 32]

National Heritage

The area was not specifically assessed for National Heritage significance given the evidence of the importance of the assessment area relative to the TWWHA. At the landscape level, it is unlikely to have any 'stand-alone' value of particular significance, the real importance being the contribution that parts of the area can make to the integrity of the TWWHA, especially in terms of catchment integrity and visual protection. Its protection would complete catchment protection of Richea and Upper Coles Creek, the latter being a very high value part of the TWWHA.

Summary—Gordon Range [FID 26,27]		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forests	(vii), (ix), (x)	Contribution to long-term protection and maintenance of regional connectivity represented by the 'C2C' tall eucalypt corridor.
Tall eucalypt forests	(viii) '..outstanding examples representing major stages of earth's history,….'	It should be noted that at a generic level, all of the tall eucalypt forests contribute to the likelihood that tall eucalypt forests as a class can meet Criterion (viii). The contribution is not necessarily recognisable at the site-specific level.
Catchment integrity/natural processes	(ix) '.. outstanding examples representing significant ongoing ecological and biological processes…'	Key contribution to protection of Upper Coles and Richea Creek catchments otherwise already protected in the TWWHA.

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Completion of catchment protection		Contribution or enhancement of natural integrity of National Heritage listed TWWHA.

Summary of heritage value

NOTE: The assessment area comprises ENGO-proposed reserves together with an adjoining small section of non-ENGO state forest (see also reference to Nunamira Cave archaeological site in Upper Florentine section above.

The northern parcel of the assessed area is considered to have no particular 'stand-alone' heritage significance at the landscape level except for its importance for the long-term

contribution that it can make to other recognised natural heritage values of the Tasmanian Wilderness World Heritage Area:.

- as tall eucalypt forest, albeit regenerating, it makes a significant contribution to maintaining regional connectivity of tall eucalypt forest, in particular, contributing to connectivity between the Upper Florentine and the Lower Florentine.
- as a catchment(s) flowing directly into the TWWHA, it can make an important contribution to the integrity of the existing National Heritage and the TWWHA.

The southern parcel in the Florentine catchment [FID 32], which comprises tall eucalypt forest, does have some in situ heritage significance. This relates primarily to the contribution that it can make, together with other forests to the north and south, to maintaining regional connectivity in the tall eucalypt ecosystem and hence in the long-term maintenance of the ecological integrity of tall eucalypt ecosystem in the TWWHA. However, providing this stand of forest is protected, there is no immediate need for it to be included in the TWWHA (see section on Boundary considerations below). The future of this parcel of forest is also linked to the subject of protection of the nearby Nunamira Aboriginal Archaeological site (see Upper Florentine section above).

Boundary considerations

GR1 is particularly important for boundary improvements to the TWWHA as well as its contribution to catchment integrity.

The northern parcel of the ENGO-proposed reserves [FID 34] is an anomaly in the eastern boundary of theTWWHA. It is located mostly in the Coles Creek catchment, including in the very head of Upper Coles Creek and so it drains directly into a very high value section of the TWWHA (outstanding example of *E. regnans* tall eucalypt forest). The watershed of the Gordon Range and, further south, the Tiger Range, is a very logical permanent boundary to the TWWHA in this precinct.

Adopting the watersheds as a new and more appropriate boundary of the TWWHA would require:

- protecting approximately 75 per cent of the northern ENGO block
- protecting about 375 ha. of mostly previously logged tall eucalypt forest (state forest)* to the immediate south.

This could be ‘offset’ by rescinding that part of the northern parcel in the Florentine catchment.

The proposed new boundary is illustrated in yellow edge in the diagram above at the start of the Gordon Range section. A shape file is available.

The southern parcel of ENGO proposed block in the Florentine catchment does have significant heritage conservation values, contributing to the regional connectivity of the tall eucalypt ecosystem. However, its future needs to be reviewed in the context of the recommended protection of the important Nunamira archaeological site 600 metres to the east. The archaeological site could potentially be linked to the TWWHA by reconfiguring the ENGO-proposed reserves to orient east-west (see recommendations relating to the Nunamira Archaeological site. The site could be retained in state forest but added to the TWWHA.

Recommendations

1. Adopt the Gordon–Florentine watershed as the most appropriate TWWHA boundary in this locality.
2. Permanently protect only that part of the ENGO block FID 34 west of the Gordon–Florentine watershed.

3. Permanently protect that part of state forest between the ENGO-proposed reserves and west of the Gordon–Florentine watershed.
4. Rescind the northern most parcel of ENGO proposed reserves east of the Gordon-Florentine and retain in state forest (as offset to 3 above).
5. Add the lands in 2 and 3 to the adjoining TWWHA.
6. Consider the future of the southern ENGO block [FID 32] of ENGO land in the context of the proposed protection of the nearby Nunamira archaeological site. One option is to physically link the two by extending ENGO FID 32 to embrace Nunamira.

Mount Field assessment area

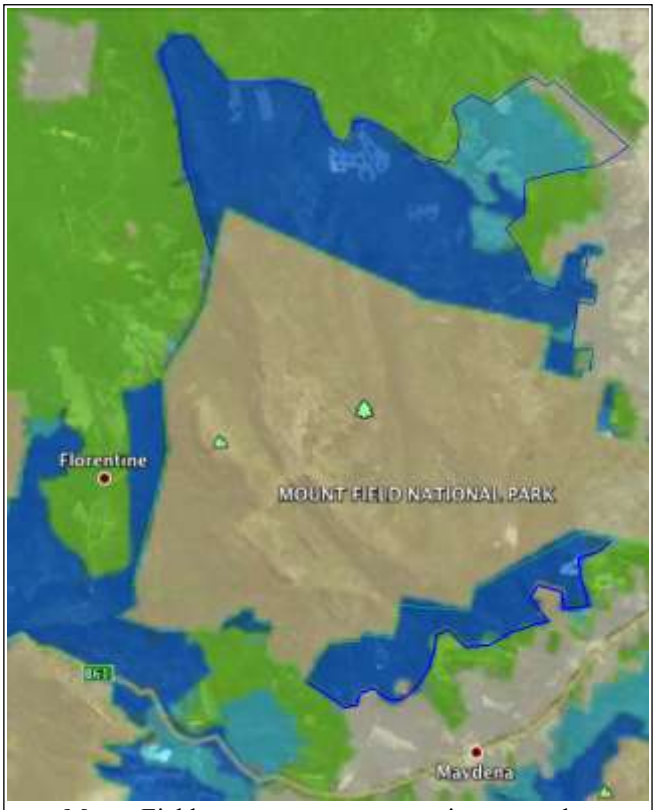
FID 24, 26, 28, 31, 33, plus various public reserves

Introduction

The Mount Field assessment area comprises Mount Field National Park together with a series of adjoining separate ENGO proposed blocks including a block of forest along the southern and western boundary of Mount Field National Park and blocks on the northern side of the park. The ENGO proposed reserves in the Upper Florentine (west side of park) are also related to the ENGO proposed reserves on the park's southern boundary.

Context for assessment

It is apparent that the intent of the ENGO-proposd reserves for protection is to add to or enhance Mount Field National Park.



Mount Field assessment area comprises several blocks of ENGO forest on the southern boundary of the park and on the northern side of the park. The lands on the western boundary are dealt with in the Upper Florentine section. (dark blue='Immediate protection'. Ligh blue='Interim protection'.

One of the apparent anomalies of the TWWHA is the omission of Mount Field National Park from the World Heritage nomination, possibly because of physical separation from the TWWHA. Mount Field is a high value component of the conservation estate and could readily qualify as a valuable part of the TWWHA; indeed with the proposed addition of the Upper Florentine to the TWWHA, Mount Field National Park would be physically linked to the TWWHA.

Mount Field National Park has a number of very significant documented heritage attributes that justify it being considered for addition to the TWWHA. The ENGO-proposed reserves were therefore assessed in that context as well as for any in situ heritage values.

An important context for assessing the western and southern group of

ENGO-proposed reserves is subterranean features, a major riverine cave system that flows from the Florentine valley west of the park, under the park, to emerge outside the park at Junee Cave.

Heritage assessment

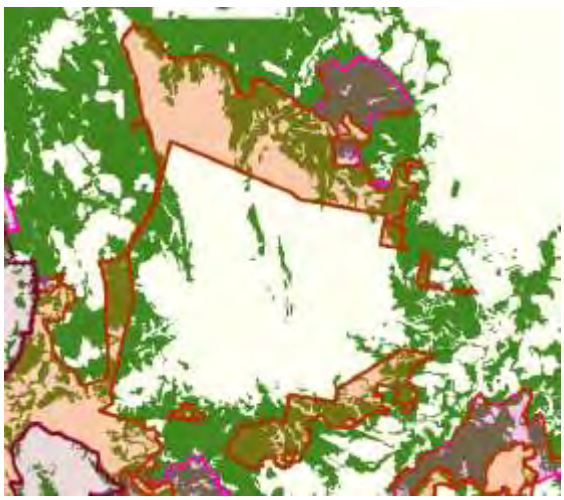
Time constraints prevented a detailed search of databases so no species level biodiversity attributes were assessed.

Two major natural attributes were considered key to assessing heritage value of these ENGO-proposed reserves; the tall eucalypt forest and the karst and associated cave attributes. Glacial features and biodiversity are of particular importance for Mount Field National Park.

Tall eucalypt forest

The southern suite of ENGO-proposed reserves comprise mostly well-developed tall eucalypt forests with some rainforest gullies forming a forested fringe along the southern boundary of the park. Upslope the forest gives way to mostly low woodland and treeless areas just inside the park boundary.

At the regional scale, a major corridor of tall eucalypt forest is recognisable and extends from central Tasmania (upper Derwent) southerly to the south coast. In the vicinity of Mount Field National Park the corridor bifurcates, one strand of corridor extending around each side of the high rocky mesa occupied by the national park.



Detail. The ENGO-proposed reserves on the south and north side of Mount Field National Park form part of a continuous strip of wet eucalypt forest around the south, eastern and northern sides of the park. Protection of the ENGO-proposed reserves would contribute to maintaining tall eucalypt forest connectivity in the region. The ecological diversity of the park would be significantly enhanced.

As well as their in situ value as remnant tall eucalypt forest, these forests also derive heritage significance in other ways. These include being an integral part of a significant tall eucalypt corridor around the eastern side of Mount Field National Park, and linking to the ENGO-proposed reserves on the north side of the park. As such the tall eucalypt forest in the southern ENGO-proposed reserves make a significant contribution to maintaining that eastern corridor.

Karst

The Junee River Caves system is of special heritage conservation significance. This major cave system heads in the Florentine Valley to the west of Mount Field National Park, receives water via numerous cavernous sinkholes in the Florentine catchment, including in the park, flows under Mount Field National Park, exiting at Junee Cave which is located in a small public reserve surrounded by ENGO-proposed reserves. The cave system is at the very least of national significance with Eberhard claiming the system contains Australia's deepest and longest caves. If added to the Tasmanian Wilderness World Heritage Area, would make a major contribution to the values and integrity of the TWWHA, greatly adding to the already cited karst and cave values.

> The Junee Cave aquifer is one of the most extensive and hydrologically complex karst systems in Australia. —Department of Primary Industries, Parks, Water and Environment, Tasmania

Table 2. Major caves in the Junee–Florentine karst ranked according to depth and length. These include many of the deepest and longest caves in Tasmania. Niggly Cave is currently the deepest explored cave in Australia.

Deep caves	Depth (m)	Long caves	Length (m)
Niggly Cave	375	Growling Swallet	12 000
Ice Tube - Growling Swallet	360	Threefortyone-Rift Cave	7 000
Khazad-Dum	333	Niggly Cave	3 250
Cauldron Pot	305	Serendipity	2 940
Serendipity	278	Porcupine Pot	2 531
Rift Cave-Threefortyone	249	Khazad-Dum	1 774
Tassy Pot	238	The Chairman	1 216
Owl Pot	225	Burning Down The House	1 200
Niagara Pot	222	Cauldron Pot	1 071
Sesame	207	Tassy Pot	854
Flick Mints Hole	204	Sesame	800
Porcupine Pot	202	Owl Pot	786
The Chairman	197	Junee Cave	775
Peanut Brittle Pot	186	Frankcombes Cave	774
Udensala	181	Niagara Pot	611

—Eberhard 1998

Glacial

A major part of the landscape of Mount Field National Park shows evidence, sometimes quite graphically, of multiple glaciations in the form of glacial landforms and periglacial features. These features have been described by Lewis (1922, 1923) and Fish & Yaxley (1966).

Residual dolerite capping on the massif allows relative dating of the surrounding glacial deposits, (Kiernan 1983) contributing to the international significance of area in the study of glacial history (DASETT/Govt. of Tasmania 1989 p.33).

> The Junee-Florentine karst covers an area of about 18,500 ha and contains more than 580 documented cave entrances, including many deep and long caves (Eberhard 1994, 1996), making it one of the most important cave systems in Australia. Niggly Cave (375 m), which is located inside the park, is probably the current deepest explored cave in Australia. Other important caves are Junee Cave (at Junee Cave State Reserve), Beginners Luck, Welcome Stranger, Frankcombes Cave, Cashions Creek Cave and Growling Swallet. Many of the caves are part of a much larger system which water tracing has shown to be linked to an underground stream network that is the source of the Junee River at Junee Cave. The western part of the park and the Junee Cave State Reserve are located within the karst catchment and contain numerous significant karst features of high geoconservation value. State forest adjacent to the park and reserves also contains significant caves and karst features, including caves linked to the Junee River system.
>
> The Australian Karst and Cave Management Association recommended at its 1992 national conference that the Junee-Florentine karst system should be included in the park. The Australian Speleological Federation supported this proposal.
>
> —Clarke 1997a. (Mt. Field National Park management plan)

In his landmark report 'A Review of the Geoconservation Values of the Tasmanian Wilderness World Heritage Area' Sharples made particular comment on the geoconservation significance of the Mount Field National Park and associated lands, which is worth quoting here:

> Mt Field National Park lies a few kilometres outside the TWWHA, from which it is separated by state forest. However, the National Park contains aesthetically outstanding glacial landforms which were amongst the first glacial landforms recognised in Tasmania (Lewis 1922, 1923), and which strongly contribute to the World Heritage *Glacial and Glacio-fluvial Landforms* sub-theme of the nearby TWWHA under criteria (i) and (iii) (UNESCO 1999).
>
> The National Park also contains part of one of the most extensive and well-developed Ordovician limestone karsts in Tasmania, the Junee River Karst including Australia's deepest known cave, Niggly Cave at 375 metres deep (Eberhard 1994). See Figure (15). This karst crosses into adjoining state forest, where a management zoning scheme is in place to protect the most critical parts of the Junee River Karst system (Eberhard 1994). The large scale of development and diversity of its other karst attributes makes this karst highly significant under the World Heritage karst themes (Section 3.2.2). In particular, glacio-karst phenomena are well developed in the Junee River Karst, due to interaction with the Mt Field glacial processes (Eberhard 1997a, Kiernan *et al.* 2001), and these contribute significantly to the Glacio-karstic Phenomena World Heritage sub-theme in the adjacent TWWHA.
>
> Although Mt Field National Park and the Junee River Karst system are not contiguous with the TWWHA boundary, they are only a few kilometres away and contain highly significant karst and glacial features that relate and **contribute strongly to the World Heritage values of the TWWHA,** and which thus warrant sympathetic management with the TWWHA karst and glacial values. —Sharples 2003 (emphasis added)

Considered as a single entity, the Mount Field assessment area comprising Mount Field National Park together with:

- Marriot Falls Reserve
- Junee Cave Reserve
- Lady Binney Forest Reserve
- ENGO proposed reserves adjoining to north, south and west of Mount Field National Park.

The ENGO proposed reserves contain outstanding natural heritage values which would make a very significant contribution to the values and integrity of the TWWHA; in particular contribution to karst, glacial and tall eucalypt forest values. They are associated with Mount Field National Park are an integral part of the larger assessment area, taking their high conservation significance from being part of that larger block.

The subterranean catchment of the Junee Cave system, comprising some 7,500 hectares, has been mapped with the assistance of the numerous swallets with surface manifestations. The recommended boundary seeks to protect the caves and their surface and subterranean catchments. Much of the surface catchment is ENGO-proposed reserves and so are important to protect this outstanding heritage feature. (Diagram from Eberhard 1995)

Summary—Mount Field		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
South precinct		
Tall eucalypt forest	(ix) (Outstanding examples of ongoing ev olution)	Contribution to tall eucalypt regional connectivity (Part of C2C corridor)
Karst	(viii) (Outstanding examples of stages of earth's history)	Important contribution to integrity and value of karst in TWWHA (but see Mount Field aggregate area.)
North precinct		
Tall eucalypt forest	(ix)(Outstanding examples of ongoing evolution)	Contribution to tall eucalypt regional connectivity (Secondary strand of C2C corridor)
Tall eucalypt forest	(x) important and significant natural habitats for in-situ conservation of biological diversity	An important contribution to ecological diversity in the form of tall eucalypt forest extending onto the dolerite capping – appears to be rare in TWWHA. Here over a gradual gradient grading into alpine vegetation.
Tall eucalypt forests	(viii) '..outstanding examples representing major stages of earth's history,….'	It should be noted that at a generic level, all of the tall eucalypt forests contribute to the likelihood that tall eucalypt forests as a class can meet Criterion (viii). The contribution is not necessarily recognisable at the site-specific level.
Mount Field Assessment (**aggregate**) area (National park, ENGO-proposed reserves, public reserves) Glacial, biodiversity, tall eucalypts, karst attributes.		This area contains multiple World Heritage values and would make an important contribution to values and integrity of TWWHA. The tall eucalypt forests contribute to meeting criterion (vii) 'superlative natural phenomena', (ix) 'outstanding examples of ongoing evolution', (x) in-situ conservation of biological diversity and likely also a contribution to the generic qualification of tall eucalypt forests as meeting Criterion (viii). (See section on tall eucalypts)

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Glacial, biodiversity, tall eucalypts, karst		The combination of the park, adjoining ENGO-proposed reserves and associated public reserves represents an area of truly of outstanding conservation value and that if added to the TWWHA would contribute significantly to World Heritage values and contribute very significantly to the integrity of the National Heritage listed values of the TWWHA.

Heritage summary

The ENGO-proposed reserves adjoining or adjacent to the north, south and western boundaries of Mount Field National Park were assessed both individually and as part of an aggregate core, which also included:

- Mount Field National Park
- Lady Binney Forest Reserve
- Junee Cave Reserve
- Marriots Falls Reserve.

Individually and collectively these lands have multiple attributes and were assessed as having significant National Heritage value and if added to the Tasmanian Wilderness World Heritage Area would very significantly contribute to the values and integrity of the TWWHA (which of course is also National Heritage listed).

In particular, the complete Junee cave system was assessed as an outstanding piece of natural heritage that retains a high level of natural integrity. Protection of the ENGO-proposed reserves in the west and south precincts, together with Lady Binney Reserve, would effectively complete protection of the catchment and ensure long-term natural integrity.

Heritage summary—Mount Field assessment area

World Heritage: Assessed in context of the adjacent TWWHA, Mount Field National Park, together with select parts of the ENGO-proposed reserves and several existing public reserves, would, as an addition to the WHA, contribute very significantly to the values and integrity of the WHA. Contributes value and integrity against Criterion (vii), (ix) and (x) and possibly to (viii).

National Heritage: Meets criteria (b) and (c) as National Heritage.

Outstanding Heritage Feature: The outstanding feature of the southern Mount Field precinct is undoubtedly the Junee cave complex. This feature would readily meet National Heritage standard as a 'stand-alone' area, especially including the important biodiversity associated with the caves.

Adding Mount Field National Park and associated ENGO-proposed reserves would make a very significant contribution to the values and integrity of the TWWHA.

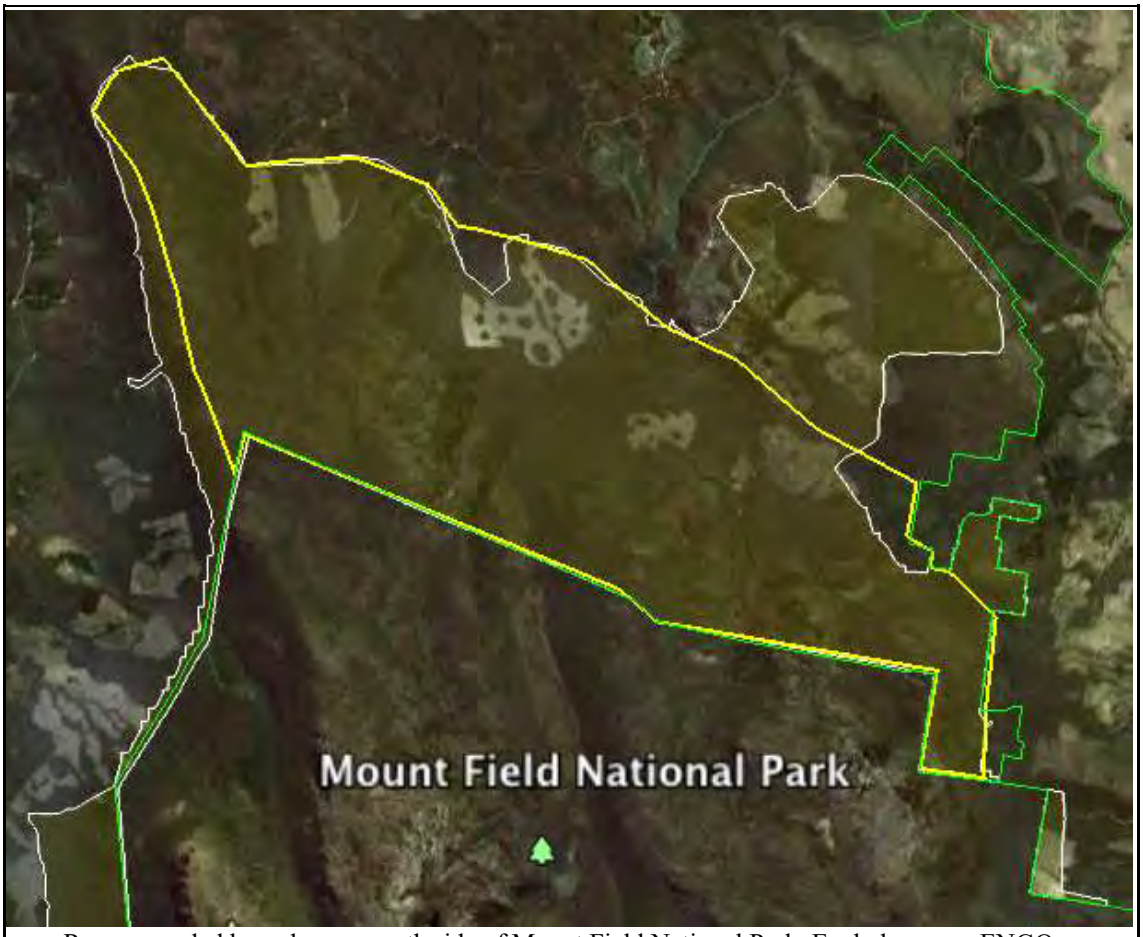
A major part of the ENGO proposed reserves immediately adjoining or adjacent to Mount Field National Park, is an integral part of the Mount Field landscape and ecosystem and collectively were assessed to be of natural heritage significance.

Boundary considerations

A boundary for protection purposes has been delineated for the Mount Field precinct. The following factors were important in determining an appropriate boundary:

- location of surface features of Junee cave system
- catchment protection of the Junee cave system.
- connectivity of eucalypt forest
- Uuse of natural features where possible.

A precise boundary option is presented and recommended.



Recommended boundary on north side of Mount Field National Park. Excludes some ENGO-proposed reserves and includes some small areas of non-ENGO-proposed reserves.

Detail of recommended boundaries around the southern side of Mount Field National Park. Includes Junee Cave Reserve, Marriott Falls Reserve and Lady Binney Forest Reserve.

On the north side of the park selection of a boundary was more determined by the extent of the intact forest areas and landscape features. The existing park boundary, a straight line cutting across the topography, is far from ideal but then finding a superior boundary was not easy. The boundary illustrated is indicative only and can be refined in more detail providing the general intent is followed.

NOTE: The ENGO-proposed reserves to the north-east have been deleted from consideration so the boundary either follows the ENGO boundary or cuts through ENGO-proposed reserves.

On the southern side of Mount Field National Park, the recommended boundary approximately follows the boundary of the ENGO-proposed reserves but also includes some areas of non-ENGO land including Marriott Falls Reserve, Junee Cave Reserve and Lady Binney Forest Reserve and several very small slivers of state forest.

Lower Florentine assessment area

FID 35, 37, 38

Introduction

The conservation value of the lower Florentine (LF1) derives from the mainly intact tall eucalypt forests immediately adjoining the TWWHA as illustrated in the diagram below. These forests are relicts of a once very extensive tract of tall eucalypt forest extending the length of the Florentine Valley and up the adjacent Upper Derwent valley much of which has been subjected to intensive forestry harvesting and plantation development.

ENGO-proposed reserves (yellow tint, white edge) between the Florentine River and the Tasmanian Wilderness World Heritage Area.

Context for assessment

The ENGO-proposed reserves in the Lower Florentine immediately adjoin the Tasmanian Wilderness World Heritage Area. The TWWHA is a critically important context for assessing the heritage significance of the ENGO-proposed reserves.

A most important part of the context of the forests of the Lower Florentine is that they are part of a continuous corridor of mainly intact tall eucalypt forest extending the length of the Florentine valley and then up the Derwent valley. That part of the corridor to the south-west and the north are largely within the TWWHA whereas the intervening section is entirely within the ENGO-proposed reserves in state forest.

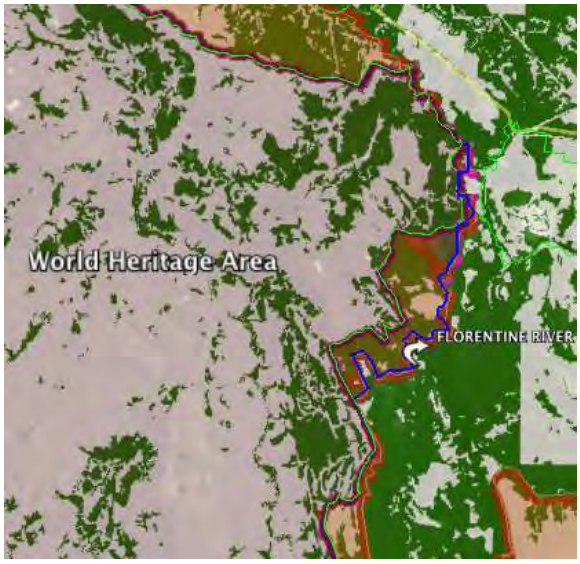
The tall eucalypt forests in this precinct are essentially the largest relict forest on the fringes of the once very much more extensive tract of tall eucalypt forest that extended the length of the Florentine valley but which is now largely clear-felled and intensively managed as eucalypt plantation.

Heritage assessment

That section of the TWWHA adjoining and upslope of the tall eucalypt forests in the ENGO-proposed reserves by contrast are largely devoid of tall eucalypt forest, being predominantly extensive treeless areas. See diagram below.

Tall eucalypt forest

Given the increasingly intensive industrial timber production being undertaken across the floor of the Florentine valley, the remaining largely intact stands of tall eucalypt forest in the ENGO-proposed areas are increasingly important for conservation. Not only are they outstanding examples of their class but also represent a key component necessary to maintain regional connectivity in the tall eucalypt forests of Tasmania. The ENGO forests represent a critical ecological link between the tall eucalypt forests of the Upper Derwent and the remnant corridor up the western side of the Florentine valley for example Upper Coles Creek to Upper Florentine.



The ENGO-proposed reserves in the Lower Florentine (blue edge) support very tall eucalypt forest but the immediately adjoining part of the TWWHA (grey matrix) is largely devoid of tall eucalypt forest in this locality.

Extraordinary cluster of giant trees in the Lower Florentine are indicators of the exceptional development of the tall eucalypt forests in this locality. Six registered giant trees occur within the ENGO-proposed reserves.

Much of the forests in the ENGO-proposed reserves are outstanding examples of their class. Like so much of the eastern boundary of the TWWHA, the best development of the tall eucalypt ecosystem is located just outside the TWWHA. The existing contour boundary of the TWWHA effectively excluded tall eucalypt forest, which is concentrated at elevations below that contour.

Of the more than 100 individual trees registered on the Giant Trees Register for Tasmania, there are three distinct clusters of such trees, one being the lower Florentine, an indication of the superlative form of the tall eucalypt forests in the precinct. Of the registered trees in the Lower Florentine cluster, eight are already in the TWWHA, including two in Upper Coles Creek. A further seven are located in the ENGO-proposed reserves. There is potential for some additional giant trees to be discovered in the old growth forests in the ENGO-proposed reserves.

The giant trees are superlative features in their own right but are also an important indicator of these forests being superlative examples of their type.

The forests of the ENGO-proposed reserves are strategically located to provide critically important regional connectivity between the tall eucalypt forests of the Upper Derwent to the north and the remnant tall eucalypt forests along the western margin of the Florentine valley and adjoining Gordon catchment. (see diagram of tall eucalypt forests above) The tall eucalypt forests are an integral part of the ‘C2C’ Tall eucalypt corridor between central Tasmania and the south coast.

The tall eucalypt forests of the ENGO-proposed reserves [FID 35,37,38] have outstanding heritage significance both in terms of the superlative features they contain (very tall eucalypt forest, giant trees) and in terms of the very real contribution that they would make to the integrity of the tall eucalypt forest values of the Tasmanian Wilderness World Heritage Area.

Adding the forests in the ENGO-proposed reserves to the immediately adjoining TWWHA would very significantly contribute to the natural integrity of the TWWHA and are therefore definitely of world heritage significance.

Karst

The karst system of the Florentine Valley is one of the most extensive tracts of karst in Australia, extending along the length of the valley floor and lower slopes of the tributary valleys of the Florentine River including into the ENGO-proposed reserves immediately to the south of Wylds Craig [FID 35]. The karst features of the Florentine have been extensively documented by Eberhard (1996).

Two relevant karst units mapped by Eberhard include HSZ 12 and MSZ 12 (Eberhard 1996). HSZ 12 is located wholly within the ENGO proposed reserves and is regarded as an important area for karst conservation, particularly being located in unlogged tall eucalypt forest.

HSZ 12: 'This zone is the best surviving example in the Florentine Valley of a sizeable area exhibiting significant karst development that has not been extensively disturbed due to past logging within some part of its catchment. This integrity greatly enhances its conservation value, providing representation of both landforms and land forming processes under essentially natural conditions.' —Eberhard 1996

The mapped northern and north-eastern boundary of HSZ 12 appears to be coincident with the boundary of the TWWHA. Not withstanding that HSZ 12 is not a feature that is 'partly in and partly out of the TWWHA, it undoubtedly would contribute to the integrity of the already inscribed karst values of the TWWHA.

A large proportion of the once extensive tall eucalypt forest on karst in the Florentine Valley

- HSZ12: Heath Creek area. This area contains the major concentration of karst features in the Coles Creek Area. Of particular note are numerous sinkholes including some unusually large examples, the only known example of a mound spring in the Junee-Florentine karst, and a number of significant caves. The hydrology of this area is complex, involving both surface and subterranean drainage; some sinkholes are hydrologically enigmatic and appear to function as estavelles. High Sensitivity zoning for this area reflects both the density of karst features and the existence of landform types that are rare or otherwise unusual in Tasmania. Some karst features are expressed in colluvium mantling the limestone and would be particularly susceptible to damage during forest operations; in general, the potential for forest operations to affect natural sedimentation regimes and hydrological parameters would appear to be relatively high. Steep slopes within the upper catchment raise the further possibility of landslips and water quality changes impinging on karst features and processes, even if timber harvesting is confined above the contact at the top of the limestone. This zone is the best surviving example in the Florentine Valley of a sizeable area exhibiting significant karst development that has not been extensively disturbed due to past logging within some part of its catchment. This integrity greatly enhances its conservation value, providing representation of both landforms and landforming processes under essentially natural conditions. The zone boundary takes into account the apparent extent of limestone outcrop and the catchment of the karst hydrological subsystem associated with Heath Creek, as suggested by mapping by Drysdale (1992).

—Eberhard 1996

has been subjected to logging and road construction and associated impacts such as siltation. Particularly noteworthy therefore is that it complements the Weld Valley section of the existing TWWHA in terms of being an uncommon example of karst within well developed intact tall eucalypt forest.

Adding the proposed ENGO parcel (FID35) to the TWWHA, including this northerly limit of the Florentine valley karst (rated overall nationally significant in the Tasmanian Geoconservation Database) in an old growth, tall eucalypt forest is considered to make an important contribution to the value and integrity of the already inscribed World Heritage karst values of the TWWHA.

Another nearby small karst area worthy of mention is MSZ12 described by Eberhard as:

> MSZ12: a limestone hill on Lower Coles Road. This hill exhibits a well-developed karst landform assemblage including caves, sinkholes and karren. Some features have been affected by past logging, resulting in damage to karren and some unnatural sedimentation of the un-named cave TL54. Coles Creek flows underground along the margin of this hill. Medium Sensitivity highlights the need for detailed planning prior to further forest operations in this area'.

Although not within the ENGO-proposed reserves, one of the recommended boundary options for this precinct is to include MSZ12 and associated lands within the TWWHA, thereby providing greater protection for ongoing natural processes in the karst and tall eucalypt ecosystem in the precinct (see proposed boundaries).

Summary—Lower Florentine		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(vii) (superlative natural phenomena)	Contributes to integrity 'eucalypt tall open forests including Eucalyptus regnans, the tallest flowering plant species in the world;' Includes 6-7 registered 'giant trees'.
Tall eucalypt forest	(ix) (Outstanding examples of ongoing evolution)	Contributes to ecological diversity of already cited World Heritage values 'pristine tall eucalypt forests;'
Tall eucalypt forest	(ix)	Contributes to the integrity of tall eucalypt forests in the TWWHA by preserving regional connectivity.
Tall eucalypt forests	(viii) '..outstanding examples representing major stages of earth's history,….'	It should be noted that at a generic level, all of the tall eucalypt forests contribute to the likelihood that tall eucalypt forests as a class can meet Criterion (viii). The contribution is not necessarily recognisable at the site specific level.
Tall eucalypt forest	(x) important and significant natural habitats for in-situ conservation of biological diversity	Contributes to local ecological diversity in the form of tall eucalypt forest extending from valley floor to altitude upper limit.
Karst		Contributes to integrity of karst in TWWHA (karst under tall eucalypt in a pristine catchment)

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	(d)	The ENGO forests in the Lower Florentine readily demonstrate the 'principal characteristics' of tall eucalypt forests. ['(d) the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of: (i) a class of Australia's natural …. places; or (ii) a class of Australia's natural... environments)']
Tall eucalypt forest	'(e)	The concentration of very tall eucalypts as indicated by the number of registered 'giant trees' in the vicinity makes this an outstanding example of the very tallest of the eucalypt species in Australia. The very existence of the 'Giant Tree' register is evidence of that tall eucalypt trees are 'valued by a community or cultural group'. ['(e) the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group';]

Summary of heritage assessment

The tract of mainly intact forest represented in the Lower Florentine ENGO-proposed reserves contain forest that is a superlative example of its class. It contains trees that are of exceptional tallness, including six to seven* specimens on the Tasmanian Giant Tree Register. (* one shows as being on a boundary of the ENGO-proposed reserves.)

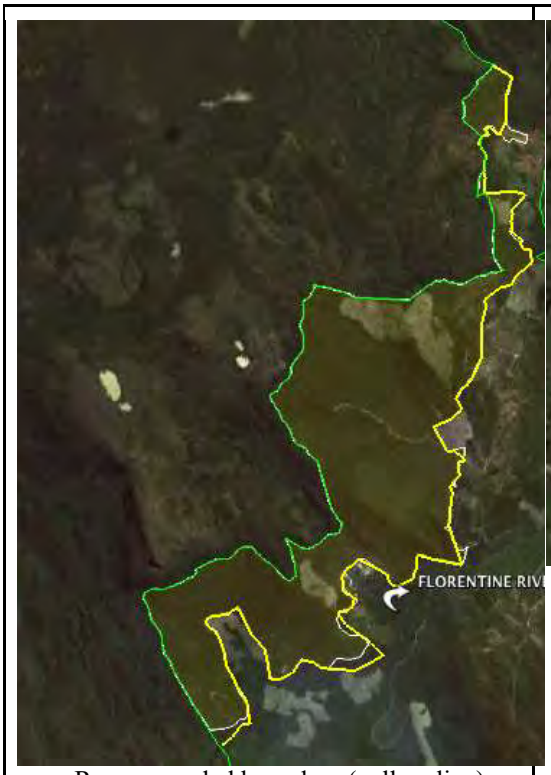
The forest would significantly contribute to the integrity of the TWWHA especially in terms of representation of the tall eucalypt forest ecosystem, the most outstanding development of eucalyptus-dominated vegetation. The area is therefore considered to be of both World Heritage and National Heritage significance.

The ENGO-proposed reserves of the Lower Florentine also make an important contribution to maintenance of regional connectivity in the tall eucalypt forest ecosystem, part of the 'C2C' tall eucalypt corridor between central Tasmania and the south coast. The 'C2C' tall eucalypt corridor has been assessed as making a highly significant contribution to the integrity of the TWWHA, especially in terms of ensuring maintenance of natural processes and maximizing capture of the ecological diversity of the tall eucalypt forest ecosystem.

Boundary considerations

That section of boundary of the TWWHA immediately adjoining the ENGO-proposed reserves in the Lower Florentine comprise mostly a relic of when the original national park boundary was assigned to a contour. That contour closely accords with the upslope/altitudinal limit of tall eucalypt forest in the precinct. The primary objective of recommending alteration

to the boundary of this section of TWWHA is to capture important natural heritage values, namely outstanding examples of tall eucalypt forest, in particular fine stands of Eucalyptus regnans and significant areas of karst.



Recommended boundary (yellow line) in Lower Florentine (closely follows ENGO-proposed boundary)

Lower Florentine boundary detail Heath Creek

The proposed new boundary has been drawn to achieve that objective but at the same time end up with a more sensible and sustainable boundary.

The ENGO-proposed reserves include some recently logged coupes and it is considered that these logged areas should never-the-less be included in any protection to ensure as far as possible a consolidated block of forest that facilitates both ongoing natural processes in the protected lands in the longer term and a well defined appropriate boundary conducive to field management of this important tract of forest.

The recommended boundary is illustrated in the adjacent diagram. The recommended boundary generally follows the boundary of the ENGO-proposed reserves but with some minor but important variations. The boundary detail is available as a shape file.

NOTE: One potential departure from the ENGO-proposed reserve boundary is in the Heath Creek catchment, in the western part of the ENGO-proposed reserves. One option for a superior boundary but which involves a significant area of non-ENGO-proposed reserves, including clear felled areas, is illustrated in the diagram below. This boundary option has the advantage of:

- a significantly shorter TWWHA boundary (2 km shorter)
- includes Karst area MSZ 12 (further contributing to the integrity of the TWWHA)
- increases area for future rehabilitation of tall eucalypt forest.

- better facilitates maintenance of ongoing natural processes.

If this boundary option is adopted, care should be taken to make sure that Folletts Swallet karst feature on Coles Creek is included.

Summary heritage assessment

The ENGO-proposed reserves in the Lower Florentine are assessed as being of both National and World Heritage significance because of the important contribution they can make to the integrity of the immediately adjoining Tasmanian Wilderness World Heritage Area both in terms of tall eucalypt forest values and karst values.

Adding the ENGO-proposed reserves, adopting the recommended boundary would add value to the World Heritage Area (tall eucalypt forest and karst) and greatly improve the appropriateness and field management aspects of boundary of the Tasmanian Wilderness World Heritage Area.

As a minimum, the MSZ 12 karst should be permanently protected within the state forest.

Recommendations

1. Recognise the ENGO-proposed reserves in the Lower Florentine assessment area for their outstanding natural heritage significance.
2. Protect the lands delineated in the diagram above and add to the adjoining Tasmanian Wilderness World Heritage Area.
3. Consider adopting the alternative shorter boundary across the Coles Creek tributary valley (see Boundaries).

Upper Derwent assessment area

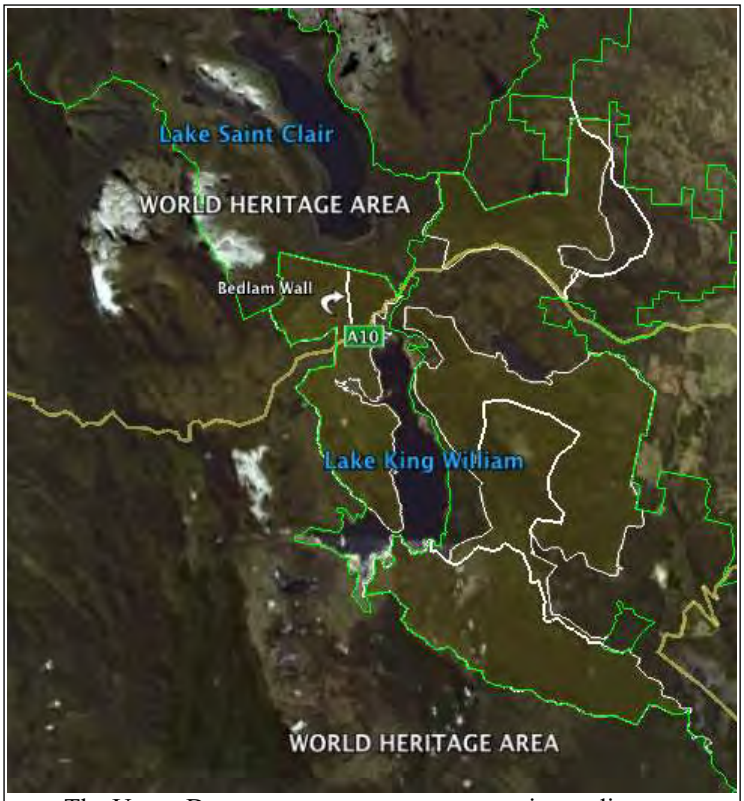
FID 44, 48, 55

Introduction

The Upper Derwent assessment area (UD1) comprises a cluster of ENGO-proposed reserves, including designated as 'Immediate protection' and 'Interim protection' in the Upper Derwent (see diagram 1 below). Most is forested, including significant areas of tall eucalypt forest. A treeless area in the north-west is a naturally treeless area, part of the Navarre Plain.

Context for assessment

The UD1 area is mostly upland landscape ranging to more than 1,000 metres and as such includes the climatic limit of tall eucalypt forest in the region.



The Upper Derwent assessment area comprises a diverse collection of land parcels in a highland landscape, ranging from tall eucalypt forest to treeless moorlands and blanket bogs.

The assessment area includes the managed stored waters of Lake King William, part of a glacial lake basin which is used for diversion of water for hydro power generation. A water race extends along the eastern side of the Derwent to deliver water to the Taraleah power station.

Heritage assessment and associated delineation in this precinct is complicated by the complexity of intact and modified or artificial landscape features. In particular, Lake King William is problematic given that when it is full to capacity it looks every bit a part of an outstanding scenic landscape but when drained looks particularly ugly with exposed bare ground and dead trees. A series of power lines, water races and more recently logging and associated roads in pristine forests further detract from the visual attributes of the area.

It was decided that notwithstanding the geographic cluster of the ENGO-proposed reserves, there was merit in conducting the initial assessment for each of several landscape sub-units. Those adopted were:

- Derwent Gorge west (south of Butler's Gorge dam)
- Navarre Plain—Lake William west

- Wentworth Hills
- Clarence River (northern side of Lyell Highway).

Assessing heritage significance focussed on the tall eucalypt forest ecosystem. The forests of UD1 are at the northern end of a more or less continuous belt of tall eucalypt forest that extends southwards adjacent to the TWWHA, to the southern-most coast of Tasmania.

[FID 44] 'Derwent Gorge West' sub-unit for assessment purposes. Until recent road construction and logging, this area was mapped as high quality wilderness, an integral part of the South West Tasmania wilderness area, mostly protected in the adjoining TWWHA.

Derwent Gorge West sub-unit [FID 44]

Heritage assessment

The most important natural attribute of this sub-unit is the eucalypt forests, in particular the tall eucalypt forest formation.

Considered in the context of the major tract of tall eucalypt forest extending from this locality to the south coast of Tasmania, the forests in the Upper Derwent are particularly significant. They demonstrate comprehensively the transition from the well-developed tall eucalypt forests in the lower Florentine-Derwent to the higher elevation and colder landscapes of the Upper Derwent. The mixed eucalypt species forests of the lower Florentine give way to pure stands of *Eucalyptus delegatensis* at higher elevations and in colder habitats. As such they represent a significant component of the total ecological diversity of the tall eucalypt forests of southern Tasmania.

The tall eucalypt forests of the Derwent Gorge West sub-unit need to be recognised as an ecologically integral part of the single tract of forest, which extends from the lower Florentine/Tarraleah area. This tract represents one of the largest, if not largest, continuous

tract of (mostly*) intact tall eucalypt forest in Tasmania. The 'Upper Derwent' tract of tall eucalypt forests is partly within the Tasmanian Wilderness World Heritage Area and partly outside [FID 44].

* Apart from several selectively logged coupes in the ENGO-proposed reserves.

Transition forest between tall eucalypt forest and well developed rainforest in the Upper Derwent. In wetter sites, the rainforest continues below the canopy of the tall eucalypt forest. —Google Earth imagery.

Although mapping indicates a significant tract of forest in the Weld where tall eucalypt forest is a substantial component, the Weld forest is ecologically very different to that of the Upper Derwent. The Weld may be characterised as an archipelago of eucalypt forest in a sea of rainforest whereas the Upper Derwent, on very different topography and geology, is more a continuous tract of tall eucalypt forest intersected by occasional gully stands of rainforest and a gradation of rainforest understorey, from well-developed at lower elevations to absent at higher elevations. (500–900 m. asl.)

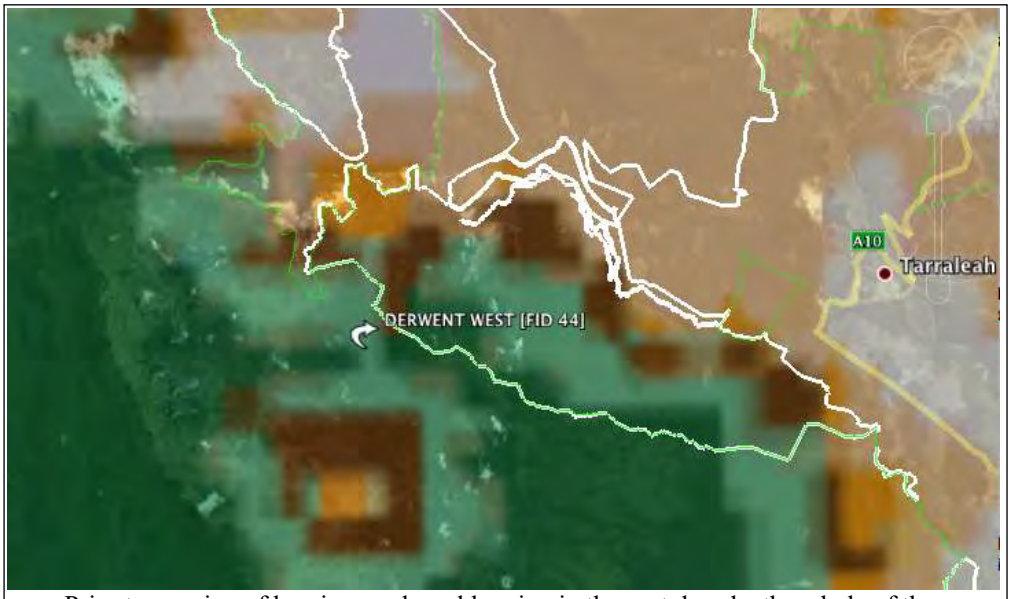
Whereas there are numerous sites in tall eucalypt forest further south that show the transition from lowland tall eucalypt forest to rainforest and/or alpine communities on steep gradient slopes, the Upper Derwent demonstrates the transition to montane and alpine communities over an extended low gradient slope. This culminates in treeless communities including sedgeland and buttongrass.

From the Lower Florentine forests where the tall eucalypt forests are very tall growing (including 'giant trees') and often intimately associated with rainforest at around 500 m. asl, there is a transition up the Derwent. This passes through increasing elevation with a decrease in rainforest and rainforest understorey towards dominance by *E. delegatensis* and increasingly, forest with sparse understorey. This culminates in pure stands of *E. delegatensis* at around 900 m. asl.

Unlike much of the other tall eucalypt forest in ENGO-proposed reserves in the 'Southern Forests' region, the tall eucalypt forests were, until recently, part of the continuous tract of mapped high quality wilderness that extends to the west coast of Tasmania. Only with the recent advent of roading and selective logging has the wilderness quality been eroded. With cessation of logging and some rehabilitation, this outstanding tract of tall eucalypt forest could again be restored to wilderness condition. Adopting the Derwent River gorge as the boundary of the TWWHA would further enhance the prospects of ongoing ecological processes being maintained throughout this great tract of forest.

The largely intact tract of tall eucalypt forest on the western side of the Derwent Gorge, including that part already protected in the adjoining TWWHA, embedded as it is in the edge of the largest tract of temperate wilderness in Australia, represents an outstanding example of tall eucalypt forest ecosystem and is clearly of National and World Heritage significance.

If the tall eucalypt forests of the Derwent Gorge West [FID 44] were added to the adjoining TWWHA, they would make a very important contribution to the natural integrity of the TWWHA.



Prior to opening of logging roads and logging in the past decade, the whole of the Derwent West block [FID 44] was mapped as high quality wilderness (Wilderness mapping 1996). as per currently adjoining wilderness in the TWWHA. Cessation of roading and logging in this block, accompanied by limited rehabilitation, the wilderness qualities could be readily restored and provide the wilderness (dark green) in the TWWHA a clearly defined permanent boundary on the Derwent River Gorge.

Rehabilitating this tract of otherwise high quality wilderness would not only contribute to the extent of wilderness protected in the TWWHA but would contribute greatly to maintaining ongoing natural processes. If the Derwent Gorge is adopted as a boundary, these forests would be likely to have greater prospect of buffering from human activities, such as escaped fire, than any of the other stands of tall eucalypt forest along the eastern edge of the TWWHA. It should be noted that the TWWHA is listed against Criterion (ix) '… to be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, … communities of plants and animals;' and that 'pristine tall eucalypt forests' are listed against this criterion.

Undoubtedly the best way to ensure 'ongoing ecological and biological processes' is to maintain such forests in as close to a wilderness condition as possible. The option still exists for the forests in the Upper Derwent, most especially in the ENGO-proposed reserves, to be rehabilitated and maintained in a wilderness condition.

Heritage summary

The still largely intact tract of tall eucalypt forest in the Derwent Gorge West sub-unit is undoubtedly an outstanding example of its type. This tract is an integral part of a larger single tract of tall eucalypt forest that extends south-east, through the TWWHA and into the ENGO-proposed reserves of the Lower Florentine.

A very important consideration is that until quite recently these forests were mapped high quality wilderness, an integral part of the South Western Tasmania wilderness. Very little effort would be required to restore the wilderness quality. The combination of the prospective wilderness and the outstanding tall eucalypt forest is important in assessing the heritage conservation value of the area. It makes it doubly significant as a prospective addition to the adjoining Tasmanian Wilderness World Heritage Area. The area is definitely of national and global heritage significance.

If added to the TWWHA, the ENGO-proposed reserves comprising the Derwent Gorge West [FID 44] would make a very important contribution to the integrity (tall eucalypt forest, wilderness) of the TWWHA.

Boundary consideration

By far the most logical and appropriate final boundary for the Tasmanian Wilderness World Heritage Area in this precinct is the well-defined Derwent River Gorge. At the detail level, the technical boundary is recommended to follow the Tarraleah water race so as to provide field management of the TWWHA with jurisdiction over the river corridor.

Navarre Plain–Lake King William West sub-unit [FID 58]

Heritage assessment

Glacial

The Navarre Plain locality is defined by the extensive evidence of past glaciations and includes a number of important glacial features of definite heritage significance. Kiernan has researched in detail the Cainozoic glaciation of the Lake St Clair area (1992). A suite of glacial landforms associated with the southern end of Lake St Clair glacier include a series of recessional moraines adjacent to the shore of Lake St Clair (south of visitor centre), Bedlam Wall, an ice gouged ‘headland’ formation, a lateral moraine associated with the Bedlam Wall and a scatter of moraines and outwash debris running southwards on what now forms part of the Navarre Plain, crossing the Lyell Highway and extending downstream to the Lake King William basin.

Navarre-King William West sub-unit [FID 58] located east and south of the Tasmanian Wilderness World Heritage Area. Lake King William is an artificial pondage managed for hydro electric power generation.

Cynthia Bay Moraines

An important glacial formation is the Cynthia Bay Moraines adjacent to Cynthia Bay at the southern end of Lake St Clair, a glacially gouged rock basin. Kiernan describes the origin of the moraines.

> Cynthia Bay moraines—an impressive array of at least 25 terminal moraine ridges and latero-terminal moraines bounds the southern shoreline of Lake St Clair. The southernmost of these moraines is located 1 km from the lake shore and is believed to represent the terminus of the Derwent Glacier during the late Last Glacial Stage. These narrow and steep moraines do not exceed 10 m. —Kiernan 1992

The Cynthia Bay moraines are listed in the Tasmanian Geoconservation Database (ID 2709). The Cynthia Bay Thule-Baffin moraines were assigned as having Representative and Outstanding significance at world level on the Tasmanian Geoconservation Database (Dixon & Duhig 1996,

The Cynthia Bay moraines, just south of the Lake St Clair visitors centre, are mostly within the existing Tasmanian Wilderness World Heritage Area but do extend southwards just across the boundary (based on LIST map—Geoconservation overlay) into ENGO-proposed reserve [FID 58]

Diagram illustrating relationship between Lake St Clair 'rock basin', Cynthia Bay moraines, Bedlam Wall and Bedlam Wall moraine.

Bedlam Wall and Bedlam Wall Moraine

The Bedlam Wall is a glacially eroded landform created by lateral gouging of a 'headland' hill, itself a hill that has been overridden by an earlier glaciation. The 'wall' was created by glacial ice moving south from the Lake St Clair rock basin. Associated with this erosional feature is a depositional feature known as the Bedlam Wall moraine, a lateral moraine described by Kiernan as follows:

> Bedlam Wall moraine—The steep flanks of the Bedlam Wall ridge south of Lake St Clair have generally precluded the preservation of deposits but a lateral moraine extends along its foot at 830–840 m. At the northern end of the ridge it is overlain by 1 m of angular dolerite talus derived from a rock rib. The moraine can be traced southwards for nearly 2 km. An outwash plain down stream of the moraine can be traced up valley inside the moraine limit.
>
> The Bedlam Wall moraine marks a phase during which the Derwent Glacier terminated c. 3 km south of Lake St Clair, close to the site of the present Derwent Bridge settlement. —Kiernan (1992)

The 'moraine ridges, till and glacio-fluvial outwash sediments' referred to by Sharples as being within the then proposed additions to the TWWHA derive from glacial sources on Mount Gell and extend beyond that addition into the ENGO-proposed reserve [FID 58], conjoining the features associated with the Lake St Clair glacier and similarly extend to the Lake William basin.

Navarre Plains (addition to Franklin – Gordon Wild Rivers National Park)

This proposed extension area has previously been recommended for inclusion in the TWWHA (DPWH 1990).

Glacial and Glacio-fluvial Landforms sub-theme
This area contains numerous moraine ridges, till and glacio-fluvial outwash sediments relating to at least two phases of Late Cainozoic glaciation (Kiernan 1985, Fig. 7.2; 1991c). These features contribute significantly to the World Heritage value of this sub-theme.

—in Sharples 2003 A Review of the Geoconservation Values of TWWHA

The whole of the Navarre—King William West sub-unit is within the footprint of Cainozoic glaciations and presents extensive evidence of glaciation in the form of depositional glacial landforms and one erosional feature (Bedlam Wall). Much of the Navarre Plain and area approaching Lake William is outwash plains, mostly from glaciation from the Lake St Clair basin but also a mix of outwash from Mount Gell and Mount King William I glaciers to the west.

> Properties proposed under criterion (viii) should contain all or most of the key interrelated and interdependent elements in their natural relationships. For example, **an 'ice age' area** would meet the conditions of integrity if it includes the **snow field, the glacier itself and samples of cutting patterns, deposition and colonization (e.g. striations, moraines, pioneer stages of plant succession, etc.);** … (Para 93 of Operational Guidelines 2008—emphasis added)

Adding the whole of the Navarre—King William West sub-unit to the Tasmanian Wilderness World Heritage Area would make a significant contribution to the integrity of the TWWHA, in particular to the already cited glacial values.

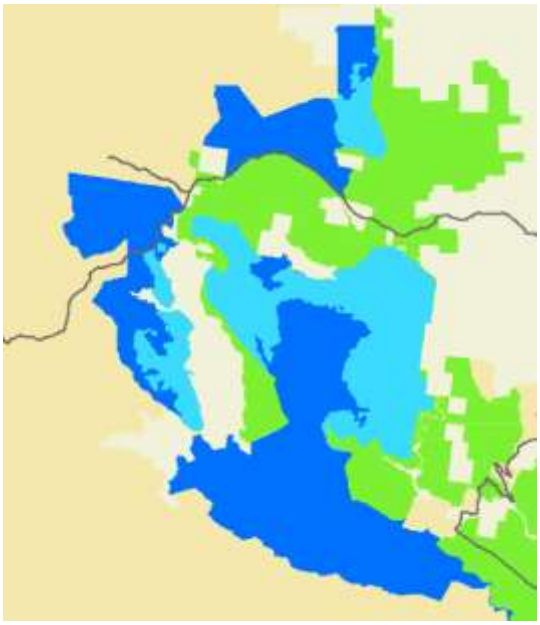
Scenic beauty

Although the overall landscape of the Navarre—King William West sub-unit is one of a subdued topography, this contributes to its significant scenic beauty. The extensive treeless plains and open snow gum woodland contrast with the surrounding forested and mountainous landscape and is the only part of the TWWHA where this environment is readily accessible by road. The numerous image postings on Google Earth for this precinct are testimony to the aesthetic appeal of this distinctive landscape.

An important 'presentation' consideration is that the extensive areas of treeless landscape provide visitors with the opportunity experience views of some of the nearby mountains otherwise denied by the forested environs of the Lyell Highway. Good views of Mount King William I and Mount Gell are made possible by the treeless landscape of the Navarre Plain landscape.

Heritage summary

The glacial landforms of the Navarre-King William West sub-unit extend over much of the area and are directly related to the Tasmania Wilderness World Heritage Area, all being parts of various glacial footprints which have their source in the TWWHA. As such the glacial landforms would make a significant contribution to the integrity of the TWWHA.



ENGO-proposed reserve cluster (dark= 'Immediate protection' and light blue= 'Interim protection) in the Upper Derwent. The TWWHA is shown in cream yellow (left and upper)

Much of the sub-unit is at least an integral part of a significant scenic landscape shared with the adjoining parts of the TWWHA, the existing TWWHA boundary cutting right across some of the treeless plains. Any development of the Navarre Plain landscape would therefore directly detract from the scenic values of the adjoining part of the TWWHA. Adding the Navarre-King William West sub-unit would make a significant contribution to the integrity of the TWWHA (see also Boundary Considerations).

Given that the Derwent Bridge Lake St Clair precinct has been developed as an important visitor and presentation node for the World Heritage Area, there are several road frontage parcels of land that may be perceived to be a part of the TWWHA landscape but in reality are not part of the site. For example, the visually impressive Navarre Plain on the north side of the Lyell Highway is only partly within the TWWHA and unprotected lands extend to within a few hundred metres of the Lake St Clair visitor centre. It is recommended that the balance of this geomorphic (glacial moraine) and scenic entity be included in the TWWHA.

The mosaic of forest, snow gum woodland and buttongrass plains on the western side of Lake King William, are closely associated with the Navarre Plain landscape and is recommended for including in the TWWHA.

The Navarre-King William West sub-unit of the ENGO-proposed reserves [FID 58] would make an important contribution to the integrity of the TWWHA, especially to the integrity of glacial landforms and scenic beauty.

Recommendation

1. Add the ENGO-proposed reserves contained in the Navarre-Lake William West sub-unit [FID 58] to the Tasmanian Wilderness World Heritage Area. (That part of the area north of the Mount Lyell Highway is the most critically important but adding the area south of the highway is justified on a combination of values, consolidation of protection, boundary rationalisation and simplified field management.)

Clarence River sub-unit [FID 66]

To the east of Derwent Bridge, the Clarence River sub-unit [FID 66] of ENGO land is bounded on two sides by the Tasmanian Wilderness World Heritage Area (west and north), on the south by the Lyell Highway and the east by an extensive tract of state forest.

Most of the sub-unit is naturally vegetated with a mosaic of eucalypt forest, *Leptospermum* woodland and treeless moorland and the occasional patch of grassland. Parts have been subjected to some form of selective logging in recent years. The overall condition is one of a natural landscape with natural vegetation.

Heritage assessment

A stand of *Eucalyptus cordata* is mapped in the south-west corner of the Clarence River sub-unit but reference to Nicolle et al. (2008) failed to give sufficient information to establish any special conservation significance.

Immediately adjoining the ENGO-proposed reserve is Clarence Lagoon, a permanent freshwater lake immediately inside the TWWHA. The TWWHA boundary follows the water's edge on the southern side of the lake meaning that some of the immediate catchment of the lagoon is not in the TWWHA but in the ENGO-proposed reserves. Clarence Lagoon is listed as critical habitat for the Clarence Galaxias *Galaxias johnstoni* (Fulton 1978), nationally listed as endangered. The species understandably occurs in the Clarence River downstream of Clarence Lagoon, hence within the ENGO-proposed reserves. The only other known habitat of this species are five or six small lagoons in the immediately surrounding lands, including the Wentworth Hills Lagoon in ENGO-proposed reserves some 13 km south.

> All populations of Clarence galaxias are essential to the species' long-term viability and require protection and management. —Threatened Species Listing Statement

Several of the six known 'important habitats' of the *G. johnstoni* are located near but just outside the ENGO-proposed reserves, including Dyes Marsh and Rivulet, Tibbs Plain Marsh, unnamed marsh north of Clarence Lagoon and the unnamed marsh north east of Skullbone Plains. The latter two sites appear to be located on private land part of which is recommended for inclusion in the TWWHA to protect the catchment of Clarence Lagoon and to shorten the boundary of the TWWHA.

Populations of Clarence galaxias found in the unnamed lagoon north of Clarence Lagoon occur on land owned by Northern Forest Investments (land parcel number 0876). The natural barrier protecting the marsh near Skullbone Plains from trout immigration also occurs on land owned by Northern Forest Investments (land parcel number 0880) (Threatened Species Listing Statement). The recommended boundary would embrace this one 'important habitat', which is not on public land.

The alternative boundary recommended would protect most of the important habitat of this endangered species. Adding the modified ENGO-proposed reserves would contribute to the integrity of the TWWHA, particularly in respect of the endangered *Galaxias johnstoni*.

Separate consideration might be given to the case to include the important habitat east of Skullbone Plains in the TWWHA or other appropriate form of protection and management.

The critical threatening process for the Clarence Galaxia is the introduction of brown trout. While habitat protection is important for the future of the species, it is more critical to effectively monitor and manage to limit feral fish from being introduced.

Apart from the *G. johstoni*, no other specific natural attribute, biological or geological, was identified within the Clarence River sub-unit.

Boundary consideration

The recommended boundary, if the Clarence River sub-unit is added to the World Heritage Area, embraces Dyes Marsh and Rivulet—other 'important habitat' of the endangered *Galaxias johnsoni*. The eastern recommended boundary mostly follows natural features and would be appropriate as a final boundary to the Tasmanian Wilderness World Heritage Area.

The southern boundary follows that of the proposed ENGO reserve, which is the Lyell Highway. Independent of whether lands on the opposite side of the highway are protected and added to the TWWHA, the highway is a very appropriate boundary. Ideally, the parcel of land immediately west of the ENGO-proposed reserves should be included in the TWWHA to consolidate protection in this precinct—although this block does appear to be privately owned.

[FID 66] 'Clarence River' sub-unit. The area could only be recommended for addition to the TWWHA if the recommended boundary (shown white) was adopted to include Dyes Marsh and the 'unnamed lagoon north of Clarence Lagoon'.

Wentworth Hills sub-unit [FID 54]

Context for assessment

The Wentworth Hills sub-unit [FID 54] is separated from but adjacent to the TWWHA. Central to the ENGO-proposed reserves is the prominent range known as the Wentworth Hills, including a landmark bluff known as D'Arcy's Bluff visible from the Lyell Highway. Elevation ranges from about 700 m. to 1155 m. above sea level on the highest point of the Wentworth Hills.

The area borders Laughing Jack Lagoon—an artificial pondage managed for electricity generation.

The greater part of the Wentworth Hills sub-unit is naturally vegetated, including some mainly isolated stands of tall eucalypt forest (probably *E. delegatensis*), open eucalypt forest, woodland, scrub and some smaller areas of alpine shrubland and heath. Most of the precinct is in a natural condition but several patches have recently been subjected to logging.

Heritage assessment

Biodiversity

Several small, threatened plant communities are mapped on the slopes of the range, particularly the north-east slope. None appear to be of critical conservation value given the limited size and the wider occurrence of the communities for example, 'Freshwater aquatic sedgeland and rushland'.

Sign at lagoon on Wentworth Hills identifying the importance of the lagoon to the endangered Clarence Galaxia. www.bushwalk.com

Wentworth Hills Lagoon, appears to be a small glacial tarn high up on the Wentworth Hills and is one of six listed 'important habitat' for the endangered Clarence Galaxia, *Galaxia johnstoni* (Fulton 1978).

This species is nationally listed as endangered and its most important habitat is Clarence Lagoon but another five or six nearby small lagoons are also regarded as important habitat.

'All populations of Clarence galaxia are essential to the species' long-term viability and require protection and management' (Parks and Wildlife Tasmania).

Given that almost all of the known important habitat of this endangered fish species is either within the TWWHA or within or adjacent to the ENGO-proposed reserves and the species is on the EPBC endangered species list, the area is considered to be of at least national significance. Given the adjacent TWWHA, adding the lagoon to the area would contribute to the integrity of the TWWHA, specifically, protect that part of the habitat of the species that extends outside the TWWHA.

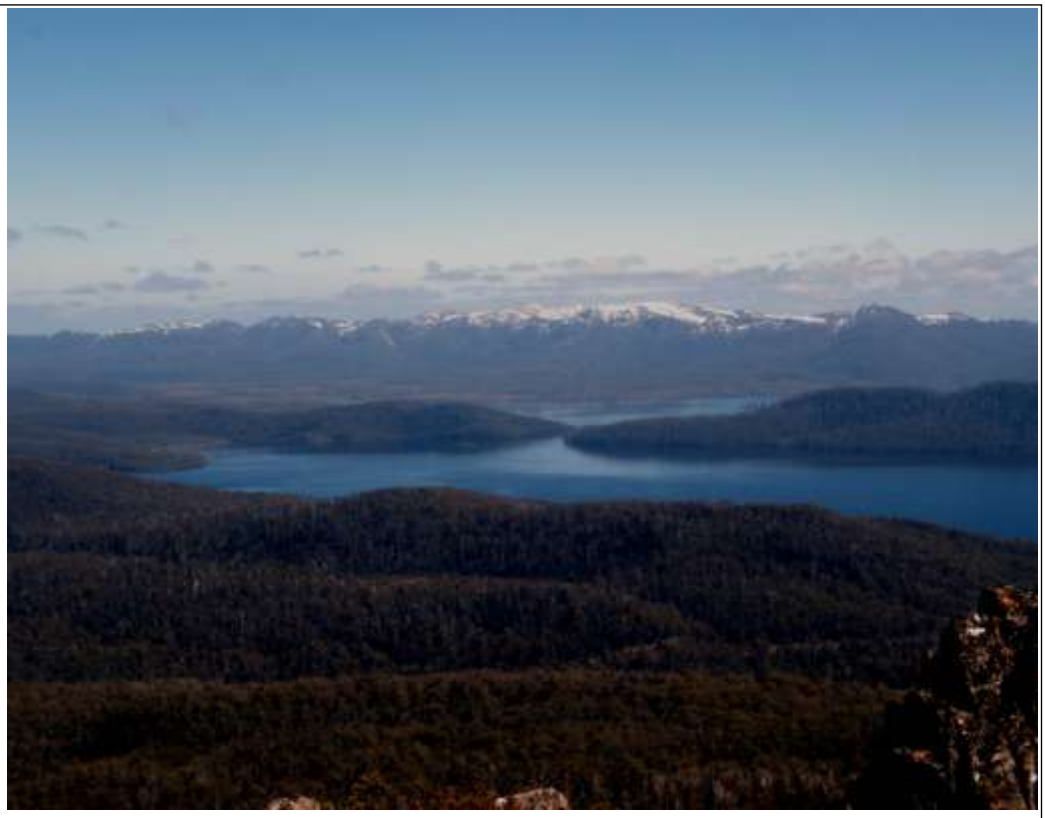
Tall eucalypt forest

A discontinuous scatter of stands of tall eucalypt forest lie on the lower slopes of the Wentworth Hills, more concentrated on the south-western fall of the range.

The conservation value of the tall eucalypt forest is here primarily about their context in a colder environment near the altitudinal limit of the formation, if not the species. Rather than interfacing with rainforest as at lower altitudes, here the tall eucalypt is in an essentially eucalypt dominated landscape including formations and species of lower tree height. They share this context with the forests across the Derwent Gorge in the West Derwent sub-unit.

Scenic beauty

The Wentworth Hills contributes to the overall scenic attributes of the Upper Derwent but probably its greater attribute is as a site for viewing the outstanding scenic landscape, especially to the west, much of which is in the TWWHA. See image below.



View from Wentworth Hills looking towards King William Range, Lake King George in foreground. The Wentworth Hills provide an excellent point from which to view the expansive and outstanding scenic beauty of the Tasmanian Wilderness World Heritage Area and associated landscape. If all of the Upper Derwent ENGO-proposed reserves (middle and foreground) and a piece of non-ENGO state forest (ridge near lake) were added to the TWWHA, all of the lands in this view would be in the TWWHA—apart from the waters of the artificial pondage of Lake King William which is not recommended. Image by 'Iluvswtas' www.bushwalk.com

There is no doubt that the Wentworth Hills sub-unit comprising ENGO-proposed reserves is an area worthy of protection. This would bring many conservation benefits including protecting the habitat of endangered animal species (Clarence Galaxias), a diverse forest and woodland habitat at relatively high elevation and some scenic values.

Heritage summary of Wentworth Hills

Apart from the contribution that the Wentworth Hills Lagoon would make to the ecological integrity of the TWWHA, no globally significant values were identified in the Wentworth Hills sub-unit.

Wentworth Hills has good potential as a stand-alone protected area but in its present delineated form it would be hard to justify its addition to the TWWHA.

Adding the Wentworth Hills would benefit the TWWHA only if the following state forests were considered as additions to the TWWHA:

- between the ENGO-proposed reserve and Lake William
- between the ENGO-proposed reserves and the Lyell Highway.

A consolidated block of protected land of this configuration would have definite contributions to make to the integrity of the TWWHA and as well could provide an appropriate permanent boundary to the TWWHA.

Recommendations

1. Permanently protect at least the area of the Wentworth Hills designated by ENGOs for 'Immediate protection' and manage in a way that is complementary to the TWWHA.
2. Make a consolidated addition to the TWWHA comprising:
    - Wentworth Hills [FID 54]
    - state forests between FID 54 and north to the Lyell Highway (exclusive of Laughing Jack Lagoon)
    - state forest north of Lyell Highway as per recommended boundary for the 'Clarence River' sub-unit [FID 66].

Summary—Upper Derwent		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Biodiversity Galaxia johnstoni endangered fish species	Criterion (x) ('...contain the most important ... habitats for in-situ conservation of biological diversity, including those containing threatened species....')	Habitat of endangered species—important habitat in TWWHA but extending outside. Contribution to integrity of TWWHA (habitat of endangered fish species)
Glacial (Bedlam Wall and associated moraines of the Derwent Glacier extending outside TWWHA boundary.)	(viii) (geological and geomorphological processes)	Contribution to the integrity of the Tasmanian Wilderness World Heritage Area (an 'ice age' area would meet the conditions of integrity if it includes the snow field, the glacier itself and samples of cutting patterns, deposition and colonization (e.g. striations, moraines, pioneer stages of plant succession, etc.) Condition of Integrity, Para 93 Operational Guidelines

Summary—Upper Derwent		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Tall eucalypt forest	Criterion (vii) '..contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'	Contribution to the integrity of the Tasmanian Wilderness World Heritage Area (additional dimension provided by pure stands of tall eucalyptus *E. delegatensis*.)
Tall eucalypt forest	(ix) '….to be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water,…..communities of plants and animals;'	Contribution to the integrity of the Tasmanian Wilderness World Heritage Area (pristine tall eucalypt forest in a wilderness environment)
Tall eucalypt forest	Criterion (x) (biological diversity)	Contribution to the integrity of the Tasmanian Wilderness World Heritage Area (additional ecological diversity of tall eucalypt forest ecosystem)
Tall eucalypt forests	(viii) '..outstanding examples representing major stages of earth's history,….'	It should be noted that at a generic level, all of the tall eucalypt forests contribute to the likelihood that tall eucalypt forests as a class can meet Criterion (viii). The contribution is not necessarily recognisable at the site-specific level. The forests of the Upper Derwent in particular have the potential to help provide an expanded understanding leading to meeting of Criterion (viii)

Summary—Upper Derwent		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
Wilderness values	Criterion (vii) '… contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'	Contribution to the integrity of the Tasmanian Wilderness World Heritage Area (wilderness values that are an extension of the world heritage wilderness in the adjoining TWWHA) [Notwithstanding that recent road construction and logging in the area west of the Derwent River Gorge, much of the area remains in a condition consistent with being mapped in 1996 as high quality wilderness. Rehabilitation to wilderness condition could be readily achieved]

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Biodiversity—Galaxia johnstoni endangered fish species	(b) '… uncommon, rare or endangered aspects of Australia's natural ... history'	An endangered fish species with important habitat partly within TWWHA (National Heritage) and partly outside. Species listed on EPBC Act list. National significance.

Summary of heritage values

(See also under separate sub-units above)

The natural attributes of the cluster of ENGO-proposed reserves in the Upper Derwent [FIDs 43, 44, 54, 58, and 66] contain a variety of natural attributes, some of which are of definite heritage significance at both the national and global level.

- Derwent Gorge West sub-unit [FID 44]: Most outstanding of identified heritage values is that of the combined tall eucalypt forests and wilderness values on the western side of the Derwent Gorge [FID 44], potentially making a very important contribution to the value and integrity of the Tasmanian Wilderness World Heritage Area. This area is strongly recommended for addition to the TWWHA.
- The Navarre Plain–Lake King William West sub-unit [FID 58]: The Navarre Plains and associated lands on the western side of Lake King William contain important glacial and scenic values, together with presentation considerations, of direct relevance to the

adjoining TWWHA and if added to the TWWHA, could be expected to contribute significantly to the integrity of the TWWHA.

- Clarence River sub-unit [FID 66]: The 'Clarence River' area north of the Lyell Highway contains some important habitat of an endangered species (Clarence Galaxia) and would make a valuable contribution to the TWWHA. However, as an addition to the TWWHA its contribution to the integrity of the area would be significantly greater if it included some additional state forest and some private land to more effectively protect habitat of the Clarence Galaxia. See boundary recommendation. The Clarence River locality is not critical to the TWWHA but deserves closer scrutiny and protection.
- Wentworth Hills sub-unit [FID 54]: The ENGO-proposed reserves in the 'Wentworth Hills' precinct have a range of conservation attributes including some values of national and global significance. Although adding the area, including the Wentworth Hills Lagoon, would technically contribute to the integrity of the TWWHA, adding the area with the ENGO-proposed reserve boundaries is not recommended. The Wentworth Hills ENGO-proposed reserves could only be recommended for adding to the TWWHA if two additional parcels of state forest (the area between Wentworth Hills and Lake King William and the Tibbs Plain Marsh between Wentworth Hills and the Lyell Highway) were available for a consolidated addition.

Boundary considerations

The existing boundary in the Upper Derwent part of the Tasmanian Wilderness World Heritage Area, extending from Counsel River in the south to east of Derwent Bridge includes a number of anomalies and inconsistencies that deserve fixing in this latest process, in line with identifying important heritage values.

The disposition of the natural heritage values in the Upper Derwent assessment area presents some difficulties in designing appropriate boundaries for the Tasmanian Wilderness World Heritage Area. This is particularly the case on the eastern side of the Derwent River where the occurrence of the endangered fish species *Galaxia johnstoni* is restricted to a series of small lagoons and marshes scattered across the Upper Derwent landscape.

While the ENGO-proposed reserves east of Lake King William and south of Lyell Highway have been assessed and found to contain values of National Heritage significance and potentially some values that would technically add to the integrity of the TWWHA, the resultant boundaries are less than ideal and in some cases not appropriate. It is recommended that priority be given to adopting a well-defined and sustainable boundary and to separately deal with protecting any identified heritage values east of the river (Wentworth Hills). Protection needs east of the Derwent should address the important habitat of the Clarence galaxia and the significance of the Wentworth Hills area—both as a part of the scenic landscape viewed from within the TWWHA and the value of the hills as a vantage point for viewing the outstanding expansive vista over the TWWHA and stored waters of Lake King William.

- Derwent Gorge West [FID 44]: Adding the mostly forested lands west of the Derwent River Gorge to the TWWHA is strongly recommended. In principle, the gorge represents an appropriate final boundary for this section of the TWWHA, both in terms of field definition and maintaining natural condition (wilderness) and ongoing natural processes. The recommended boundary is the water race/canal parallel to the river. See diagram above.
- The Navarre Plain–Lake King William West sub-unit [FID 58]: The whole of this sub-unit [FID 44] is recommended for adding to the TWWHA. The eastern 'external' boundary of the ENGO-proposed reserves is endorsed as an appropriate boundary for the TWWHA.

- Clarence River sub-unit [FID 66]: The area could only be recommended for adding to the TWWHA if the recommended boundary was adopted to include Dyes Marsh and the 'unnamed lagoon north of Clarence Lagoon' (see under Clarence River sub-unit). The recommended boundary would be an appropriate permanent boundary for the TWWHA.
- Wentworth Hills sub-unit [FID 54]: This area is only recommended for inclusion in the TWWHA if land use is consolidated (see under Wentworth Hills sub-unit above). If that approach is adopted, the external (eastern) boundary of the ENGO-proposed reserves [FID 54] would be an appropriate permanent TWWHA boundary but would require design for 'harmonising' with any boundary on the opposite (north) side of the Lyell Highway (See Clarence River sub-unit).

CHAPTER 4

West Coast

Chapter 4

West Coast

ENGO-proposed reserves associated with West Coast section of the TWWHA

Introduction

In the West Coast 'province' of Tasmania there are many features and values of heritage conservation significance, many of which are directly relevant to the Tasmanian Wilderness World Heritage Area. Indeed many such areas should have been included in the TWWHA but for their having been identified as having significant mineral prospects.

Not withstanding the mineral prospectivity, the important heritage conservation values need to be protected and appropriately managed to the maximum extent possible. Some areas containing high heritage conservation value have been placed in reserves of various forms, most particularly in Regional Reserves that have provision for mineral prospecting and mining.

This section of the report briefly addresses the heritage conservation significance of the various parcels of 'ENGO HCV' lands in the West Coast province, which are directly relevant to the existing Tasmanian Wilderness World Heritage Area. The ENGO-proposed reserves have clearly been identified and delineated in the context of the numerous adjoining and adjacent public reserves. The heritage significance and relevance of the ENGO-proposed reserves to the existing World Heritage in many cases only makes sense when seen in the context of the adjoining and adjacent reserves. Accordingly, as well as assessing the significance of each ENGO parcel of land, the relevant associated public reserves have been identified on both map and by name (see below).

Notwithstanding the identified mineral prospectivity in some of these lands, recommendations are made for those areas of outstanding heritage conservation value to be added to theTWWHA. Whether any or all of these lands are available for permanent reservation and thence inclusion in the TWWHA is a matter for government. It is important in the shorter term to at least recognise that these lands have valuable heritage conservation values, including values of World Heritage significance.

> Some of the best Australian expressions of 'refugia', 'relict' and 'rainforest' themes were considered by TPLUC (1997a) to be within the TWWHA. They placed the Tasmanian examples among several other Australian rainforest sites of international significance. They note also that the Mt Dundas–Mt Read rainforests, adjacent to the TWWHA, are exemplary. —Balmer et al. 2004

With increasing knowledge of the disposition of high mineral potential, there should be opportunities to upgrade the conservation reservation of at least select areas. For example, the outstanding but vulnerable glacial landscape of the Lake Beatrice Conservation Area and surrounding Tyndall Regional Reserve are of outstanding heritage conservation value and can be readily bed argued as worthy of adding to theTWWHA.

It should be noted that many of the reserves in the West Coast between the Pieman River in the north and Elliot Bay in the south have previously been identified for their heritage values and as prospective additions to theTWWHA. Some of the recommendations in this section may well repeat previous recommendations. The important thing in the shorter term is to recognise

that ,notwithstanding the mineral prospectivity of these areas, they also contain some outstanding heritage values, including some of the most spectacular scenic landscapes of Tasmania (e.g. Tyndall Range, Lake Beatrice, West Coast Range).

Relationship of West Coast province to Tarkine

The West Coast province dealt with in this section of the heritage verification is directly adjacent to the region referred to by the ENGOs as 'The Tarkine'. This area has been proposed as a national park and is currently being evaluated by the Australian Heritage Council to establish if the area qualifies as a National Heritage Area.

Heritage assessment of ENGO-proposed reserves

Individual ENGO-proposed reserves are briefly assessed for heritage values and an indicative level of significance provided. For at least the smaller ENGO-proposed reserve lands, their heritage conservation value comes from context, being an integral part of a larger aggregate of lands. Most smaller parcels were clearly identified on the basis of their relationship to existing reserves and were usually assessed in that context.

FID 90

Context for assessment

Small area on north-east boundary of Mount Heemskirk Regional Reserve. The heritage significance of this parcel can only be assessed in the context of the adjoining much larger reserves of essentially intact natural lands.

Assessment

Mostly forested. Some significant disturbance in western half. Eastern half appears to be intact.

No identified geoconservation values.

Contributes to connectivity between Mount Heemskirk and Meredith Range Regional Reserves.

Recommendations

1. Add to Mount Heemskirk Regional Reserve.
2. Consider Mount Heemskirk Regional Reserve, together with other adjacent reserves such as Meredith Range Regional Reserve, for adding to Tasmanian Wilderness World Heritage Area.

FID 92

Small area of steep, forested land along the Murchison Highway south of Renison Bell mine (straddles Murchison Highway).

Includes part of mine site water storage pond and a spur logging road. Possible mapping error —parcel may be intended to be all on eastern side of road

No identified geoconservation or biodiversity attributes located.

Data deficient.

Recommendations

1. Review conservation significance.

FID 85

Very small area on south-eastern boundary of Mount Heemskirk Regional Reserve—indeed appears to straddle boundary. Possible mapping error? No identifiable heritage conservation attributes.

Recommendation

1. Review original mapping and objective.

FID 88

A very mountainous forested area south west of Rosebery.

Forest that is 90 percent intact. Ten percent is a highly degraded landscape of massive benching and debris spill. (Mount Hamilton–Hercules Mine)

FID 88 is adjacent to a small but very important Lake Johnson Nature Reserve.

A threatened vegetation community, King Billy Pine *Athrotaxis selaginoides* rainforest, part of a much larger tract of this community in the adjoining Mount Dundas Regional Reserve and the Mount Murchison Regional Reserve, extends into the eastern part of FID 88 although much of this has been damaged by past mining.

A significant feature of FID 88 is Montezuma Falls, one of the more impressive waterfalls in western Tasmania.

> One of the region's top attractions is Montezuma Falls—at 104 metres, one of Tasmania's highest waterfalls.
>
> The three-hour round trip walk to Montezuma Falls begins just ten minutes south of Rosebery and is regarded as one of the easiest and most rewarding walks on the West Coast, taking tourists through open and park-like rainforest, along the route of the historic North East Dundas Tramway, right to the base of the falls.
>
> Along the way, tourists can enjoy beautiful flora including leatherwood, myrtle, sassafras, giant tree ferns and eye-catching fungi, and may also catch sight of native wildlife, including several species of birds. — www.lead.org.au

Locality diagram for Montezuma falls in FID 88, a popular tourist attraction. www.exploroz.com

Montezuma Falls
www.lead.org.au

Heritage assessment

Data and time limitations prevented this parcel of land from being comprehensively investigated. However, some observations can be made about the potential heritage conservation significance.

The greater part of FID 88 is forested, primarily with *Nothofagus cunninghamii* rainforest with ridge top communities of *Acacia melanoxylon* and *Leptospermum* sp.

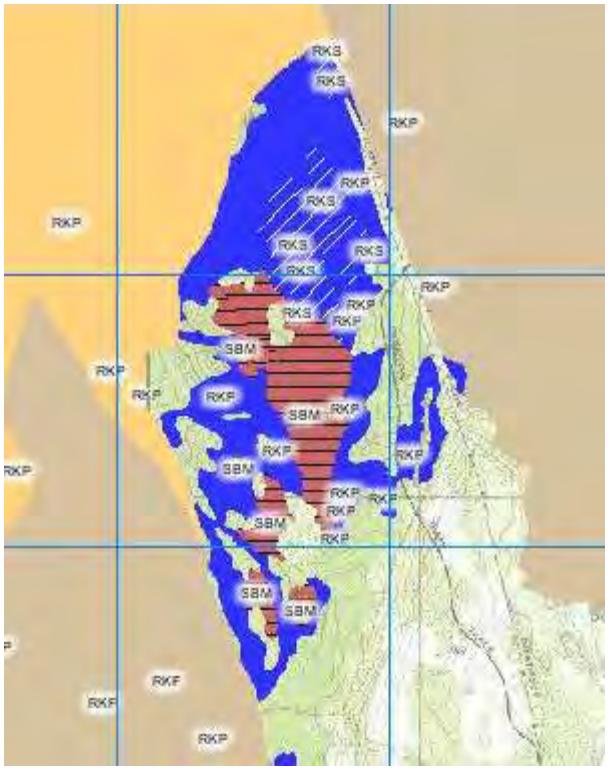
Some cultural heritage values appear to be within the site in the form of the remains of the historic Dundas Railway built in the 1890s. This deserves closer investigation. Preliminary investigation suggested this to be of some particular significance in the history of mining in the region. A 2 ft. gauge railway in such difficult terrain and constructed in the 1890s may be of national heritage significance.

The area contains a significant occurrence of King Billy Pine forest community of high heritage conservation value, a forest type officially classified within Tasmania as a threatened plant community.

Summary of attributes

Preliminary investigation indicates the presence of both cultural and natural heritage values of likely national significance. The remains of the Dundas Railway are worthy of further investigation and assessment. The King Billy Pine forest community in the east of the block is of conservation significance, the community being recognised within Tasmania as 'threatened'.

Directly adjoining the Mount Dundas Regional Reserve, a case clearly exists for adding FID 88 to that regional reserve.



Almost the whole of FID 89 is threatened plant communities. As well, it occupies a strategic location for securing connectivity between threatened communities of King Billy pine in the two adjoining reserves—Mount Dundas and Mount Murchison Regional Reserves.

Recommendations

1. Protect FID 88 and add to Lake Johnson Nature Reserve.
2. Further investigate FID 88 (less mined area) and adjacent lands, including Lake Johnson Nature Reserve, to establish the case and feasibility for adding these lands to the Tasmanian Wilderness World Heritage Area.

FID 89

Introduction

FID 89 is located between and adjoins Mount Dundas and Mount Murchison Regional Reserves, both reserves are of very high heritage conservation value.

Heritage assessment

Almost the whole of FID 89 is threatened plant communities (King Billy Pine *Athrotaxis selaginoides* and *Banksia marginata* wet scrub) and so is of high heritage conservation value. These values are therefore readily verified.

FID 89 is strategically located between two regional reserves and a nature reserve, each of very high conservation value. As such it potentially provides a critical link for securing ecological connectivity between those three reserves, two of which have significant stands of King Billy Pine *Athrotaxis selaginoides* and the third globally important Huon pine. FID 89 is of definite

natural heritage conservation value and if added to the TWWHA, would contribute significantly to the integrity of the TWWHA.

Findings

FID 89 is of definite high heritage conservation value. It is an integral part of a tract of land with high heritage values and which is worthy of permanent protection and addition to the TWWHA.

Recommendations

1. Permanently protect FID 89, as a minimum, adding it to one of the two adjoining Regional Reserves.
2. Investigate in more detail FID 89 and adjacent lands, including Lake Johnson Nature Reserve and FID 88 (exclusive of area grossly disturbed by mining) to establish the case and feasibility for adding these lands to the Tasmanian Wilderness World Heritage Area.

Tyndall Range assessment area

FID 80

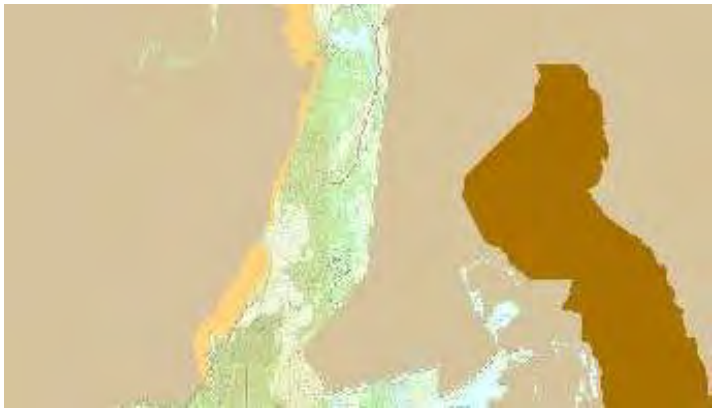
Introduction

FID 80 occupies a well-defined major terrace in the landscape, bordered in the west by the deep 'V' shaped gorge of the Henty River and in the east by the steep glaciated western face of the Mount Geikie section of the West Coast Range. To the east FID 80 adjoins Tyndall Regional Reserve and to the west the Mount Dundas Regional Reserve.

Heritage assessment

FID 80 has multiple geoconservation values listed on the Tasmanian Geoconservation Database:

- Central Plateau Terrain (global significance)
- Central Highlands Cainozoic Glacial Area (national significance)
- Tyndall Range Glacial Features (national significance)
- Hamilton Moraine (lower extension).



FID 80 (centre) is strategically located between two major Regional Reserves of High Conservation Value and so is critical to providing ecological connectivity between the two reserves. The dark brown area is Lake Beatrice Conservation

Area. Diagram from LISTMap.

FID 80 contains a major stand of the threatened plant community, King Billy Pine *Athrotaxis selaginoides* and as such is of definite natural heritage conservation value. The stand occupies a lower elevation topographic position complementary to the more extensive higher mountain habitat in the region.

FID 80 is a part of the Tyndall Range, which is highly regarded as one of the most spectacularly glaciated mountain ranges in Tasmania. The range is listed as a geoconservation site of continental significance (i.e. nationally significant).

Finding

FID 80 was found to contain natural heritage conservation value of definite national significance.

Also FID 80 is strategically located between two major regional reserves, each of very high heritage conservation value and therefore critically important for maintaining ecological connectivity between the two major reserves of very high heritage significance. The addition FID 80 and the two adjoining reserves to the adjoining TWWHA would contribute very significantly to the integrity of the adjacent TWWHA.

Recommendation

1. Formally protect the whole of FID 80. It is strongly recommended that it be given nothing less than nature reserve status.
2. Consider adding FID 80 and adjoining and adjacent regional reserves and conservation areas (e.g. Lake Beatrice) to the Tasmanian Wilderness World Heritage Area.

Dundas associated assessment area

FID 59, 61, 62, 64, 67, 69, 79, 81

Introduction

This assessment area embraces a suite of ENGO-proposed reserves in the one district and directly associated with Mount Dundas Regional Reserve. This reserve of 38,820 ha. is an area of apparent high heritage conservation value and is a potential addition to the Tasmanian Wilderness World Heritage Area. The conservation value of the Mount Dundas Regional Reserve provides an important context for assessing the heritage values and significance of the various ENGO-proposed parcels along its boundary.

Locality diagram showing various reserves, the larger (highlighted edge) is Mount Dundas Regional Reserve

Context for heritage assessment

Some of the best Australian expressions of 'refugia', 'relict' and 'rainforest' themes were considered by TPLUC (1997a) to be within the TWWHA. They placed the Tasmanian examples among several other Australian rainforest sites of international significance. They note also that the Mt Dundas–Mt Read rainforests, adjacent to the TWWHA, are exemplary. —Balmer et al. 2004

Mount Dundas Regional Reserve

This large reserve of rugged hills of mostly rainforest, wet scrub and some moorland remains in an essentially intact condition. Unlike many other parts of the West Coast region, the only form of development activity identified is one minor four-wheel drive track in the north.

The Mount Lyell Highway forms its southern boundary. The reserve provides an important part of the natural landscape for travelers along this section of highway.

Mount Dundas Regional Reserve has been recognised for its conservation significance, particularly for its rainforests namely:

> Some of the best Australian expressions of 'refugia', 'relict' and 'rainforest' themes were considered by TPLUC (1997a) to be within the TWWHA. They placed the Tasmanian examples among several other Australian rainforest sites of international significance. **They note also that the Mt Dundas–Mt Read rainforests, adjacent to the TWWHA, are exemplary.**

Various ENGO HCV lands (yellow) adjoining Mount Dundas Regional Reserve.

> Key Gondwanan genera are *Nothofagus* and the coniferous genera *Athrotaxis*, *Phyllocladus*, *Lagarostrobos*, *Microstrobos* and *Microcachrys*. To satisfy the conditions of integrity, the region must have a boundary that encompasses the taxonomic range of the species, provide habitat of sufficient area to enable natural evolutionary and ecological processes to continue and provide the best examples of that species or process (Table 3.1). The assessment of whether the boundary is sufficient to satisfy conditions of integrity is to some extent subjective. Only 10,970 ha of *Nothofagus gunnii* remain extant in Tasmania, of which nearly 70 percent is within the TWWHA, satisfying the condition of integrity (Robertson & Duncan 1991). **The largest stands, and arguably therefore the most superlative examples, of the species are currently outside the TWWHA boundary on Mt Murchison, Mt Dundas and the Tyndall Range.** However, these stands are not in secure reserves and are subject to mineral exploration. —Balmer et al. 2004

Awareness of the conservation significance of the Mount Dundas Regional Reserve is an important part of the context for assessing the heritage value of the suite of ENGO-proposed reserves along the boundary of the reserve.

FID 81

Of the series of ENGO-proposed reserves along the boundary of the Mount Dundas Regional Reserve, one in particular, FID 81, deserves separate consideration. All others are dealt with as a group.

FID 81, the larger of the ENGO-proposed reserves adjoining the reserve is wholly naturally vegetated, being a mix of *Nothofagus* rainforest, *Eucalyptus nitida* wet forest and some patches of moorland. It contains only one small patch of threatened plant community, about 20 ha. of King Billy pine in the north.

Badger River Forest Reserve of 370 ha. has FID 81 on three sides.

Most of FID 81 is already in informal reserve on state forest, perhaps accounting for the intact native vegetation throughout most of the area (probably some burning of the blanket bog/moorland on the southern edge adjacent to the Zeehan Strahan Road).

It has considerable geoconservation values, including some fragile landforms.

Identified Geoconservation values include:

- Little Henty Raised Last Interglacial beaches
- Henty Dunes (regional)
- Macquarie Harbour Graben (national significance)
- Deeply Entrenched River Gorges on the Henty Surface (sub-regional)
- Zeehan Region Strike Ridges and Valleys (regional)
- Professor Plateau Erosion Surface Remnant (sub-region)
- Western Tasmania Blanket Bogs (global significance).

The main heritage significance comes from the existence of an intact transect from the strike ridges of the inland through to intact sandy estuary and beaches, including 'fossil' beaches from the last interglacial. The combination of these geoconservation attributes, the intact vegetation and the natural buffering of the coastal sand dunes from encroachment by vehicles, greatly complements that of the adjoining Mount Dundas Regional Reserve. If added to that reserve, FID 81 would contribute greatly to the ecological and geoconservation integrity of that reserve and further enhance the significance of the Mount Dundas Regional Reserve as a potential addition to the Tasmanian Wilderness World Heritage Area.

Only one Aboriginal site has been recorded within FID 81 (TAS12578).

Finding

FID 81 is of definite high heritage conservation value and if considered in the context of it adjoining the Mount Dundas Regional Reserve, would be of at least national significance.

Mount Dundas Regional Reserve, together with FID 81 and Badger River Forest Reserve, would, if added to the adjacent Tasmanian Wilderness World Heritage Area, contribute significantly to the integrity of the TWWHA.

Protecting the natural vegetation of the area would help to maintain the natural landscape associated with the Strahan–Zeehan Road and so contribute to presentation of the natural landscape or, if added to the TWWHA, contribute to the presentation of the TWWHA.

Recommendation

1. Formally protect ENGO reserve FID 81 either by:
    - adding to Mount Dundas Regional Reserve or
    - reserving as nature reserve.

Other ENGO-proposed parcels adjoining Mount Dundas Regional Reserve

FID 64, 67

Both parcels are fully forested, mainly rainforest.

No specific conservation attributes were discovered in the literature. Their main value would appear to be as boundary improvements to the Mount Dundas Regional Reserve.

Henty Forest Reserve (hatched) adjoins Mount Dundas Regional Reserve. FID 67 and 64 adjoin to the north and south-east.

Significant opportunity exists to improve the integrity of the boundary by including the Henty Forest Reserve between FID 64 and FID 67. Together the three areas contribute to protecting the Henty River corridor, helping to protect the wilderness and wild river values of the river.

FID 59, 61, 62

All three areas are already reserved as informal reserves managed by Forestry Tasmania.

Mostly forested with forest communities ranging from *Nothofagus* temperate rainforest in valleys and lower slopes to *Acacia melanoxylon* on some ridges and *Eucalyptus nitida* wet forest and woodland on the western (fire) side of the rainforest.

No threatened plant communities recorded. No geoconservation values recorded

The Mount Dundas Regional Reserve, together with these three parcels of ENGO-proposed reserves is of high heritage conservation value and would rate at least national significance. In addition these three parcels make an important contribution to the boundary of the adjoining Mount Dundas Regional Reserve.

FID 59, a larger parcel, is particularly important for consolidating the boundary of Mount Dundas Regional Reserve as it more closely aligns the boundary with the Lyell Highway and so extends the visual protection along that road.

Conclusion

Mount Dundas Regional Reserve is an area of outstanding conservation value of such significance to be worthy of inclusion in the Tasmanian Wilderness World Heritage Area. The

various ENGO-proposed reserves adjoining Mount Dundas Regional Reserve all contribute to the value and integrity of the reserve as a potential formal conservation reserve.

The following combination is of global heritage significance worthy of adding to the adjoining World Heritage Area:

- Mount Dundas Regional Reserve
- Nine ENGO-proposed reserves, including FID 81
- Tyndall Regional Reserve and Lake Beatrice Conservation Area.

Recommendations

1. Recognise the outstanding heritage conservation value of Mount Dundas Regional Reserve (national significance).
2. Recognise the important contribution that FIDs 59, 61, 62, 64, 67, 69, 79 and 81 make to the heritage value and significance of the adjoining Mount Dundas Regional Reserve.
3. Consider adding FIDs 59, 61, 62, 64, 67, 69, 79, 81 into Mount Dundas Regional Reserve.
4. Consider adding Mount Dundas Regional Reserve and associated other reserves to the Tasmanian Wilderness World Heritage Area.

FID 52

(including West Coast Wilderness Railway)

Introduction

FID 52 is adjacent to but not immediately adjoining the Tasmanian Wilderness World Heritage Area being separated by just 1 km by the West Coast Range Regional Reserve. FID 52 is also immediately adjacent to the Mount Dundas Regional Reserve, separated only by the Lyell Highway.

Context for assessment

FID 52 is made up of steep mountain landscape on the western fall of the West Coast Range. It is in the King River catchment, which drains west into Macquarie Harbour. Most of FID 52 is fully vegetated although it is understood that parts have been subjected to selective logging of Huon pine in historic times.

FID 52 adjoins the West Coast Range Regional Reserve and is less than 1.5 km from the Tasmanian Wilderness World Heritage Area.

FID 52 is traversed by the historic West Coast Wilderness Railway that connects Queenstown to Strahan and is a popular tourist attraction.

Apart from the railway, it contains only a few four-wheel drive tracks that access the moorland in the south-west.

More than half of the area is forested, mostly with *Nothofagus* forest and King Billy pine but also some areas of *Eucalyptus nitida* towards Macquarie Harbor.

Much of the higher slopes and dissected plateau in the western arm of the area is moorland.

Assessment

FID 52 drains into Macquarie Harbour (west section) and King River (north section). The West Coast Wilderness Railway traverses the area, following the King River for much of its way.

Geoconservation: Several geological features extending into the area are listed on the Tasmanian Geoconservation Database (TGD) including:

- The Macquarie Harbour Graben of Geographical Significance. Significance is 'Continent', '*Statement of Significance:* Possibly the clearest example of a late-stage trailing margin rift structure in Australia. Contains neotectonically significant features (including terraces and evidence for reactivation of Devonian structures) listed as separate sites.' (TGD) Assessed: national significance.
- West Coast Range, geographical significance continental (national)
- Macquarie Graben Fluvial Geomorphic Systems, geographical significance, global significance.

Threatened plant communities

FID 52 contains a group of stands of King Billy pine, *Athrotaxis selaginoides*, a listed threatened plant community. See below.

The cluster of forest stands of King Billy pine is very significant given the relative natural protection afforded by the mostly surrounding rainforest.

Cultural heritage

The West Coast Wilderness Railway connects Queenstown to Strahan and is a popular tourist attraction. It is undoubtedly also of important historical value and hence of cultural heritage significance.

Protection of FID 52 would greatly complement the railway and help to protect the scenic landscape through which the railway passes. If FID 52, together with the West Coast Range Regional Reserve is added to the Tasmanian Wilderness World Heritage Area, the West Coast Wilderness Railway would represent a good opportunity for enhancing the presentation of the World Heritage Area. In 2005 the railway was awarded the National Engineering Heritage Award for the achievement in successful reconstruction in this difficult terrain. (*The Newsletter of National Engineering Heritage Australia*, July 2006).

Finding

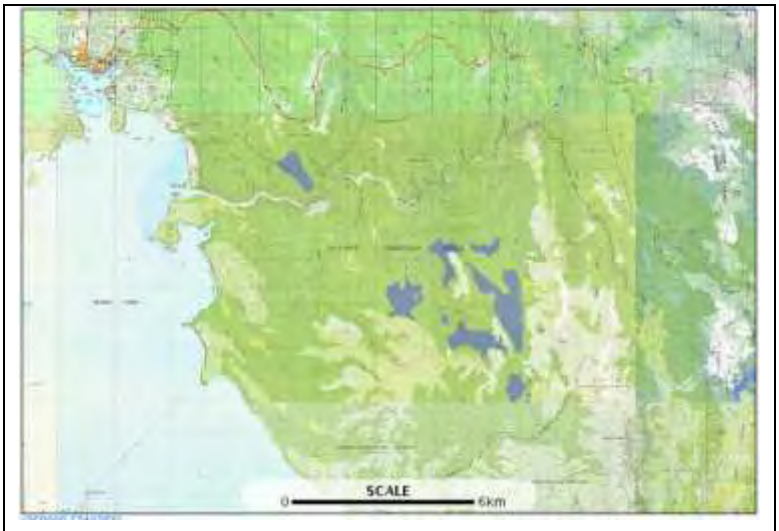
FID 52 has significant natural and cultural heritage values, including stands of King Billy pine *Athrotaxis selaginoides* and a number of significant geoconservation values. Considered as an integral part of the landscape in the West Coast Range Regional Reserve, the combination is of at least national heritage significance and, if added to the adjoining TWWHA, would make an important contribution to the integrity of the TWWHA. FID 52 is of high heritage conservation significance.

Boundary considerations

Adding FID 52 to the adjoining West Coast Range Regional Reserve would improve the boundary of that reserve. However, if the reserve is available for adding to the Tasmanian Wilderness World Heritage Area, consideration should be given to extending the protection northwards to the Lyell Highway and hence establishing full connectivity with the Mount Dundas Regional Reserve (see recommendations re Mount Dundas Regional Reserve elsewhere in the report).

Recommendations

1. Consider FID 52 for permanent protection from mining and other development. Reserve as national park or similar.
2. Add the West Coast Range Regional Reserve, together with FID 52, to the Tasmanian Wilderness World Heritage Area.
3. Acknowledge that the West Coast Wilderness Railway is an historically significant piece of cultural heritage and a further opportunity to link quality tourism with the TWWHA and so incorporate it into the permanent reserve (see 1.) and TWWHA (see 2.).



Mapped King Billy Pine *Athrotaxis selaginoides*, a threatened plant community. (Source: LIST)

Mount Jukes assessment area

FID 50

FID 50 is a small parcel of land on the north-eastern boundary of the West Coast Range Regional Reserve. It is a very steep and rocky area extending down the face of Mount Jukes, from the summit, almost down to Lake Burbury. FID 50 includes the whole of the glacial feature 'Main Jukes Cirque', together with the major lateral moraines.

Geoconservation

FID 50 is part of a mountain massif (Mount Jukes) that is rich in geoconservation values including:

- Proprietary Peak Types Area, geographical significance, regional
- Transect through Mt Read Volcanic, Mt Jukes Road, geographical significance at regional level:

  Statement of Significance: A representative transect through the hydrothermal alteration zone in the Central Volcanic Complex, including faulted boundary with the Eastern Sequence.
- West Coast Range, geographical significance, continental (national significance).

Biological

Much of the lower slopes in FID 50 are wet woodlands of *Eucalyptus nitida* and moorland. The cirque contains a significant area of Huon pine *Lagarostrobos franklinii* rainforest and scrub. Further upslope the vegetation is mapped as 'Highland low rainforest and scrub' and 'western alpine sedgeland/herbland'.

FID 50 includes a significant area of Huon pine *Lagarostrobos franklinii* 'rainforest and scrub' high up in the Jukes Cirque.

Finding

FID 50 is of definite high heritage conservation significance and is an integral part of a landform and landscape that can readily qualify as a potential addition to the TWWHA.

Further, FID 50 is an integral part of the West Coast Range massif and as such must be assessed accordingly.

Together with the West Coast Range Regional Reserve, FID 50 would make a very significant contribution to the integrity of the adjoining Tasmanian Wilderness World Heritage Area.

Recommendations

1. Add FID 50 to the West Coast Range Regional Reserve.
2. Add the West Coast Range Regional Reserve to the immediately adjoining TWWHA.

Other reserves in the West Coast province

A number of reserves of conservation significance have been referred to in the text above. Some other reserves in the West Coast are collectively or individually considered to be of heritage conservation importance. For completeness, a full list of names of the reserves with identified or anticipated conservation values, and therefore worthy of consideration as additions to the Tasmanian Wilderness World Heritage Area, is provided below.

Regional reserves

1. West Coast Range

1. Mount Dundas
2. Tyndall
3. Mount Murchison
4. Mount Heemskirk

Conservation areas

5. Lake Beatrice
6. Granite Tor
7. Princess River
8. Crotty
9. South West

Nature reserve

10. Lake Johnson

Forest reserve

11. Badger River
12. Teepookana
13. Henty

CHAPTER 5

Tarkine

Chapter 5

Tarkine

Introduction

The Tarkine assessment area comprises an aggregate of ENGO-proposed reserves that collectively are based upon a long-standing concept for a national park—a proposed Tarkine National Park. The area has also been the subject of listing by the Australian Heritage Commission and is presently the subject of an assessment for National Heritage value by the Australian Heritage Council.

The national park proposal by the ENGOs has been developed around the existence of mapped wilderness that represents the core of the concept.

Under the circumstances it was logical to conduct an assessment of the aggregate area rather than attempt to assess the significance of individual ENGO-proposed parcels.

Context for heritage assessment

The Tarkine has been the subject of considerable attention and previous studies, evaluations and assessments including:

- National Wilderness Inventory (NWI)
- National Estate evaluation by the former Australian Heritage Commission
- Proposal as a national park by ENGOs
- National Heritage evaluation by the Australian Heritage Council (current).

Tarkine National Park (shaded) and area (blue edge) being assessed for National Heritage by the Australian Heritage Council. The 'hole' in the middle is the existing Savage River mine.

A number of surveys, studies and researches relevant to the area are quoted in the literature. The Tarkine has also been the subject of a number of publications, books and websites and extensively promoted by ENGOs over several decades. As well as being promoted for national park status, the area has received regular promotion for its claimed World Heritage significance.

The conservation attributes of the Tarkine have been promoted and debated in the media for several decades and there is a significant amount of publicly available information on the natural and cultural attributes of the area.

The area currently being assessed by the Australian Heritage Council (AHC) substantially coincides with the boundaries of the proposed Tarkine National Park. However, there are some puzzling differences such as in the area west of the Donaldson River Nature Recreation Area that has been omitted from the AHC assessment.

The Tarkine national park proposal stops just short of a physical link to the existing TWWHA but the area currently under assessment by the National Heritage Council has a token physical link to the north-western section (Cradle Mountain) of the Tasmanian Wilderness World Heritage Area. Irrespective of this physical link, the area could be assessed for World Heritage either as a potential stand-alone prospective World Heritage nomination or as an elaboration of the TWWHA. Physical connectivity is not a prerequisite for considering such an area as an extension of the TWWHA.

The 'Tarkine' aggregate of ENGO-proposed reserve lands is clearly intimately related to the Tarkine protected area concept and has been assessed in that context. It was considered inappropriate to take a reductionist approach and separately assess individual parcels except in the context of the larger core, given that:

- the concept of a single Tarkine national park/World Heritage Area is well known and for some years has been dealt with by Government as a single entity (see National Estate, National Heritage process)
- the Tarkine National Park concept has developed around wilderness core areas
- a significant proportion of the Tarkine is already recognised for its heritage conservation significance by designation as formal protected areas.

This assessment focused on **the single aggregate area** rather than each individual parcel. The heritage significance of individual parcels can be interpreted according to the contribution that they make to the integrity of the larger Tarkine heritage assessment unit.

Where appropriate and necessary, some specific attention has been directed towards particular parcels of the ENGO-proposed reserves.

World Heritage assessment

CAVEAT: Given the strict time constraints imposed by the IGA process, research of background data on the Tarkine region was similarly constrained; accordingly, the assessment and verification process documented below must carry the caveat of being regarded only as an **indicative assessment**. However, any additional data on natural and cultural heritage attributes forthcoming in future is only likely to increase the assessed heritage significance rather than detract from the values on which preliminary assessment was based.

Context for cultural heritage assessment and verification

Firstly, although the author has extensive experience in World Heritage matters, including in analysis of cultural heritage material, he is not formally qualified in matters archaeological and anthropological and so defers to relevant specialists for any more comprehensive analysis

and assessment. The author had access to maps showing the location of all official recordings of Aboriginal sites in the region.

Secondly, the assessment is a holistic assessment at the landscape level and does not depend on separate analysis of specifics of each and every land parcel or locality. The assessment area is therefore the whole of the Tarkine region, incorporating all known (and doubtlessly the many unknown) field evidence of Aboriginal interaction with the environment.

Thirdly, while individual known cultural sites may be protected from development, the cultural heritage values are considered to embrace the wider environment, the landscape, with which the people interacted, especially through fire and hunting activities.

World Heritage Criterion (iii)

> … to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

The former Australian Heritage Commission assessed the Tarkine as 'one of the world's great archaeological regions' (1990, cited in Richards and Sutherland-Richards 1992).

Given the obvious Aboriginal cultural links between the landscapes of the Tasmanian Wilderness World Heritage Area and the Tarkine, a good starting point for a preliminary assessment is to compare the two. For example, the following quote is intended to summarise the Aboriginal cultural significance of the TWWHA in respect of Criterion (iii).

Criterion (iii) Unique cultural tradition

> The Tasmanian Wilderness bears a unique and exceptional testimony to an ancient, ice age society, represented by:
>
> Pleistocene archaeological sites that are unique, of great antiquity and exceptional in nature, demonstrating the sequence of human occupation at high southern latitudes during the last ice age. (inscribed values statement for Tasmanian Wilderness World Heritage Area under Criterion [iii])

The Tarkine area undoubtedly contains archaeological sites that date back to the Pleistocene. However, compared with the TWWHA it appears to lack the series of cave sites, some with artistic decoration that clearly correlate with Aboriginal occupation during the Pleistocene, including sites that subsequently became uninhabitable due to encroachment of forest into grasslands post Pleistocene.

We can confidently assume that in the Tarkine during the Pleistocene there would have been a concentration of Aboriginal occupation on the coastline, just as was the case post-Pleistocene and right up to the time of European settlement. However, given that the Pleistocene coastline has been submerged, much of the shoreline surface evidence from the Pleistocene will have been lost to rising sea level. At least the majority of the abundant midden and occupation sites such as the 'doughnut middens'/house circles are likely post Pleistocene (Holocene).

Preliminary comparison between the TWWHA and the Tarkine Aboriginal landscapes indicates that whereas the coastline of the World Heritage Area is predominantly a rocky coastline, that of the Tarkine is predominantly a sandy beach coast, offering rather different food resources and living conditions to further south in the TWWHA. At the landscape level, the environments of the two regions differ significantly and so would have had different but complementary living conditions.

Preliminary assessment suggests that the Tarkine has the potential to independently qualify against Criterion (iii) but I defer to specialist cultural analysis for final arbitration on that point. Notwithstanding, there is no doubt that the cultural heritage values as they relate to Criterion (iii) **would contribute greatly to the integrity of the Tasmanian Wilderness World Heritage Area.** That is, if the Tarkine were added to the TWWHA, it would

significantly contribute to the integrity of the TWWHA by further enhancing the qualification of that area against Criterion (iii).

Criterion (v)

> ... to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change; World Heritage criterion (v)

As for criterion (iii), it is useful to compare the Tarkine with the existing Tasmanian Wilderness World Heritage Area namely:

Criterion (v) Outstanding example of traditional settlement for TWWHA

> The Tasmanian Wilderness provides outstanding examples of a significant, traditional human settlement that has become vulnerable under the impact of irreversible socio-cultural or economic change. The World Heritage values include:
>
> … archaeological sites which provide important examples of the hunting and gathering way of life, showing how people practised this way of life over long time periods, during often extreme climatic conditions and in contexts where it came under the impact of irreversible socio-cultural and economic change. (inscribed values for Tasmanian Wilderness World Heritage Area at 2011).

The archaeological and anthropological descriptions and analyses of the Tarkine Aboriginal cultural heritage surely represent an echo of that statement of values, albeit in somewhat different landscapes. The huge number of coastal middens alone is more than comparable to those documented in the TWWHA, albeit in significantly different environments, particularly the coastal environment.

Assessment findings

Preliminary analysis and comparison with the TWWHA leads to the conclusion that the Tarkine is comparable and so would probably equally meet Criterion (v) of the World Heritage Operational Guidelines. That is, it is likely that subject to more comprehensive analysis, the Tarkine would qualify against World Heritage Criterion (v).

At the very least, if the Tarkine was nominated as an addition to the existing TWWHA, it could be readily demonstrated to greatly contribute to the integrity of the TWWHA, especially in respect to values relevant to Criterion (v). The integrity of the TWWHA would be enhanced by a substantial resource of archaeological sites associated with a sandy coast, thereby complementing the TWWHA where sandy beach environments are more the exception than the rule.

World Heritage Criterion (vi)

> … to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. (The Committee considers that this criterion should preferably be used in conjunction with other criteria); (World Heritage Criterion [vi])

As for criteria (iii) and (v), a useful starting point in assessing the Tarkine against the World Heritage criteria is to directly compare it with the adjacent Tasmanian Wilderness World Heritage Area:

Criterion (vi) Directly associated with events or living traditions for TWWHA

> The Tasmanian Wilderness is directly associated with events of outstanding universal significance linked to the adaptation and survival of human societies to glacial climatic cycles. The World Heritage values include:

> … archaeological sites including Pleistocene sites, which demonstrate the adaptation and survival of human societies to glacial climatic cycles and periods of long isolation from other communities (e.g. the human societies in this region were the most southerly known peoples on earth during the last ice age) (inscribed values for Tasmanian Wilderness World Heritage Area at 2011).

Assessment findings

Arguably the Tarkine region can readily meet the description of the inscribed values applied to the TWWHA in respect of Criterion (vi). It may lack some of the highly significant inland Pleistocene cave sites but whereas some of the inland cave sites were abandoned after the Pleistocene, the Tarkine can, through historical documentation, demonstrate continuous Aboriginal occupation post-Pleistocene right up to early European settlement.

Preliminary assessment indicates that based on documented attributes and values, the Tarkine region may meet World Heritage Criterion (vi).

At the very least, if the Tarkine were to be proposed as an addition to the Tasmanian Wilderness World Heritage Area, it could be readily demonstrated that it would make a substantial contribution to the integrity of the already cited World Heritage Criterion (vi).

Summary of cultural heritage assessment

This assessment should be regarded as **preliminary only** as it was not practicable to access all documentation within the time constraints. Notwithstanding, any additional data is only likely to increase the certainty of the area qualifying against Criteria (iii), (v) and (vi).

Based on the documented attributes and values of the Aboriginal cultural heritage in the Tarkine it is apparent that the Tarkine can readily meet World Heritage Criterion (v) and very likely (iii) and (vii).

An important contributor to the value of the cultural heritage is the context of a largely undisturbed if not wilderness landscape, an Indigenous cultural landscape.

Furthermore, subject to appropriate strict protection at the landscape level, much of the Tarkine can comply with the Conditions of Integrity, both general and specific to Criteria (iii), (v) and (vi).

Natural Heritage Criteria

World Heritage Criterion (vii)

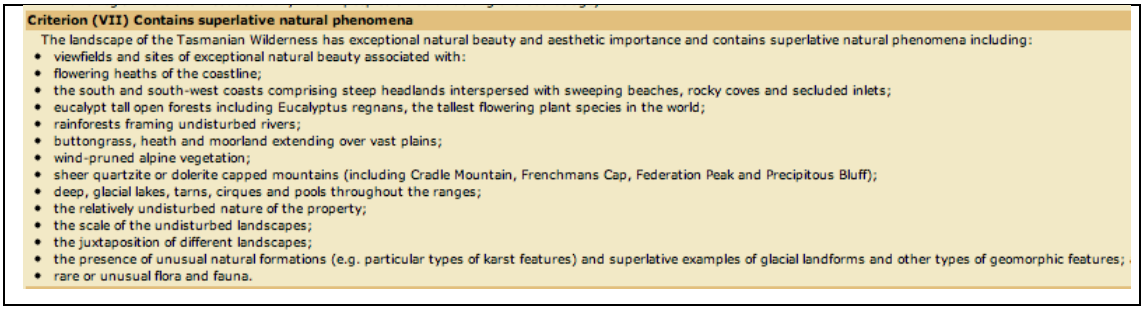
> ... contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

Heritage assessment

Assessment of the natural heritage values of the Tarkine needs to be considered both as a stand-alone assessment area and in the context of the adjacent Tasmanian Wilderness World Heritage Area.

Comparison with TWWHA

A useful starting point is to directly compare with the documented inscribedl values ascribed to Criterion (vii) for the TWWHA:



Criterion (VII) Contains superlative natural phenomena

The landscape of the Tasmanian Wilderness has exceptional natural beauty and aesthetic importance and contains superlative natural phenomena including:

- viewfields and sites of exceptional natural beauty associated with:
- flowering heaths of the coastline;
- the south and south-west coasts comprising steep headlands interspersed with sweeping beaches, rocky coves and secluded inlets;
- eucalypt tall open forests including Eucalyptus regnans, the tallest flowering plant species in the world;
- rainforests framing undisturbed rivers;
- buttongrass, heath and moorland extending over vast plains;
- wind-pruned alpine vegetation;
- sheer quartzite or dolerite capped mountains (including Cradle Mountain, Frenchmans Cap, Federation Peak and Precipitous Bluff);
- deep, glacial lakes, tarns, cirques and pools throughout the ranges;
- the relatively undisturbed nature of the property;
- the scale of the undisturbed landscapes;
- the juxtaposition of different landscapes;
- the presence of unusual natural formations (e.g. particular types of karst features) and superlative examples of glacial landforms and other types of geomorphic features;
- rare or unusual flora and fauna.

In approaching the assessment of World Heritage values of the Tarkine, it is instructive to firstly conduct a brief comparison with the recognised World Heritage values of the Tasmanian Wilderness World Heritage Area. An attribute, by attribute comparison is presented below.

- (flowering heaths of the coastline;) A prominent feature of the Tarkine is the much more extensive flowering coastal heaths; indeed the coastal heaths of the Tarkine may be almost as extensive as in the TWWHA. It is reasonable to argue that the expansive treeless coastal plains, largely devoid of evidence of industrial man, gently rising to distant rainforested hills represents an aesthetically appealing landscape and landscape of 'exceptional natural beauty'.

Assessment

The 'flowering heaths of the coastline' undoubtedly contribute an important dimension to the overall exceptional natural beauty of the Tarkine, contrasting with the adjacent very extensive deep shaded and mossy temperate rainforests. This feature contributes to the Tarkine, meeting Criterion (vii):

- (the south and south-west coasts comprising steep headlands interspersed with sweeping beaches, rocky coves and secluded inlets;) The Tarkine coastline is very different to the 'rocky coves and secluded inlets' of the TWWHA; by contrast it is dominated by 'sweeping beaches' far longer and more connected than any in the TWWHA. The impression is more of a wild deserted desert coast with few if any trees visible, often dominated by the wildness of massive oceanic swells that expend their energy as massive wave breaks on shallow gradient deserted sandy beaches.

Assessment

Large open areas of natural beachfronts are now uncommon in temperate Australia although still relatively common in tropical Australia. The beaches on the Tarkine coastline contribute to the experience of encountering open expanses of wild beauty. The 'sweeping beaches' make an important contribution to the Tarkine meeting Criterion (vii):

- eucalypt tall open forests including *Eucalyptus regnans*, the tallest flowering plant species in the world;) compared with the TWWHA, tall eucalypts are less a feature but are never the less a significant part of the Tarkine vegetation and landscape. The tallest growing species, *E. regnans* is not a feature, the best-developed tall eucalypt stands being dominated by *E. obliqua,* the first eucalypt to be officially described. As with the TWWHA, the tall eucalypts in the Tarkine are often intimately mixed with the temperate rainforest, a constant reminder of the dynamic interplay between these two great ecosystems and the critical role that fire plays in those dynamics.

Assessment

- Rainforests framing undisturbed rivers—compared with the TWWHA, the Tarkine can equally claim 'rainforests framing undisturbed rivers' although there is much less diversity of landscape through which the rivers flow. Tarkine does, however, include

some quite extensive rainforests, which contain undisturbed rivers—the most outstanding example being the headwaters of the Savage River, already partly protected in the Savage River National Park. There is a much greater concentration of rainforests in the Tarkine than in the TWWHA so the assumption is that rainforest framed undisturbed rivers will be commensurately more common and/or better developed. Of the Tarkine imagery presented on the Internet and in books and other publications, 'rainforests framing undisturbed rivers' is a common recurring feature, tending to confirm an objective assessment of the presence and distribution of this feature in the Tarkine landscape.

Assessment

As with the TWWHA, the Tarkine features many 'rainforest framed undisturbed rivers' although the Tarkine may differ in having fewer undisturbed rivers. That is offset, however, by the more extensive rainforests associated with those 'undisturbed rivers'. The many outstanding examples of 'rainforests framing undisturbed rivers' found in the Tarkine undoubtedly contributes significantly to the Tarkine meeting World Heritage Criterion (vii):

- 'buttongrass, heath and moorland extending over vast plains;' When compared with the TWWHA, the Tarkine can equally claim 'buttongrass, heath and moorland extending over vast plains;' although probably less buttongrass and more heath. This attribute tends to be associated with the mostly treeless coastal lowlands and could be said to take the form of 'extending over vast plains'.

Assessment

There is little doubt that the treeless coastal lowlands and adjacent low hills present vistas that for many could invoke the judgement of 'exceptional natural beauty', especially on cold misty days and low light conditions. The very extensive treeless heaths and moorlands extending over the expansive plains of the Tarkine lowlands would make a significant contribution to the Tarkine as a whole, meeting World Heritage Criterion (vii):

- wind-pruned alpine vegetation;' In distinct contrast to the TWWHA, the Tarkine does not significantly feature 'wind-pruned alpine vegetation'. There are extensive wind pruned forest vegetation margins where the coastal treeless plains meet the eucalypt and rainforests but these could not be said to represent an outstanding feature. Much of the Tarkine, although exposed to driving westerly and south westerly winds, is a generally more subdued landscape than the very rugged mountainous TWWHA and so the vegetation is not exposed to extreme pruning impacts
- 'sheer quartzite or dolerite capped mountains (including Cradle Mountain, Frenchmans Cap, Federation Peak and Precipitous Bluff)'
- 'deep, glacial lakes, tarns, cirques and pools throughout the ranges;' The Tarkine, in sharp contrast to the adjacent TWWHA does not present 'sheer quartzite or dolerite capped mountains' and the associated 'deep, glacial lakes, tarns, cirques and pools throughout the ranges;' Tarkine instead is a very different landscape, much more subdued than the TWWHA. Instead, the Tarkine is characterised by low, often rounded mountains with little or no evidence of glacial sculpting, thereby contrasting with the very different landscape of the TWWHA
- 'the relatively undisturbed nature of the property'
- 'the scale of the undisturbed landscapes'
- the juxtaposition of different landscapes;' The Tarkine shares with the TWWHA 'relatively undisturbed nature' on a large scale, wilderness, and exhibits remarkable juxtaposition of different landscapes, notably the contrast between the exposed, treeless coastal lowlands and adjacent or immediately adjoining sheltered shady rainforests

- 'the presence of unusual natural formations (e.g. particular types of karst features) and superlative examples of glacial landforms and other types of geomorphic features'. The Tarkine lacks the superlative glacial landforms of the TWWHA but this is in part offset by a completely different geology and geomorphology. For example, the combination of a highly jointed and dissected granite landscape draped with a highly variable mosaic of moorland and low scrub in the Meredith Range is an extraordinary natural landscape and geomorphic feature
- 'rare or unusual flora and fauna'. The Tarkine shares with the TWWHA 'rare or unusual flora and fauna' some of which are likely to contribute to the region qualifying to meet Criterion (vii) namely: 'to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance'.

Other main attributes

Some of the natural heritage attributes of the Tarkine region relevant to Criterion (vii) and absent from or not specifically recognised in the TWWHA include:

- much more extensive well developed (tall) temperate rainforest
- greater extent of open coastal plain
- greater lengths of sandy ocean beaches.

Overall assessment against criterion (vii)

> … to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

The Tarkine has the following natural attributes:

- vast expanse of largely treeless coastal plains
- long sandy ocean beaches backed by tracts of treeless heath
- very extensive tracts of well-developed temperate rainforest (the most extensive individual stand(s) in Australia) of exceptional natural beauty and aesthetic importance'
- visually outstanding stands of tall eucalypt forest, often intimately associated with rainforest
- major tracts of apparently pristine natural landscapes—recognised wilderness qualities
- the extraordinary visual impact of the complex granite landscape of the Meredith Range with its mosaic of moorland and scrub.

It is therefore reasonable to conclude that the Tarkine landscapes include major areas of superlative natural phenomena (major tracts of pristine natural temperate rainforest and treeless plains—the second largest tract in the world of cool temperate rainforest) and areas of exceptional natural beauty and aesthetic importance (temperate rainforests, tall eucalypt forest, wild coastline and vast treeless coastal plain).

It is reasonable to conclude as a preliminary finding that the lands known as the Tarkine National Park proposal and AHC assessment area, community understanding of 'The Tarkine' meets World Heritage Criterion (vii).

NOTE: If the Tarkine is considered as an addition to the Tasmanian Wilderness World Heritage Area, it is sufficiently distinctly different to that area that it would greatly complement that area and make a major contribution to the integrity of the existing TWWHA in respect of Criterion (vii).

by **Nic McCaffrey**

> ... the combination of a highly jointed and dissected granite landscape draped with a highly variable mosaic of moorland and low scrub in the Meredith Range is an extraordinary natural landscape and geomorphic feature.

World Heritage Criterion (viii)

> … be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

Assessing the natural heritage values of the Tarkine needs to be considered both as a stand-alone assessment area and in the context of the adjacent Tasmanian Wilderness World Heritage Area. A useful starting point is to directly compare with the documented 'inscribed values' ascribed to Criterion (viii):

Criterion
(VIII) Outstanding examples of stages of earth's history

The Tasmanian Wilderness is an outstanding example representing major stages of the earth's evolutionary history. The World Heritage values include:
geological, geomorphological and physiographic features, including:

- rock formations including Precambrian rocks and Cambrian rocks;
- Late Cambrian to Early Ordovician sequences of the Denison Range;
- fossiliferous Ordovician limestone;
- Permian-Triassic sediments and associated Jurassic dolerite intrusions;
- Darwin Crater and Lake Edgar fault;
- karst systems including glacio-karstic features;
- karst geomorphology and karst hydrology;
- glaciation, including glacial deposits of the Late Cainozoic, Permo-Carboniferous and Precambrian;
- extraglacial areas (eg solifluction sheets, block streams, rock glaciers, landslip deposits);
- periglaciation (e.g. Mt Rufus, Frenchman's Cap);
- soils (e.g. peatlands); and
- undisturbed river systems which show particular geomorphological processes;
- relict biota which show links to ancient Gondwanan biota including:
- endemic conifers (including the King Billy pine Athrotaxis selaginoides, the Huon pine Lagarostrobos franklinii and the genera Diselma, Microcachrys, Microstrobos);
- plant species in the families Cunoniaceae, Escalloniaceae and Winteraceae;
- the plant genera Bellendena, Agastachys and Cenarrhenes in the Proteaceae;
- other plant genera with Gondwanan links (e.g. Eucryphia, Orites, Lomatia and Nothofagus);
- monotremes (e.g. platypus Ornithorhynchus anatinus, short beaked echidna Tachyglossus aculeatus);
- dasyurid species;
- parrots (e.g. orange-bellied parrot and the ground parrot);
- indigenous families of frogs with Gondwanan origins (e.g. Tasmanian froglet Ranidella tasmaniensis, brown froglet Ranidella signifera, Tasmanian tree frog Litoria burrowsi, brown tree frog Litoria ewingi);
- invertebrate species in the genera Euperipatoides and Ooperipatellus;
- the Tasmanian cave spider (Hickmania troglodytes);
- aquatic insect groups with close affinities to groups found in South America, New Zealand and Southern Africa (e.g. dragonflies, chironomid midges, stoneflies, mayflies and caddisflies);
- crustaceans (e.g. Anaspidacea, Parastacidae, Phreatoicidae);
- primitive taxa showing links to fauna more ancient than Gondwana (e.g. Anaspids, Trogloneta (a mysmenid spider), species of alpine moths in the subfamily Archiearinae, species in the genus Sabatinca of the primitive lepidopteran sub-order Zeugloptera).

The Tarkine undoubtedly shares many of the attributes of the Tasmanian Wilderness World Heritage Area although some special values are absent for example Darwin Crater, the extensive well-developed karst* and all the intrusive dolerite and associated landforms and features. The Tarkine shares many of the biological features that are evidence 'representing major stages of earth's history, including the record of life …'.

(*While there are reasonably extensive mapped areas of karst in the Tarkine, these have been little explored so it is difficult to directly compare its potential for important karst and caves with the much better-known karst and caves of the TWWHA, especially of the Mole Creek karst.)

At the geological level, Tarkine shares with the TWWHA an extraordinary array of rocks of many ages, including from the oldest era, the Pre-Cambrian.

Assessment

NOTE: Much of the material in this section is directly quoted from the document *A proposal for a Tarkine National Park* (Pullinger 2004). This has proved a convenient and reasonably reliable source of information for a preliminary assessment of World and National Heritage significance. A sample of data on biodiversity contained in the report was subjected to verification and where necessary, the corrected result adopted.

> The geology of the NW (north-west) is diverse and most rock types in Tasmania are represented in the region. The dominant feature of the region's geology is the north-east trending Arthur Lineament. This lineament is host to several currently-mined ore deposits and is considered by some to be a highly prospective region for economic mineralisation. Exploration interests in the region are in magnetite, magnesite, Cu-Au, silica flour and potential base metals.
>
> In places, the ultramafic-magnetite bodies have been altered to magnesite and this has undergone significant dissolution to produce magnesite karst systems. The distribution and extent of the magnesite karst is poorly defined and in need of attention but initial evidence points to the presence of sinkholes deeper than 70 metres, and this suggests that the karst networks are extensive. Globally, magnesite karst is very rarely reported and

these North-West sites satisfy the National Estate criteria for significant geological, geomorphological and soil sites. (Pullinger 2004)

It is apparent that the geology of parts of the Tarkine is well studied, partly because of the commercial interest in mineralisation prospects. On the other hand it is also apparent that some geological formations have not attracted the same level of exploration and as a result are only poorly known.

The intensive geological investigation driven by commercial interest along the Arthur lineament in particular means that the Tarkine has yielded much more evidence of the geological dynamics of the Tasmanian corner of the Australian tectonic plate than has the TWWHA which has mostly not been the subject of such intense research. It may not be a case of one area is more important than the other but rather that the Tarkine region has yielded more direct evidence of ' … representing major stages of earth's history, ... significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features'. The geological evidence in the Tarkine is not a substitute for that in the TWWHA but rather is complementary and contributes to the overall evidence of earth's history as revealed by the geology of the whole of western Tasmania.

Other features of geoconservation significance

Magnesite karst

These are present as well-developed karst systems in an unusual magnesium carbonate substrate and are globally unusual (Sharples 1992b; Sharples 1997; Houshold et al. 1999). The magnesite karst systems of the Arthur Lineament exhibit well-developed relict karst landforms of Tertiary age, including caves and pinnacle karst at Lyons River and the Arthur River–Victory Springs area, and active hydrothermal karst hydrology including warm springs. (Pullinger 2004)

Lyons River

Magnesite karst features in this area include well-developed Tertiary-age relict karst landforms such as pinnacles and caves, and an extensive hydrothermal karst hydrological system including a major warm spring in pristine condition (Houshold et al. 1999). Part of the magnesite body is covered by a flow of basalt over 40 metres thick in some areas. Present day vegetation along Lyons River is predominantly callidendrous rainforest with a rainforest/eucalypt forest mosaic on the Northern side of the river Northwards along Prospect Ridge to the Keith River. This mostly undisturbed magnesite karst area is a high priority for protection of its karst values, since no magnesite karst is currently represented within any Tasmanian conservation reserve orthe TWWHA. (Pullinger 2004)

Keith/Arthur Rivers

Karst landforms here include warm springs developed in magnesite carbonate rock, and include at least one deep in-filled sinkhole.' (Lake Chisholm)

Main Rivulet–Bowry Creek

Karst landforms here include a number of small, undecorated caves and several castle-like outcrops with impressive undercut bases (swamp notches). The latter feature may also be representative at an international level, given that karstic landforms in magnesite are **globally rare and no other significant systems are known.** The magnesite itself is an unusual rock type, the occurrence here most commonly comprising a fine-grained equigranular marble, which probably formed by metasomatism of original dolomite (Sharples 1997). Cave sediments and pollen records provide palynological evidence of past climates and vegetation distribution. Karst landforms vary from pinnacles to overhangs, caves and underground cavities. (Pullinger 2004)

Palaecological and quaternary values

> Dendrochonological sequences of importance in determining climate trends from living and buried conifers, *Lagarostrobos franklinii* (Huon pine) and *Phyllocladus asplenifolius* (celery-top pine) (Hill 1995).
>
> The sub-fossil logs of coniferous trees, in particular the Huon pine, buried in the Stanley River have proven to be of global scientific interest for dendrochronology and therefore of interest in the study of climate change, particularly post Pleistocene. High-precision carbon 14 analysis, 'covering an age range from 10,350 to 10,760 14C years BP, has been linked to the European absolute tree-ring and floating Late Glacial Pine chronologies, bridging the current gap in the European tree-ring chronologies during the early YD (Young Dryas) period and making a continuous and reliable atmospheric 14C record for the past 14,000 cal BP.' (Hua, Barbetti, Fink et al. 2008).

The Stanley River sub-fossils are unlikely to be the only such material in the Tarkine, which because of its largely undisturbed condition, is conducive to survival of other such material with the potential of global significance.

The buried sub-fossil material in the Stanley River is demonstrably a scientific resource of global scientific importance.

NOTE: The precise location and the likely extent of remaining buried material needs to be verified.

> The Little Rapid River (in Tarkine), Cethana, Lea River and Monpeelyata sites provide a record of most of Australia's late Eocene—early Miocene macrofossil evidence (Hill 1995). The quality of fossil preservation at these sites and their uniqueness in the Southern hemisphere represent a scientific resource of global significance (Hill 1995). (Pullinger 2004)

Soils

> The kraznozem soils on Tertiary basalt plateau in the Arthur Lineament region of the area are of particular interest, since they represent the largest area of basalt soils in Tasmania which support undisturbed natural vegetation communities (Sharples 1992b). (Pullinger 2004)

Other geoconservation sites

- Internationally significant sites (Tasmanian Geoconservation Database—'TGD')
  - Little Rapid River early Oligocene plant fossil site
  - Hellyer River insect fossil locality
  - Balfour–String of Beads fossil locality
  - Western Tasmania blanket bogs (widespread in TWWHA and Tarkine)
- Nationally significant sites (TGD)
  - Trowutta–Sumac Karst Systems
  - Lyons River Magnesite Karst
  - Keith–Arthur Rivers Magnesite Karst
  - Arthur Lineament
  - Main Rivulet–Bowry Creek Magnesite Karst

(all above date to 2009 State of Environment Report)

Geomorphological processes

> The Tarkine ' … is a large, relatively undisturbed area with topographic and catchment integrity where natural processes continue largely unmodified by human intervention. Extensive areas in which undisturbed ongoing geomorphic and soil processes continue (e.g. blanket bog peat-lands, fluvial, karst and coastal processes), are a key geoconservation value' (Sharples 2004).

Assessment finding

Based on the more readily available information, it is apparent that the Tarkine as an assessment region, has a suite of geological and geomorphological features and processes of geoconservation significance, a selection of which are of national significance and some arguably of global significance.

Commercial interest has driven intense geological study in the region, select parts in particular, such as along the Arthur lineament, providing a large volume of knowledge and understanding of the geological evolution of the region since the Pre-Cambrian and, by extension, of the:

> … outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

Not separately assessed is the substantial representation of plant and animal species that are evidence of the link to Gondwana. Many of these are the same as found in TWWHA and which are cited against Criterion (viii) in the inscribed values for that TWWHA.

It is worth noting however, that recent molecular analysis strengthens the importance of Tasmania's freshwater crayfish as an outstanding example of evolution in a Gondwanan group (Richardson et al. 2006). And that, the Tarkine supports healthy populations of a suite of Gondwanan vertebrate and invertebrate fauna and an apparently healthy population of the now endangered Tasmanian Devil, the world's top order carnivorous marsupial.

Provisional assessment based on the data assessed, it is likely that the Tarkine contains values that can qualify against World Heritage Criterion (viii) namely:

> … be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

Qualification against Criterion (viii) requires further analysis.

National Heritage

Although not specifically assessed, based on the data used for assessing World Heritage significance, the Tarkine can be expected also readily meet relevant National Heritage criteria (a) and (c).

World Heritage Criterion (ix)

> … be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals;

Criterion (IX) Outstanding examples of ongoing evolution

The Tasmanian Wilderness has outstanding examples representing significant ongoing geological processes and ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water and coastal ecosystems and communities, including:

- sites where processes of geomorphological and hydrological evolution are continuing in an uninterrupted natural condition (including karst formation, periglaciation which is continuing on some higher summits (e.g. on the Boomerang, Mount La Perouse, Mount Rufus, Frenchmans Cap), fluvial deposition, evolution of spectacular gorges, marine and aeolian deposition and erosion, and development of peat soils and blanket bogs);
- ecosystems which are relatively free of introduced plant and animal species;
- coastal plant communities free of exotic sand binding grasses which show natural processes of dune formation and erosion;
- undisturbed catchments, lakes and streams;
- alpine ecosystems with high levels of endemism;
- the unusual 'cushion plants' (bolster heaths) of the alpine ecosystems;
- ecological transitions from moorland to rainforest;
- pristine tall eucalypt forests;
- examples of active speciation in the genus Eucalyptus, including sites of:
- hybridisation and introgression;
- clinal variation (e.g. E. subcrenulata);
- habitat selection (e.g. E. gunnii); and
- transition zones which include genetic exchanges between Eucalyptus species;
- plant groups in which speciation is active (e.g. Gonocarpus, Ranunculus and Plantago);
- conifers of extreme longevity (including Huon pine, Pencil pine and King Billy pine);
- endemic members of large Australian plant families (e.g. heaths such as Richea pandanifolia, Richea scoparia, Dracophyllum minimum and prionotes cerinthoides);
- endemic members of invertebrate groups;
- invertebrate species in isolated environments, especially mountain peaks, offshore islands and caves with high levels of genetic and phenotypic variation;
- invertebrates of unusually large size (e.g. the giant pandini moth - Proditrix sp, several species of Neanuridae, the brightly coloured stonefly - Eusthenia spectabilis);
- invertebrate groups which show extraordinary diversity (e.g. land flatworms, large amphipods, peripatus, stag beetles, stoneflies);
- skinks in the genus Leiolopisma which demonstrate adaptive radiation in alpine heaths and boulder fields on mountain ranges;
- examples of evolution in mainland mammals (e.g. sub-species of Bennett's wallaby - Macropus rufogriseus, swamp antechinus - Antechinus minimus, southern brown bandicoot - Isodon obesulus, common wombat - Vombatus ursinus, common ringtail possum - Trichosurus vulpecula, eastern pygmy possum - Cercartetus nanus, the swamp rat - Rattus lutreolus) in many birds (e.g. the azure kingfisher - Alcedo azurea) and in island faunas;
- animal and bird species whose habitat elsewhere is under threat (e.g. the spotted-tail quoll - Dasyurus maculatus, swamp antechinus - Antechinus minimus, broad-toothed rat - Mastacomys fuscus and the ground parrot - Pezoporus wallicus); and
- the diversity of plant and animal species.

The Tasmanian Wilderness World Heritage Area met World Heritage Criterion (ix) so it is useful to compare the 'inscribed values' of the TWWHA with the Tarkine.

Comparison with TWWHA

The reality is that apart from some important differences in respect of the high mountain–alpine geomorphic and ecological processes of the TWWHA, the Tarkine shares many of the attributes of the area, including 'outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals'.

It is therefore reasonable to conclude that many, but not all, of the values claimed for the TWWHA in respect of Criterion (ix) (see 'inscribed values' above) apply equally to the Tarkine. The level of significance may differ in some cases such as for tall eucalypt forests and native conifers, which are significantly better represented in the TWWHA.

Unlike much of the TWWHA, the Tarkine landscape and biota has evolved largely free of the direct impacts of glaciation and lacks the major mountainous landscapes of the TWWHA.

Like the Tasmanian Wilderness World Heritage Area, the Tarkine retains areas of intact natural vegetation, illustrated by the qualification of at least parts of the area as high quality wilderness under the National Wilderness Inventory. Parts of the areas mapped as wilderness in the past have now had some of their wilderness values and extent eroded by a combination of new roads, logging and some mining. Logging and associated roading in particular has made in-roads into a previously intact natural landscape. Removing some of this disturbance could help to restore wilderness values.

Notwithstanding the incremental development that has been taking place, much of the Tarkine remains intact and reasonably well-buffered from mainstream development pressures. Some important areas of intact catchment remain. Overall, much of the Tarkine remains largely undisturbed by the activities of modern technological man. Consequently it is conducive to 'significant ongoing ecological and biological processes in the evolution and

development of terrestrial, fresh water, coastal … ecosystems and communities of plants and animals'.

Although the overall habitat of the Tarkine is represented by a moderately complex mosaic of geological, topographic and vegetation classes, two habitat types in particular are very extensive, the largely treeless moorland and the rainforest. Both are of sufficient extent and diversity to be conducive to 'significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal … ecosystems and communities of plants and animals'.

The cool temperate rainforest is of such substantial extent (the second largest area in the world) that much of it represents what appears to be a very stable ecosystem where fire plays no part in the ongoing natural processes. This is in contrast to the TWWHA where much of the rainforest is much less continuous and more likely to be conducive to periodic incursion of fire, especially in the mostly steeper terrain of that region and via numerous moorland fire paths.

The rainforest occurs both as larger tracts of pure rainforest and in places as narrow galleries dictated by topographic and the dynamics of fire. Moorland, which is conducive to fire, tends to occur as larger more or less continuous tracts extending inland from the coast.

From maps and imagery it is apparent that the predominant fire pathways are from the coastal area, running inland along well-defined pathways revealed by the pattern of moorland. The extent to which this pattern was created or maintained by Aboriginal burning is unclear but that they played a role is certain.

The isolated stands of eucalypt forest have survived frequent burning of the surrounding moorland in 'fire shadows' afforded by deeply incised streams down the gently sloping coastal plain. Fires burning inland from the coast would tend to be deflected around the eucalypt forest as a result of protection provided by the deeply incised gullies on either side.

Similarly, further inland, rainforest pockets survive in topographically maintained 'fire shadows'. The extent to which this pattern was created or maintained by Aboriginal burning is unclear but note that the peninsula on left is Sandy Cape, site of a major concentration of Aboriginal sites. Note also the prevailing wind direction revealed in the mobile coastal sand dunes.

Sandy Cape, site of a major concentration of Aboriginal sites, suggests a continuous occupation of this section of the coast during the Holocene (see image above). In some places there is close juxtaposition of fire-maintained moorland and fire-sensitive rainforest. In others there may be a number of transitional plant communities which exist as a result of a lower frequency fire regime and may include eucalypt forests, such as, in better environmental conditions, tall eucalypt forests, albeit of limited extent. Some examples of tall eucalypt forest coexist with well-developed rainforest understorey, indicating a very infrequent incursion of fire. Although there are a few anomalous small stands of eucalypt forest on the coastal plain, most, especially tall eucalypt forest (>40 metres) occurs inland (higher rainfall/lower fire frequency). The latter occurs as narrow transition forests adjoining the rainforest.

Assessment

The Tarkine, on preliminary assessment, is likely to readily qualify against Criterion (ix) so a comprehensive analysis has not been presented here. Key attributes include:

- Tarkine is a large tract of relatively undisturbed land where natural ecological and evolutionary processes are ongoing (indicators: wilderness mapping, wild river mapping)
- the products of those ongoing processes are evident in the maintenance of extensive temperate rainforest and associated Gondwanan flora and in the form of more recently evolved local endemic taxa, including species that are confined to the Tarkine
- ecosystems which are relatively free of introduced plant and animal species
- the most extensive and least disturbed tract of cool temperate rainforest ecosystem in Australia and second largest in the world
- coastal plant communities free of exotic sand binding grasses which show natural processes of dune formation and erosion
- undisturbed catchments and streams.

Findings

The Tarkine as a whole is considered, on preliminary assessment, likely to meet Criterion (ix) in its own right.

However it needs to be recognised that the attributes and values of the Tarkine and the TWWHA overlap significantly, particularly in respect of Criterion (ix). Each has unique values but many other values are complementary.

At the very least, if the Tarkine area were added to the TWWHA, it would make a very significant contribution to the values and integrity of the TWWHA.

World Heritage Criterion (x)

> … contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.

The Tasmanian Wilderness World Heritage Area met World Heritage Criterion (x) so it is useful to compare the 'inscribed values' of the TWWHA with the Tarkine:

Criterion (X) Important habitats for conservation of biological diversity

The ecosystems of the Tasmanian Wilderness contain important and significant natural habitats where threatened species of animals and plants of outstanding universal value from the point of view of science and conservation still survive, including:

- habitats important for endemic plant and animal taxa and taxa of conservation significance, including:
- rainforest communities;
- alpine communities;
- moorlands (e.g. in the far south-west);
- riparian and lacustrine communities (including meromictic lakes).
- habitats which are relatively undisturbed and of sufficient size to enable survival of taxa of conservation significance including endemic taxa;
- plant species of conservation significance
- animal species of conservation significance, such as:
- spotted-tail quoll *Dasyurus maculatus*;
- swamp antechinus *Antechinus minimus*
- broad-toothed rat *Mastacomys fuscus*
- ground parrot *Pezoporus wallicus*
- orange-bellied parrot *Neophema chrysogaster*
- Lake Pedder galaxias *Galaxias pedderensis*

Comparison with TWWHA

At the habitat level, the most important differences are that the Tarkine, apart from a thin belt of sub-alpine rainforest along the eastern flank of the Norfolk range and in parts of the Meredith Range, does not include any significant alpine ecosystems and the riparian and lacustrine communities, although represented, lack the meromictic lakes and the numerous glacial lakes of the existing TWWHA. However, the rainforest and buttongrass moorland communities are particularly well represented in the Tarkine.

Of the species cited in the 'inscribed values' for the TWWHA, Lake Pedder galaxias *Galaxias pedderensis* Pedra Branka skink *Niveoscincus palfreymani* are absent from the Tarkine. These absences are more than offset by species found in the Tarkine and not found in the TWWHA e.g. The EPBC listed giant freshwater crayfish *Astacopsis gouldi* is one example, being confined to northern Tasmania. The minimally disturbed and less accessible rainforest streams of the Tarkine are critical habitat of the species that in many areas has traditionally been exploited.

In terms of potential to meet Criterion (x), on first blush, the Tarkine appears quite comparable to the TWWHA, particularly in terms of species diversity and habitat importance.

Preliminary heritage assessment

By far the two most extensive habitats/communities in the Tarkine are the rainforest and moorland communities and so are of potential high conservation importance.

The Tarkine comprises 'habitats which are relatively undisturbed and of sufficient size to enable survival of taxa of conservation significance including endemic taxa; plant species of conservation significance animal species of conservation significance …' (From 'inscribed values' of TWWHA)

Rainforest

The highlight of the Tarkine is the extensive tracts of intact temperate rainforest including a single aggregate stand of temperate rainforest greater in extent than in the TWWHA. It is the largest single aggregate of temperate rainforest in Australia. This is the most important area in Australia for ensuring ongoing conservation of cool temperate rainforest and its associated ecological and evolutionary processes because of its:

- extent
- habitat diversity
- condition
- level of catchment protection
- buffering from fire.

More than one million hectares of buttongrass moorland are in western Tasmania, largely shared between the TWWHA and the Tarkine.

> The taxon that most characterises buttongrass moorland is the tussock sedge *Gymnoschoenus sphaerocephalus* (buttongrass). The genus *Gymnoschoenus* is endemic to Australia and has only two species, *Gymnoschoenus sphaerocephalus* and *G. anceps*. The first species has its greatest abundance in Tasmania ... The extensive dominance by *Gymnoschoenus* of Tasmania's sedgelands and wet heaths has led to this ecosystem being dubbed 'buttongrass moorlands'. —Balmer 2008

Not withstanding that the 'buttongrass moorlands' are visually dominated by the one species of buttongrass, this ecosystem supports a diversity of smaller plant species and soil fauna. Although it is very extensive in Tasmania, including in the Tarkine, the community is very sensitive to fire regime so that extensive areas are essential for conservation of the biodiversity.

In the Tarkine, the buttongrass moorlands often immediately abut eucalypt vegetation and on occasions rainforests. As vegetation community capable of conducting wildfire, albeit low intensity, it can deliver fire to other more flammable or fire sensitive vegetation communities, hence the concern about how fire in the buttongrass in western Tasmania is managed.

The current pattern of buttongrass juxtaposed with rainforest and wet eucalypt in the Tarkine raises some concerns about the final disposition of any protected area boundaries. In particular there is a narrow corridor of wet eucalypt and rainforest separating two great tracts of moorland in the core of the Tarkine. Logging of this 'fire barrier' has already been occurring and may contribute to loss of this natural barrier and lead to the merging of the two moorland systems, at the same time severing the connectivity between the two major tracts of rainforest. Regrettably, the Australian Heritage Council has already removed this potentially vital barrier from the National Heritage assessment area, thereby appearing to foreclose on its protection.

The main threat to the buttongrass is considered to be the soil pathogen *Phytophthora cinnamomi.*

Basalt Plateau–Mt Bertha/Savage River

> This large Tertiary basalt plateau comprises dissected portions of the largest Tertiary lava plain in Tasmania.

> Soils developed on the plateau remain the largest undisturbed area of such soils in Tasmania, and are currently almost entirely unrepresented in the TWWHA, or in other reserves. They support characteristic vegetation communities including large areas of rainforest, and are significant as an undisturbed soil/vegetation association related directly to basalt bedrock (rather than for strictly geological or geomorphic values of the basalt). Soil type sites (not yet identified) have potential scientific value as baseline sites (Sharples 1992b). (Pullinger 2004)

Basalt soils are relatively restricted in distribution in Australia and most have been extensively developed and modified by agriculture, especially in higher rainfall regions, such that opportunities to protect such soils and associated, often distinctive, vegetation are relatively rare. Almost as an historical accident, the basalt plateau in the Tarkine escaped agricultural development so is now an area of outstanding conservation value at least of national significance.

The Tarkine includes a number of other less extensive but nevertheless important communities of conservation importance including tall eucalypt forest and dry sclerophyll eucalypt communities.

Plants

A number of individual plant species and communities deserve special mention in any assessment of heritage significance.

- 'Rare and vulnerable endemic heath, *Epacris curtisiae*, which is concentrated in the Nelson Bay River area and is not known within any secure reserves.' TNC National Park Proposal. A local endemic and listed in Tasmania as 'Rare'
- 'Representative sample of the '*Poa labillardieri –Trachymene humilis* tussock grassland' community, located within the Netherby plains region (Kirkpatrick et al. 1988a). This community is poorly reserved (Kirkpatrick et al. 1995).' (TNC National Park Proposal).
- Huon pine (*Lagarostrobus franklinii*) The Tarkine includes an outlier occurrence of this iconic long-lived coniferous tree species, here at its northern limit. See also sub-fossils of the species in the Stanley River.

Animal species

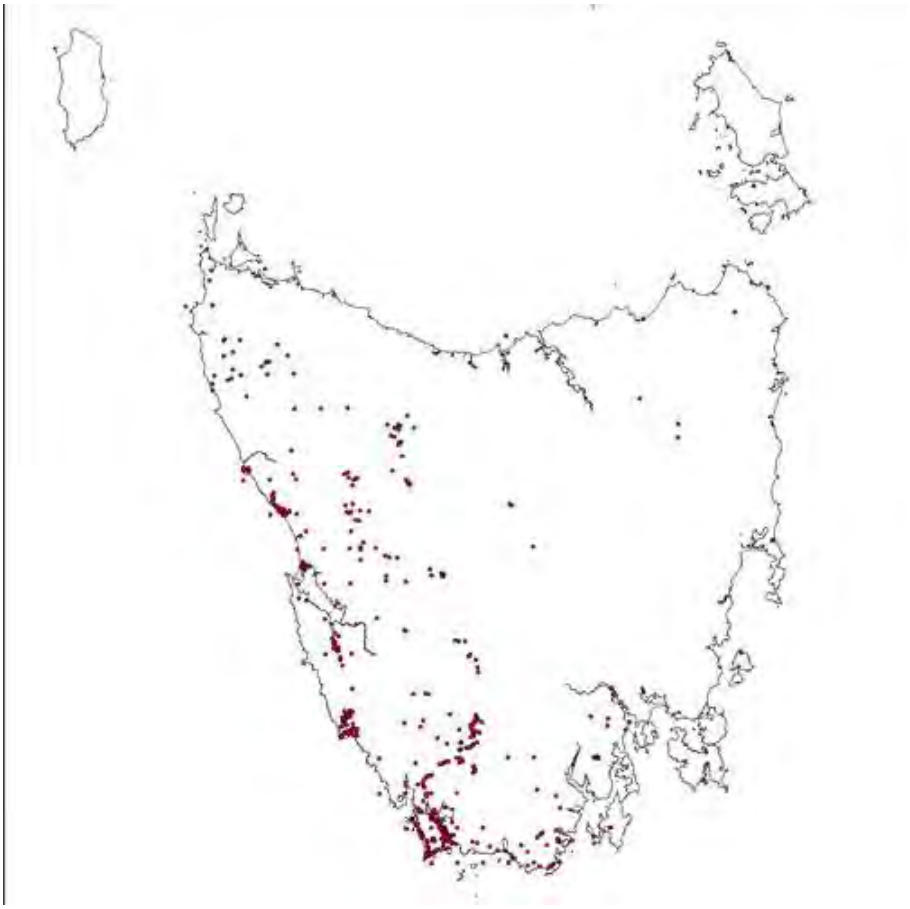
Important species of animals of conservation significance include:

The Tasmanian whitebait and Tasmanian smelt *(Retropinna tasmanica)* are endemic. The Australian grayling is listed as threatened under state and Commonwealth threatened-species legislation. These uncommon species occur in significant numbers in the Pieman River (Slater 1992).' (Pullinger 2004).

- Two threatened frog species, the green and golden frog (*Litoria raniformis*) and striped marsh frog (*Limnodynastes peronei*), are rare and have restricted distributions in Tasmania. The green and golden frog has been listed as vulnerable and its populations are declining in Tasmania; its range in Northern Tasmania has contracted (Bryant & Jackson 1999). The striped marsh frog can be found in the coastal North East, the far North West and King Island. Both these species occur in coastal lagoons, marshes and swamps of the Arthur–Pieman plains. (Pullinger 2004).
- Eleven of Tasmania's twelve endemic birds live in the Tarkine (national park proposal).
- Two migratory bird species that breed only in Tasmania, the swift parrot (*Lathamus discolor*) and the orange-bellied parrot (*Neophema chrysogaster*), forage in the Tarkine. The latter, a critically endangered species, breeds in South West Tasmania but migrates along the West coast and forages on coastal plants, especially samphire. Consequently the Tarkine's coastal vegetation is extremely important habitat. The endangered swift parrot

breeds predominantly in South East Tasmania and feeds on the nectar from the Tasmanian blue gum (*Eucalyptus globulus-globulus*). In the Tarkine, the swift parrot forages on these trees during the post-breeding dispersal and migration season.

- Records of orange-bellied parrot (*Neophema chrysogaster*) in Tasmania. The critically endangered species breeds in the TWWHA in the far south west and seasonally migrates up the west coast, using coastal habitat including on the Tarkine coast.
- A third parrot, the nationally vulnerable ground parrot, represented as a Tasmanian endemic sub-species *Pezoporus wallicus leachi*, is concentrated in the buttongrass moorlands of western Tasmania, occupying moorland shared between the TWWHA and the Tarkine. The moorlands of western Tasmania represent some of the most important habitat of the species, being the most extensive relatively secure habitat of the species nationally.



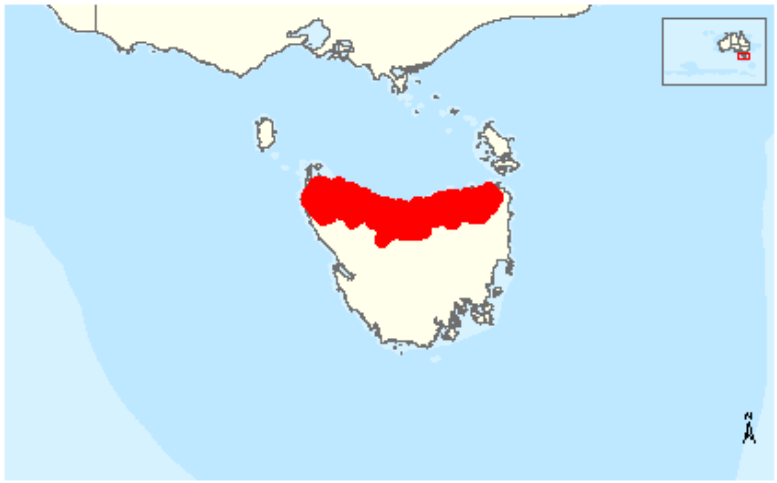
- Eastern ground parrot, Tasmanian endemic sub-species *Pezoporus wallicus leachi* distribution in Tasmania is concentrated in the west, shared between the TWWHA and the Tarkine.
- Tasmania's largest diurnal raptors are the Tasmanian subspecies of the wedge-tailed eagle (*Aquila audax fleayi*) (listed as endangered under EPBC) and the white-bellied sea-eagle (*Heliaeetus leucogaster*) (listed as migratory under CAMBA). The largest nocturnal predator is the masked owl (*Tyto novaehollandiae castanops*). The Tasmania population is listed under the EPBC as 'vulnerable'. The Tarkine provides significant habitat for some fifteen to twenty pairs of the wedge-tailed eagle and six pairs of white-bellied sea-eagle and the grey goshawk as well as habitat for the masked owl (Slater 1992, Pullinger 2004 [errors removed and verified] and EPBC documents).
- Tasmania's three largest extant mammalian predators, in order of decreasing size, are the Tasmanian devil (*Sarcophilus harrisii*), the spotted-tailed quoll *(Dasyurus maculatus maculatus),* and the eastern quoll *(Dasyurus viverrinus).* The presence of these top predators in the Tarkine is a sign of a healthy ecosystem. Currently there is an epidemic of viral cancer in populations of Tasmanian devil particularly in eastern Tasmania. Populations of the Tasmanian devil in the North West appear to be healthy and the Tarkine may be a significant refuge. Listed nationally as vulnerable, the spotted-tailed quoll *(Dasyurus maculatus maculatus)* requires extensive areas of relatively undisturbed wet forest and suitable prey for its survival. Tasmania is the global stronghold of the spotted-tailed quoll and the wet forests of the Arthur River catchment are core habitat (Jones & Rose 1996). The smaller eastern quoll *(Dasyurus viverrinus)* preys on insects

and is much scarcer in the Tarkine than in the woodlands and mountains of eastern and central Tasmania. (Pullinger 2004). [Not verified yet.])

- The Tarkine is one of the highest centres of invertebrate diversity out of the 11 sites sampled for the Tasmanian component of the National Rainforest Conservation Program (AHC, 1989). The Savage River rainforest in the Tarkine is also the only known location of 15 invertebrate species:
  - two species of Pauropoda (*Allopauropus convexus* mss name, *Stylopauropoides erectus* mss name)
  - three species of Symphyla (Hanseniella pyrethrata, Hanseniella, Hanseniella pluvialis)
  - two species of Diplopoda
  - three species of Opiliones (*Calliuncus vulsus*, *Mestonia* sp. N. and *Numioides* sp. N.)
  - two species of Collembola (*Phradmon tasmaniae*, *Paronellides* sp. Nov) (AHC, 1989).

Along with the Pedder River Lissodesmus millipede (Mesibov 1992) this brings the total number of invertebrate species known from nowhere else but the Tarkine to at least 16.

- The Tarkine is particularly important for freshwater crustaceans, which are of global significance (PWS, 2001).
- Among the crustaceans, there are at least 17 species of Amphipod (landhopper), making the Tarkine one of the richest centres of diversity for this invertebrate group in the world (PWS, 2001). National Park proposal
- One of the largest freshwater invertebrates in the world, *Astacopsis gouldi,* inhabits rivers in the north of Tasmania and the Arthur River catchment (PWS 2001, Lynch & Blühdorn 1997). (Pullinger 2004) Verified.



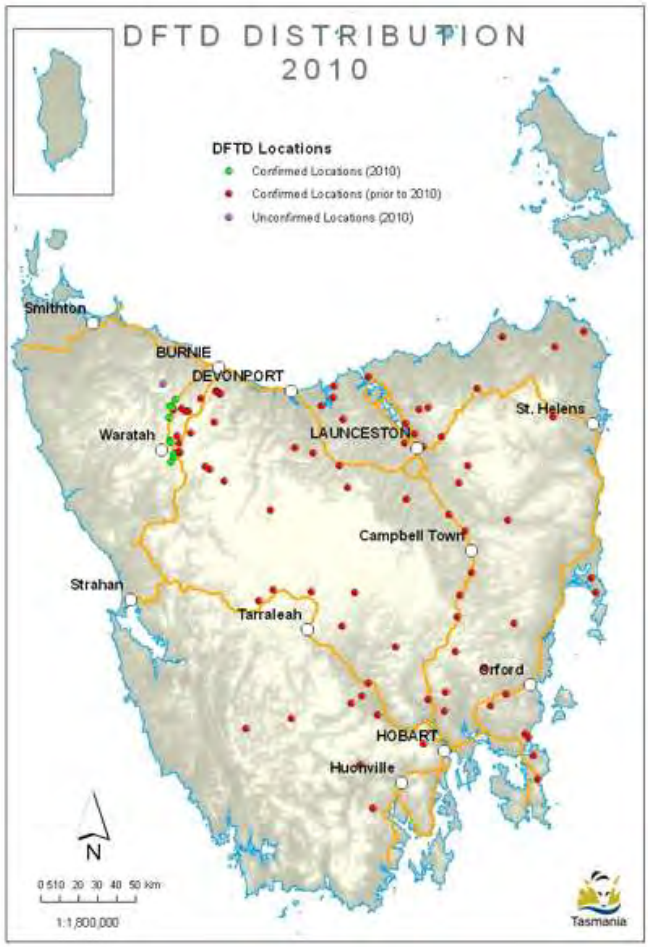
Indicative distribution of giant freshwater crayfish ***Astacopsis gouldi***

Walsh (2003) recommends that important habitat include the Hebe River (Inglis catchment), Frankland, Rapid, Keith and Lyons Rivers (all Arthur River catchments), Duck River catchment above Trowutta Road, Black River catchment, and the Dip Range streams for higher protection due to good quality habitat with good lobster populations. (Recovery Plan).

Tasmanian devil (*Sarcophilus harrisii*) IUCN Red list 'endangered'

This species is now classified as endangered due to the ravages of a fatal contagious cancer. Populations across central, northern and eastern Tasmania have dropped dramatically in the past few years. Some disease resistance has been found in a population at West Pencil Pine near the eastern extremity of the Tarkine National Park proposal.

As at August 2011, '*no confirmed cases of DFTD have been recorded west of the Murchison Hwy*'; that is, there have been no reports of the disease in the main core area of the Tarkine. It appears to remain disease free. If the Tarkine population of devil remains disease free it may become a critically important habitat for this globally endangered species.



Records of DFTD disease in the Tasmanian Devil population in 2010. Note that no occurrences in the Tarkine west of the Murchison Highway

Geoconservation

Sharples, C A Reconnaissance of Landforms and Geological Sites of Geoconservation Significance in the Circular Head Forest District, Forestry Tasmania (1996) [Contract Report]. Not accessed.

Contributory World Heritage values

- Important habitat of rare local endemic crustacean *Astacopsis gouldi,* the world's largest freshwater crayfish.
- Largest example of Gondwanan cool temperate rainforest in outstanding natural condition.
- A significant habitat for in-situ conservation of *E.obliqua* tall eucalypt forest ecosystem.
- Outstanding example of interaction between cool temperate rainforest and moorland/heath—both well represented in complex mosaic.
- Extensive intact areas of native forest on Tertiary basalt is now rare and adds an important new dimension to the ecological diversity of the TWWHA. For example *Eucalyptus brookeriana* tall eucalypt forest.

Summary of Tarkine assessed against all World Heritage criteria

Cultural

Criterion (iii)

> … to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

Preliminary assessment indicates high probability of qualifying against Criterion (iii)

Criterion (v)

> … to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

Preliminary assessment indicates high probability of qualifying against Criterion (v)

Rather than being seen simply as a collection of identified individual archaeological features, the Tarkine is a rare Aboriginal cultural landscape. It is has undergone only limited post-contact disturbance and has a range of evidence of past Aboriginal use of the landscape, including but not limited to individual sites. Given the obvious role that fire has played in creating the vegetation mosaic across the region, there can be no doubt that Aboriginal use of fire played a major role in creating this mosaic, a 'cultural landscape'. Regrettably, the precise nature of that role can now only be speculated upon but given the minimal post-Aboriginal disturbance, opportunities may still exist for researching that aspect.

There is no doubt that the Tarkine is a regional landscape which has extensive evidence of past Aboriginal occupation and activity. It justifies the statement describing the region as follows.

Natural

The Tarkine region of Tasmania contains some outstanding natural heritage attributes, some of which are clearly of World Heritage significance.

The most obvious natural heritage attributes include:

- largest tract of intact cool temperate rainforest in Australia (biodiversity, aesthetics)
- extensive high quality wilderness (aesthetics, ongoing evolution)
- expansive tracts of temperate moorland and heathland (outstanding natural beauty and important habitat for species conservation)

- habitat important for '… in-situ conservation of biological diversity
- geological and geomorphological evidence of earth's history (fossils, geological formations, landscape evolutionary processes).

The indicative results provide sufficient evidence to indicate that the Tarkine in its present form could qualify as a stand-alone World Heritage Area. The dissimilarities of the Tarkine and the Tasmanian Wilderness World Heritage Area could be interpreted either as a case for the Tarkine being separately considered for World Heritage or as a case of complementarity which binds the two great natural areas into a single entity with a common future. Some of the key attributes of the Tarkine would, if added to the TWWHA, greatly enhance the natural integrity of the TWWHA.

The most important contribution that the Tarkine can make to the integrity of the TWWHA is a major enhancement of the integrity of rainforest resources, not just because of the larger tract of rainforest but also because of the additional ecological diversity of the cool temperate rainforest (e.g. rainforest on Tertiary basalt, pristine larger catchments of rainforest etc.).

Conclusion

Preliminary assessment based on accessible data (and subject to appropriate delineation), The Tarkine is considered to qualify against Criteria (vii), (ix) and (x). It does have some valuable contributions to make against Criterion (viii) but these would need to be further evaluated.

Overall conclusions of World Heritage assessment

Based on the documented attributes and values of the Aboriginal cultural heritage in the Tarkine it is apparent that the Tarkine can readily meet World Heritage Criterion (v) and very likely (iii) and (vii).

An important contributor to the value of the cultural heritage is the context of a largely undisturbed if not wilderness landscape, an Indigenous cultural landscape.

Preliminary assessment of accessible data leads to the conclusion that the Tarkine region as defined for this assessment can qualify against World Heritage Criteria for cultural heritage.

Preliminary assessment based on accessible data (and subject to appropriate delineation), The Tarkine is considered to qualify against Criteria (vii), (ix) and (x) for natural heritage**.** It does have some valuable contributions to make against Criterion (viii) but these would need to be further evaluated.

Caveats on assessment

The following caveats apply to the above assessment:

1. The assessment as presented was for World Heritage criteria only; given the findings of this assessment, no assessment was conducted against National Heritage criteria.
2. The assessment is tenure blind.
3. The assessment was conducted with serious time constraints with the result that some data sourcing remains incomplete.
4. Based on the time limitations and constraints on accessing some data, the assessment must be regarded as being provisional only. Notwithstanding, additional data is more likely to reinforce the assessment rather than detract.
5. The assessment was conducted using the proposed Tarkine National Park as a basis but in several instances extended into immediately adjacent lands which might form a natural part of the Tarkine region. For example, Lake Chisholm which is of high heritage

conservation significance, is just outside both the national park proposal and the Australian Heritage Council(AHC) assessment area.

6. Comparative analysis was largely limited to direct comparison with the adjacent Tasmanian Wilderness World Heritage Area. This was considered legitimate given that the TWWHA has been subject to ongoing comparison at the national and global level and provides a useful benchmark for any related values.

7. Any deletion or excision of lands from the assessment area, for any future protected area has the potential to dilute, or even invalidate, the assessment. Potentially important areas of lands already excised from the AHC process could diminish the assessment findings. A map illustrating the boundaries nominated by the author following the assessment is presented below.

Heritage summary—Tarkine Region* *****Approximating the ENGO-proposed Tarkine National Park.*		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
1.1.1. vast expanse of largely treeless coastal plains 1.1.2. long sandy ocean beaches backed by tracts of treeless heath 1.1.3. very extensive tracts of well developed temperate rainforest (the most extensive individual stand(s) in Australia) 'of exceptional natural beauty and aesthetic importance'. 1.1.4. visually outstanding stands of tall eucalypt forest, often intimately associated with rainforest 1.1.5. major tracts of apparently pristine natural landscapes—recognised wilderness qualities 1.1.6. the extraordinary visual impact of the complex granite landscape of the Meredith Range clothed in a mosaic of moorland and scrub.	(vii) ' to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'	While some of these attributes overlap with the values of the Tasmanian Wilderness World Heritage Area, the great expanse of temperate rainforest stands out as being distinctive of the Tarkine and would be the core value for qualifying against Criterion (vii). Note that the context of these rainforests—in a largely wilderness setting surrounded by intact non-rainforest vegetation is important for 'framing' this 'exceptional natural beauty and aesthetic importance' On preliminary assessment, 'The Tarkine'*, the centrepiece of which is the intact expansive temperate rainforest, could qualify against World Heritage Criterion (vii) * Approximating the ENGO-proposed Tarkine National Park. If added to the TWWHA, the various attributes and values presented here against Criterion (vii) would make a very important contribution to the values and hence the integrity of the Tasmanian Wilderness World Heritage Area.

Heritage summary—Tarkine Region* *****Approximating the ENGO-proposed Tarkine National Park.*		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
• Magnesite karst: 'globally unusual', rare in Australia (Lyons and Arthur Rivers) • Karst: well developed relict karst landforms of Tertiary age. One deep flooded sinkhole (Lake Chisholm) • Sub-fossil tree wood: of global palaeoecological importance. (Stanley River) • Fossils: Little Rapid River (et al) Oligocene plant fossil-earliest macrofossil records of the family—a scientific resource of global significance (Hill 1995). Hellyer Gondwanan insect fossil site (oldest in Australia) (Jell 2004) • Kraznozem soils: extensive intact vegetation on basalt lava flows.(rare) • Gondwanan biota, both living and in fossil form, demonstrate multiple links to Gondwana.	**Criterion (viii)**'be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;'	As with the Tasmanian Wilderness World Heritage Area, no one particular feature of the Tarkine represents the core or '...outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features'. Instead, it is the many features combined which provide the evidence of the major stages of earth's history, from the most ancient of rocks, the Pre-Cambrian through to the modern day aeolian coastal sand dunes are all chapters in the story of earth's history. Fossil and sub-fossil material in the Tarkine, from the Carboniferous insect fossils of Hellyer gorge, through the Little Rapid River macro plant fossils, to the sub-fossil Huon pine logs in the Stanley River, the fossil resource of the Tarkine is already outstanding. Provisional assessment of the numerous outstanding geological, geomorphological and Gondwanan linked biological resources of the Tarkine suggests there is a case for qualifying against Criterion (viii) 'be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;' Qualification against Criterion (viii) requires further analysis. If added to the TWWHA, the various attributes and values presented here against Criterion (viii) would make a very important contribution to the values and hence the integrity of the Tasmanian World Heritage Area.

Heritage summary—Tarkine Region* **Approximating the ENGO-proposed Tarkine National Park.*		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
• extensive landscapes—including 'wilderness areas'—in which natural evolutionary processes continue, evidenced by undisturbed tracts of vegetation, pristine catchments, lakes and streams; • extensive landscapes free from introduced plants and animals. • extensive tracts of cool temperate rainforest and buttongrass moorland and blanket bogs conducive to ongoing evolutionary processes. • extensive landscapes, which demonstrate the ongoing interaction of vegetation with natural ongoing processes, in particular fire, creating a vegetation mosaic of communities promoted by frequent fire through the transitional communities of eucalypt forest to highly fire sensitive temperate rainforest. • species with Gondwanan affinities that are of outstanding significance in terms of the evolution of plant life, including Huon pine *Lagarostrobos franklinii*, Beech *Nothofagus cunninghamii*.	Criterion (ix) '...be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals	The Tarkine has outstanding examples representing significant ongoing geological, ecological and biological processes in the evolution and development of terrestrial, fresh water and coastal ecosystems and communities, including: • sites where processes of geomorphological and hydrological evolution are continuing in an uninterrupted natural condition (including karst formation, fluvial deposition, marine and aeolian deposition and erosion, and development of peat soils and blanket bogs); such landscapes are now rare in Australia, indeed through much of the temperate zones of the world • ecosystems that are relatively free of introduced plant and animal species; this compares favourably with the TWWHA but unlike many landscapes in mainland Australia. • ecosystems which (with the notable exception of the recently extinct Tasmanian tiger) retains all of the complement of biodiversity existing at the time of European settlement—a rarity in Australia, indeed many parts of the world. • coastal plant communities largely free of exotic sand binding grasses and shrubs that show natural processes of dune formation and erosion; unlike the sandy coasts of north and east coasts of Tasmania and much of mainland Australia. (Control strategy in place)

Heritage summary—Tarkine Region* **Approximating the ENGO-proposed Tarkine National Park.*		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
• sites where processes of geomorphological and hydrological evolution are continuing in an uninterrupted natural condition (including karst formation, fluvial deposition, coastal aeolian deposition and erosion, and development of peat soils and blanket bogs) • coastal sand environments, including active sand dunes and which are free of introduced sand binding grasses • coastal environments utilised by migratory species of conservation importance including the endangered orange bellied parrot *Neophema chrysogaster*		• undisturbed catchments and streams; ecological transitions from moorland to rainforest and tall eucalypt forests; apart from TWWHA, rare in Tasmania and mainland Australia. • conifers of extreme longevity (Huon pine) including sub-fossil logs dating 10,000+yrs -already proven of global significance. • endemic members of invertebrate groups; invertebrates of unusually large size (e.g. the giant freshwater crayfish *Astacopsis gouldi* animal and bird species whose habitat elsewhere is under threat (e.g. the spotted-tail quoll—*Dasyurus maculatus*, Tasmanian Devil *Sarcophilus harrisii, Mastacomys fuscus* and the ground parrot, *Pezoporus wallicus*);

Heritage summary—Tarkine Region* *****Approximating the ENGO-proposed Tarkine National Park.*		
WORLD HERITAGE		
Attribute	**Relevant criterion**	**Value**
• giant freshwater crayfish *Astacopsis gouldi* northern Tasmanian endemic, world's largest freshwater crayfish • many local endemic invertebrate species (e.g. two species of Pauropoda (*Allopauropus convexus* mss name, *Stylopauropoides erectus* mss name) • important bird habitat (e.g. eastern ground parrot Tasmanian endemic sub-species *Pezoporus wallicus leachi*) • orange-bellied parrot (*Neophema chrysogaster*), critically endangered species forage in the Tarkine. Critically important habitat • eleven of the 12 Tasmanian endemic birds are resident. • important fish habitat Tasmanian whitebait and Tasmanian smelt (*Retropinna tasmanica*) are endemic. The Australian grayling is threatened species (all three inhabit in Pieman River) • major representation of cool temperate rainforest (largest in Australia) • rare and outstanding example of rainforest on basalt kraznozem soils (Mt. Bertha/Savage River) • Major representation of *Gymnoschoenus sphaerocephalus* (buttongrass) moorland (important habitat)	Criterion (x) 'contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation.'	Although the Tarkine and the TWWHA share much of their biota there are some significant differences at the both the community and species level. Indeed they even complement each other with several migratory species utilising both regions e.g. orange bellied parrot *Neophema chrysogaster* (breeds in TWWHA and feeds in Tarkine on annual migration) The Tarkine contains habitats important for endemic plant and animal taxa and taxa of conservation significance, including: • extensive rainforest communities; • moreland • riparian and lacustrine communities (including Tasmania's only non-meromictic polyhumic forest lake) Habitats which are relatively undisturbed and of sufficient size to enable survival of taxa of conservation significance including endemic taxa: • Plant species of conservation significance • Animal species of conservation significance, such as: ○ giant freshwater crayfish *Astacopsis gouldi* ○ spotted-tail quoll *Dasyurus maculatus* ○ swamp antechinus *Antechinus minimus* ○ broad-toothed rat *Mastacomys fuscus* ○ ground parrot *Pezoporus wallicus* ○ orange-bellied parrot *Neophema chrysogaster* ○ Tasmanian subspecies of the Wedge-tailed Eagle (*Aquila audax fleayi*) (listed as 'Endangered' under EPBC) ○ Tasmanian devil (Sarcophilus harrisii) (endangered species).

Threatening processes

A range of threatening processes can be identified in the Tarkine, all of which must be addressed in heritage conservation planning. The most significant threats include:

- roads
- logging and associated roads
- mining and associated roads and effluent discharge into streams
- vehicular access, especially in coastal areas
- *Phytophthora cinnamomi* pathogen (in buttongrass moorland)
- inappropriate fire regimes, especially in buttongrass moorland.

Mining represents a significant threat to the environment in the Tarkine, including its outstanding heritage values and could complicate or threaten protection of those values. Existing Savage River mine, straddling the Savage River. Environmental impacts may extend well beyond the immediate footprint of a mine site with roads, pipelines, powerlines and effluent potentially impacting a much wider area.

Mining in particular has the potential to seriously detract from the full potential of this outstanding natural tract of land. The undeniable high conservation value (HCV) of the Tarkine, including high probability of World Heritage significance, needs to be factored into all development decisions in the region.

Boundary considerations

Comparing the boundaries of the ENGO-proposed national park and the current assessment area adopted by the Australian Heritage Council (AHC) reveals some very important differences, which need to be explained. The more significant differences are identified below:

Mawson Bay area

This appears to be part Arthur Pieman Conservation Area and West Point Aboriginal Site: Included in the AHC assessment area but not included in the Proposed National Park.
Comment: Based on at least the Aboriginal cultural heritage values in the area, the AHC is justified in including this outlier area in the Tarkine National Heritage Assessment. There are some unusual geomorphic/vegetation features behind Bluff Hill Point, which deserve investigation (see below).

Excluded enclaves

A number of areas internal to the national park proposal have been excluded from the AHC assessment process, some for obvious reasons, some not so obvious. See example below.
Comment: Some such exclusions are already heavily impacted and have probably lost any heritage values. Others are intact natural vegetation and have identified important heritage values. For example, an area of state forest excluded in Rebecca Creek (adjoining Arthur–Pieman Conservation Area) is part of a landscape unit which has one of the greatest concentration of Aboriginal cultural sites, including stone quarries, in the Tarkine area (circa 50+ sites in the catchment of Rebecca and Little Eel Creeks). This appears to be an example of where potentially important heritage values may not be captured by the National Heritage assessment process.

Excluded enclave: An area within the national park proposal but excluded by AHC assessment: the reason is obvious with a complex of mining disturbances. Blue is AHC exclusion, yellow tint is ENGO HCV [FID 252]

Arthur River–Frankland River

A large tract of mostly naturally vegetated land between the Arthur and Frankland Rivers in the north of the Tarkine within the proposed Tarkine National Park was originally included in the emergency National Heritage gazettal but has now been excised from the National Heritage assessment area:

Comment: It is most regrettable that any proposal for a major protected area, indeed World Heritage nomination, incorporating all or part of this potentially important tract of forest and moorland has been pre-empted by the National Heritage assessment process. This excision also excludes the very extensive and little known 'Welcome Swamp/Salmon/Blackwater Karst Systems' (Tasmanian Geoconservation Database) together with a long section of the Arthur River gorge.

Sumac Road

A large area of forested land on the Sumac Road—ENGO HCV [FID 252]—is within the national park proposal but has been excluded from the AHC assessment process.

Comment*:* Notwithstanding that there has been some limited coupe logging in this section, the overall natural condition and extent of rainforest would be a good reason to at least assess the natural heritage values of the area. This exclusion is critical to planning and designing a major protected area in the Tarkine. The area excised from the assessment area, as well as excluding significant areas of temperate rainforest, including a link between two major rainforest tracts, also excludes the Sumac karst system.

Trowutta–Sumac Karst

The high conservation value Lake Chisholm and associated extensive areas of the Trowutta-Sumac Karst have been omitted from both the national park proposal and the AHC assessment process. Lake Chisholm is at least of national significance and possibly of world significance. (Lake Chisholm is the only non-meromictic polyhumic forest lake in Tasmania and is also of particular geoconservation importance as a water-filled sinkhole)

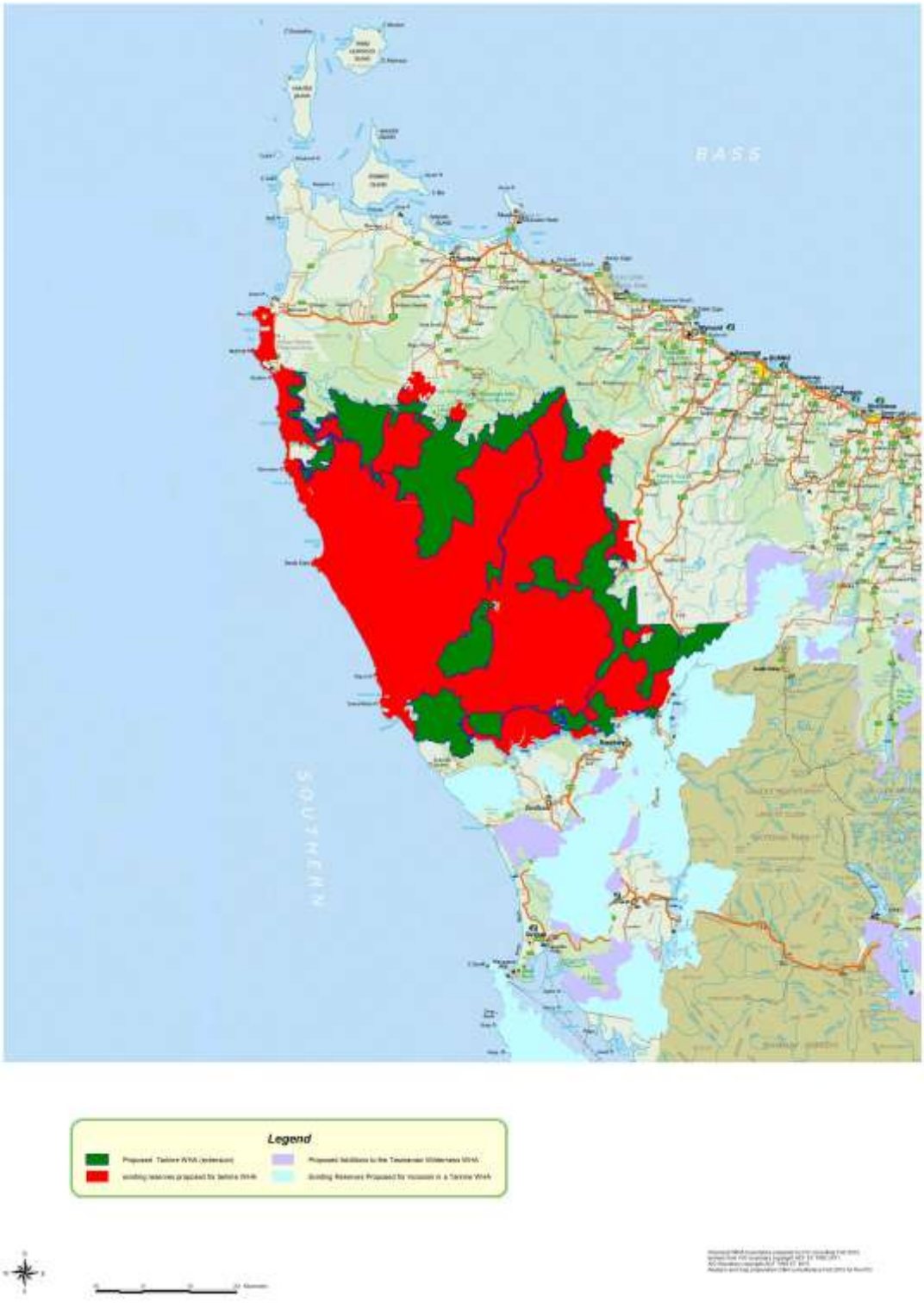
Link to TWWHA

Although not part of the ENGO HCV, it is recommended that logically those public reserves east of Lake McIntosh (Granite Tor CA and that part of Reynolds Falls NRA east of McIntosh Creek) be added to the Tasmanian Wilderness World Heritage Area. As well as adding protection to these important heritage assets significantly improves the existing boundary of the TWWHA in this locality. This has been previously recommended* on a number of occasions. This tract of existing reserves is a vital link between the TWWHA and any major protected area in the Tarkine and should be recognised for its habitat connectivity value irrespective of any World Heritage nomination of the Tarkine.

*[Department of Parks, Wildlife and Heritage (1990): *The Appropriate Boundaries of a World Heritage Area in Western Tasmania—report to the Minister of Parks, Wildlife and Heritage*.]

Notwithstanding that important heritage values may have been excluded from the National Heritage assessment process, any known attributes of these areas were taken into account when assessing the overall heritage significance of the Tarkine region.

Proposed Tarkine World heritage Area



CHAPTER 6

North Central

Chapter 6

North Central

Lands associated with northern boundary of TWWHA(Central Plateau, Western Tiers, Mole Creek, Mersey, Cradle Mountain)

Central Plateau—Great Western Tiers

Introduction

A series of ENGO-proposed reserves adjoin or are adjacent to the Tasmanian Wilderness World Heritage Area. Some parcels extend well east of the TWWHA. It is apparent that the rationale for the ENGO proposals is to achieve a more general north-easterly extension along the Great Western Tiers and Central Plateau.

As there are so many separate parcels of the ENGO-proposed reserves and there is no immediate evidence to hand that suggests that any one parcel of land would qualify as of stand-alone World or National Heritage significance, it was considered appropriate to conduct at least an initial assessment on the aggregate of parcels. Any attributes or values specific to individual parcels have been documented where necessary.

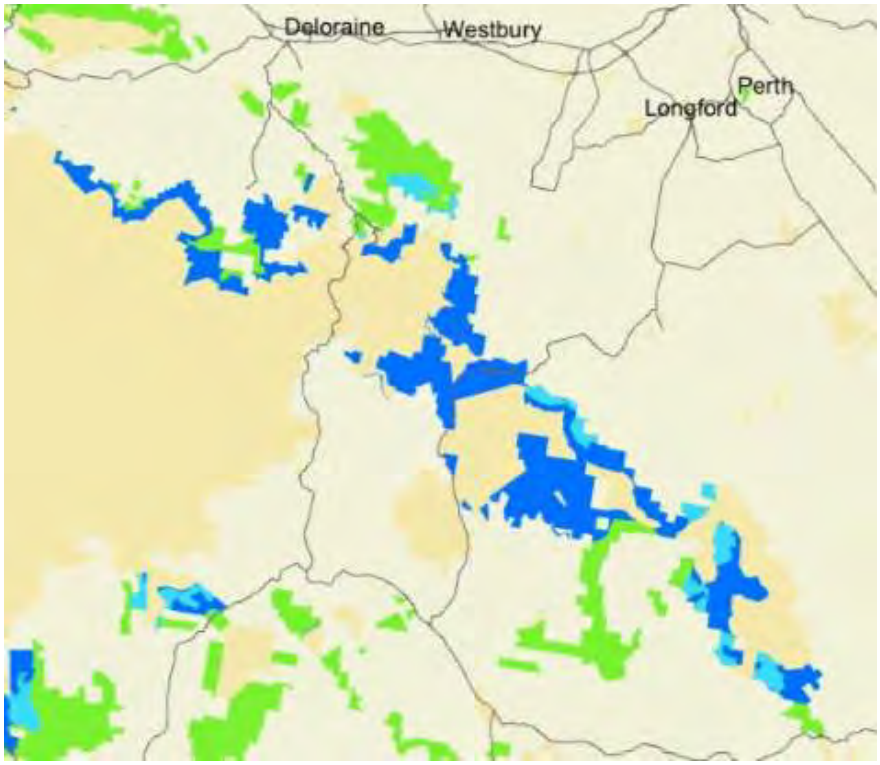


Diagram illustrating a string of ENGO proposed reservse (dark blue and light blue) along the Great Western Tiers and the Central Plateau. The assumption is made that the vision behind inclusion of some of the more easterly parcels is that together with closely associated Conservation Areas these might be proposed for addition to the Tasmanian Wilderness World Heritage Area.

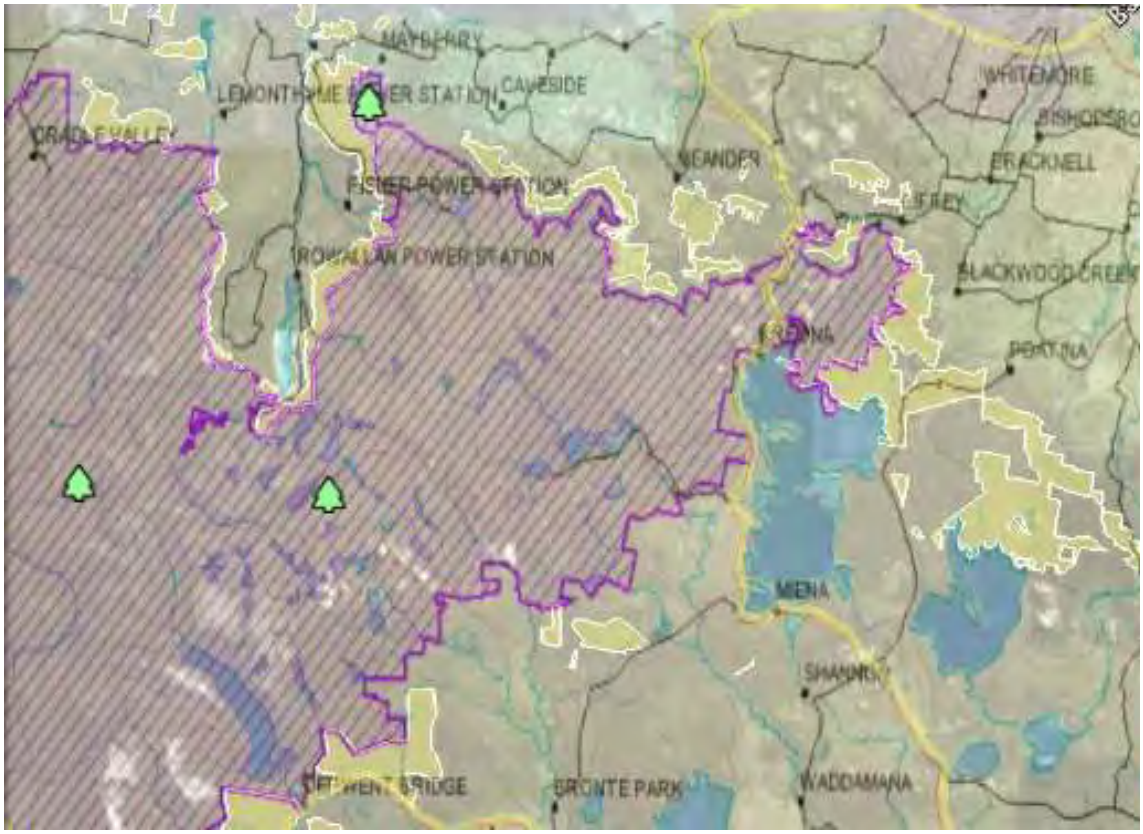


Diagram illustrating a string of ENGO nominated reserves (yellow) along the Great Western Tiers (left) and the Central Plateau (right).

Context for assessment

The 'Great Western Tiers' aggregate of ENGO-proposed reserves has been selected for assessment as a generic group but where necessary, the attributes and values of particular individual parcels have been identified.

Characterising the Great Western Tiers

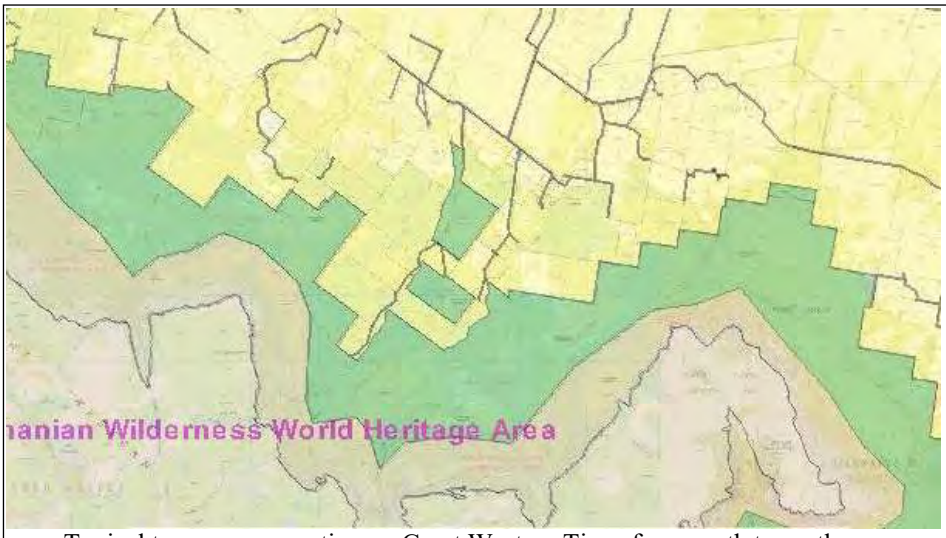
The verification process involved a series of relatively small parcels of ENGO-proposed land along the Great Western Tiers, most of which occupy a very similar topo-geographic position in the landscape. Rather analysis each and every parcel of land separately it was decided, at least initially, to address the generic issue. This led to them being listed as ENGO-proposed reserves with likely generic values.

For the sake of this verification exercise, the geographic feature largely identified as the 'Great Western Tiers' might be characterised as follows:

- Land marked by a near continuous cliff lined escarpment extending from Devils Gullet in the west to Millers Bluff in the east. This is the northern escarpment of the Central Plateau.
- Geographically, the 'Great Western Tiers' landscape unit comprises:
    - flat to undulating, often rocky plateau surface
    - well-defined cliff line in dolerite geology
    - immediate under cliff environment comprising mostly rocky scree slopes and in places minor sandstone cliffs in underlying sedimentary strata

  - a gradation of mostly drier eucalypt woodland and forest on the mid to lower slopes
  - a significant number of small streams, including some that drain over the escarpment, often as small waterfalls creating environments conducive to development of gallery rainforests in incised valley heads below the escarpment.
- Historically:
  - agricultural development extended from the lowlands up to the foot slopes under the escarpment
  - timber harvesting focussed on accessible forest areas on the mostly steeper footslopes not suitable for agriculture
  - the plateau surface of the Central Plateau, being mostly unsuitable for agriculture or timber harvesting, was protected for conservation, initially using the convenience of the cliff line to define the protected area.
- Changing knowledge and community interest:
  - increasingly valued scenic backdrop
  - increasing interest in public recreational access to under cliff area
  - increased awareness of environmental values
  - increased knowledge and understanding of Aboriginal sites in under cliff area
  - increased perception of link with Tasmanian Wilderness World Heritage Area on plateau area
  - initial government response with some protection of under cliff areas of lesser interest for timber production.

From a World Heritage/Protected Area perspective, the cliffed escarpment was originally seen as a very convenient land use and protected area boundary. Revising the purpose and values of the TWWHA lead to thinking that adopting the cliffline as the boundary fails to recognise important heritage values integrally associated with the cliffed escarpment of the Central Plateau and under cliff environments. If the sole objective of the TWWHA was to protect alpine plateau environments, then the original cliffed boundary might still be appropriate.



Typical tenure cross section on Great Western Tiers, from south to north:
* above cliff—Tasmanian Wilderness World Heritage Area
* immediately below cliff—Great Western Tiers Conservation Area
* mid to lower slopes—state forest/ENGO nominated reserve lands
* lower slopes and valley bottoms—private land.

Taking a more holistic view of the landscape, the significant heritage values, including World Heritage values, do not end at the cliff edge. Rather the cliffs and under cliff areas form an integral part of the same wilderness or largely intact landscape additional to the alpine plateau environment:

- wilderness values in some cases extend below the cliffs
- a regional scale concentration of Aboriginal sites is closely associated with caves below the cliffs (as well as the lakes above the escarpment)
- plant communities not otherwise represented in the TWWHA
- regional connectivity of forest habitat along under cliff and lower slopes.

There is a reasonable expectation that there are heritage values and attributes extending below the cliffline, and indeed may be nationally and internationally significant. Given the juxtaposition, and in some cases ecological relationship, of much of the escarpment and under cliff environment to the existing Tasmanian Wilderness World Heritage Area, it is appropriate for some of those natural and cultural attributes to be assessed for heritage value and significance in the context of theTWWHA. Natural or cultural attributes or features which are 'partly in and partly out', of the TWWHA are given special attention on the basis of the contribution that they could make to the integrity of the existing TWWHA.

Adding the largely intact forested lands below the cliffed escarpment would undoubtedly add a new dimension to the natural and cultural heritage values of the Tasmanian Wilderness World Heritage Area and so better contribute to the integrity of the TWWHA.

It was noted that most of the ENGO-proposed reserves below the cliffed escarpment are separated from the boundary of the Tasmanian Wilderness World Heritage Area by a corridor already within the Western Tiers Conservation Area. Accordingly, the assessment takes that into account and considers the combination of both the ENGO-proposed reserves and the conservation area(s).

In assessing the series of ENGO-proposed parcels below the escarpment, attributes of particular interest included:

- presence of or probability of Aboriginal cultural sites
- presence of threatened plant communities
- attributes or features that may be already partly within the TWWHA
- connectivity of forest habitat at regional scale
- outstanding scenic beauty
- manageability and boundary considerations.

Heritage assessment

The fundamental generic question that arises is whether the lands below the cliffline of the Great Western Tiers can contribute to the value and integrity of the Tasmanian Wilderness World Heritage Area. Answering this question would lay the groundwork for assessing the ENGO-proposed reserves below the escarpment, both individually and collectively.

The well-defined regional scale cliff line known as the Great Western Tiers forms, in many places the northern boundary of the World Heritage Area and is from a protected area boundary perspective, a highly appropriate boundary. However, the primary focus must be on the issue of the heritage values. Significance of the lands below the cliffs and the appropriateness of the boundary are of secondary concern.

Several precedents have already been set for extending the TWWHA to below the cliffs including:

- Mole Creek Karst National Park
- Liffey Falls
- Dry's Bluff.

The primary focus should therefore be on the heritage values.

At the generic level, there is a sound case for considering lands below the cliff line for including in the TWWHA.

Criterion (vii)

The inscribed values recorded against Criterion (vii) include:

> … dolerite capped mountains (including Cradle Mountain, Frenchmans Cap, Federation Peak and Precipitous Bluff);

Whereas individual mountains are cited, by far the largest scale (more than 100 km long), and arguably a superlative natural phenomenon in its own right, is the huge exposure of the dolerite cap forming the Central Plateau, forming the Great Western Tiers. The spectacular escarpment created by the very extensive dolerite capping of the Great Western Tiers represents a third dimension of the Central Plateau section of the TWWHA, exposing both the dolerite capping in cross section and also in places the underlying sediments.

The Great Western Tiers is of such dimension and acclaimed natural beauty and aesthetic importance that it meets Criterion (vii) '… superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'. As such, if added to the TWWHA, the Great Western Tiers would add both a largely new value as well as contribute to the integrity of the existing TWWHA.

Criterion (viii)

> Outstanding examples of stages of earth's history.

> ... to be outstanding examples representing major stages of earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

The Great Western Tiers is a 'significant geomorphic or physiographic feature'.

The inscribed values statement for the TWWHA lists against Criterion (viii)

'Permian–Triassic sediments and associated Jurassic dolerite intrusions;' although Sharples (2003) suggests that this value requires further investigation and comparison with related features in Antarctica and South Africa.

Notwithstanding Sharples's reservations, adding the Great Western Tiers to the TWWHA would substantially contribute to the geoconservation values of the adjoining TWWHA and hence to the integrity of the TWWHA boundaries.

Criterion (ix)

> Outstanding examples of ongoing evolution.
>
> … sites where processes of geomorphological and hydrological evolution are continuing in an uninterrupted natural condition (including karst formation, … fluvial deposition, evolution of spectacular gorges, marine and aeolian deposition and erosion, and development of peat soils and blanket bogs);'

To this could equally be applied to the Great Western Tiers where ongoing '*geomorphological and hydrological evolution are continuing in an uninterrupted natural condition',* is ongoing and continues to drive the retreat and renewal of this great escarpment.

As a geological/geographic feature, the Great Western Tiers has the potential to qualify as a value against at least one World Heritage Criterion, particularly, Criterion (vii) '… superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'. Natural vegetation, animals and Aboriginal sites associated with the feature also have the potential to contribute value and integrity to the World Heritage Area.

In conclusion, there are a number of valid grounds for considering the Great Western Tiers—a complex of geological, geomorphological, biological, scenic, cultural heritage values—to be potentially a very important addition to the existing Tasmanian Wilderness World Heritage Area, and could contribute to both the values and integrity of the World Heritage Area. Subject to closer scrutiny for condition and integrity, those ENGO-proposed reserves associated with the escarpment have heritage values, which are of both national and global significance, and are prospective additions to the TWWHA.

NOTE: Those parts of the Great Western Tiers Conservation Area that are not yet part of the TWWHA, have been taken into account as an integral part of the landscape unit in which the ENGO-proposed reserves are located and assessed accordingly. The whole of the Great Western Tiers Conservation Area should be added to the TWWHA together with the specified ENGO-proposed reserves.

Notes on individual parcels

FID 125

Mostly dry forest but with some extensive recent clearing. Needs subdivision to remove main older clearing.

NOTE: Several Aboriginal sites are recorded near the clearing so care should be taken to include them in area to be protected.

Most eastern section (Bessell's Road)—concentration of Aboriginal cultural sites. Adopting the ENGO-proposed boundary is appropriate.

Meander River section—it is recommended to delete the most heavily logged and cleared section and devise a better boundary in the remainder.

Long section (western)

Boundary is mostly appropriate. Significant areas of plantation are below Mother Cummings Peak so an exclusion and a shorter boundary needs to be considered.

FID 125: Recent clearing

FID 115

Escarpment Section (southern)—together with the Great Western Tiers Conservation Area, contributes to integrity of TWWHA (ecological diversity, regional connectivity, boundary benefits).

Warners Road satellite forest (northern)—at least five Aboriginal cultural sites. Small areas of *E. ovata* threatened vegetation community—part in, part out. No immediately obvious contribution to the natural heritage of TWWHA but if considered together with Quamby Bluff, of possible national significance.

FID 114, 121

These two parcels of forest directly relate to the Quamby Bluff Forest Reserve, not directly to the Tasmanian Wilderness World Heritage Area. FID 114 directly adjoins the Western Tiers Conservation Area. As such, at least in terms of habitat connectivity there is a habitat corridor link back to the Western Tiers proper. Quamby Bluff might be regarded as a 'satellite' facsimile of the Great Westerm Tiers, complete with remnant capping of dolerite (dolerite cap listed on Tasmanian Geoconservation Database). Quamby Bluff represents a more advanced stage in the erosion of the dolerite cap and may offer further insight into the evolution of the Great Western Tiers escarpment. If considered in conjunction with Quamby Bluff and FID 115, would be of at least state significance and may also qualify for National Heritage if the dual connectivity back to the Western Tiers and TWWHA are taken in to account.

FID 108, 109, 110

This is in the Liffey Falls Area. FID 109 is of local significance only and 108 is forested and drains directly into the TWWHA and would contribute to the integrity of the TWWHA (catchment protection). FID 110 is of at least national significance and, if considered in

conjunction with the adjoining Great Western Tiers Conservation Area, would contribute to the integrity of the TWWHA.

FID 106

Mostly directly adjoins the TWWHA and is a tract of eucalypt forest below the escarpment. One Aboriginal site recorded. Almost all is intact natural forest. One small section cleared (illegal logging?) If added to the TWWHA, resultant boundary would be acceptable and appropriate (accessible surveyed straight line adjoining private lands). If added to the Tasmanian Wilderness World Heritage Area, FID106 would contribute significantly to the integrity of the TWWHA. In summary, this would make a good addition to the TWWHA.

FID 97

Plateau Section–Great Lake—contains areas of highland grassy sedgeland (MGH)

Plateau Section–Arthurs Lake—contains areas of subalpine *Diplarrena latifolia* rushland (MDS). Contains areas of MGH.

Below escarpment section

The eucalypt forest contributes to regional-scale forest connectivity right along the Great Western Tiers escarpment.

FID 120 Not on Tiers

Tasveg.2.0 Code NLM *Leptospermum lanigerum–Melaleuca squarrosa* swamp forest threatened vegetation community (LIST)

Summary attributes of parcels closely associated with Great Western Tiers						
FID	**Locality name**	**Cultural site(s)**	**Threatened community/ species**	**Contrib-utes to forest connect-ivity**	**Boundary improvement**	**Comment**
78	Millers Bluff	3 sites	Minor occurrences	No	No	No particular heritage values identified. Need for further investigation.
97 + 84	Poatina Rd. to Maclanac han S'loaf	5+	Yes *Eucalyptus amygdalina* on Cainozoic Karst under Thresherman 's Hill	Yes	Improvement as addition to Conservation. Area .	Adjoins Conservation Area but does not adjoin TWWHA directly.
97	Arthur Lake section	30+		Extension of plateau habitat	No	Plateau environment.

Summary attributes of parcels closely associated with Great Western Tiers						
FID	**Locality name**	**Cultural site(s)**	**Threatened community/ species**	**Contrib-utes to forest connect-ivity**	**Boundary improvement**	**Comment**
97	Above cliffs (Gt. Lake)	15+		No	Yes (consolidation of TWWHA)	Logical addition to TWWHA.
106	Westons Rivulet	1	No	Yes	Yes	Good enhancement to TWWHA.
108	Liffey Falls		Unknown	Unknown	Yes	Small parcel draining directly into TWWHA. Possible benefit to integrity of TWWHA.
109	Liffey Falls	Unknown	Unknown	Unknown	Unknown	Very small parcel. Possible benefit to integrity of WHA boundary.
110	Liffey Falls	No	No	Yes	Yes Good consolidation of TWWHA.	Important addition to TWWHA + GWT CA addition.
114	Quamby Bluff	No	No	Yes, improves connect-ivity of Quamby Bluff Res to GWT CA and hence WHA	Yes for Quamby Bluff No for TWWHA	Useful Addition to Quamby Bluff FR/Great Western Tiers CA.

Summary attributes of parcels closely associated with Great Western Tiers						
FID	**Locality name**	**Cultural site(s)**	**Threatened community/ species**	**Contrib-utes to forest connect-ivity**	**Boundary improvement**	**Comment**
121	Quamby Bluff	-	-	-	-	Adds intact forest to QBFR and improves boundary.
125 Sth	Warners Falls–Quamby	5+	-	Yes	Yes	Important component of GWT for addition to TWWHA.
125 Nth	Quamby	5+	-	Part (satellite)	No	Link to satellite forest area (Quamby Bluff).
136	Meander	10+	-	Yes	Yes	

Data sources

Included:

- Tasmanian Government official Aboriginal site records
- LIST Database (particularly for threatened plant communities)
- published papers (e.g. Sharples 2003)
- Google Earth imagery
- Internet sourced pictorial imagery (for natural beauty, aesthetic assessment).

Summary—Great Western Tiers		
World Heritage		
Attribute	**Relevant criterion**	**Value**
Major (100 km+) dolerite cliffed escarpment, which is visually outstanding and includes areas of exceptional natural beauty.	Criterion (vii) '… superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;'	The Great Western Tiers would add a new 'third' dimension to the TWWHA in terms of both 'natural beauty and aesthetic importance'. The Great Western Tiers is '... of exceptional natural beauty and aesthetic importance;'
Permian–Triassic sediments and associated Jurassic dolerite intrusions	Criterion (viii) ' outstanding examples representing major stages of earth's history,'	An area where ongoing '*geomorphological and hydrological evolution are continuing in an uninterrupted natural condition',* and which drives the retreat and renewal of this great escarpment. The Great Western Tiers would substantially contribute to the *geoconservation value* of the TWWHA and hence to the integrity of the TWWHA.
e.g. threatened plant communities.	Criterion (x) '… most important and significant natural habitats for in-situ conservation of biological diversity ...'	Would add a whole new dimension to the ecological diversity of the TWWHA, incorporating new drier, lower elevation forest communities on different substrates. Makes significant contributions to the ecological diversity and hence integrity of the TWWHA.
Numerous Aboriginal cultural sites including cave occupation sites & open sites.	Criterion (v) Outstanding example of traditional settlement	'archaeological sites which provide important examples of the hunting and gathering way of life, showing how people practised this way of life over long time periods, during often extreme climatic conditions and in contexts where it came under the impact of irreversible socio-cultural and economic change.'

National Heritage		
Attribute	**Relevant criterion**	**Value**
		Not assessed as area qualifies as an area which would make an important contribution to the integrity of the Tasmanian Wilderness World Heritage Area and which is also National Heritage listed.

Heritage summary

The Great Western Tiers landscape, assessed at the generic level, has attributes which if added to the Tasmanian Wilderness World Heritage Area represent new World Heritage values and which would also contribute to the integrity of theTWWHA.

In particular, the Great Western Tiers represents an area '... of exceptional natural beauty and aesthetic importance;' thereby significantly contributing to the integrity of the TWWHA.

The major exposure of 'Permian–Triassic sediments and associated Jurassic dolerite intrusions' presented by the Great Western Tiers would substantially contribute to the geoconservation values of the TWWHA and hence to the integrity of the TWWHA. It presents the 'third dimension' of the extensively glaciated dolerite capped Central Plateau already within the TWWHA.

Included in the Great Western Tiers landscape are a series of threatened communities, especially on higher elevation and plateau edge areas, which would contribute to the integrity of the TWWHA.

There are several very significant clusters of Aboriginal archaeological sites, both above the cliffs and below and which would contribute significantly to the already cited cultural heritage values of the Tasmanian Wilderness World Heritage Area, thereby contributing to the integrity of the TWWHA.

Given the substantive evidence of the heritage significance of the Great Western Tiers in the context of being an addition to the TWWHA and time constraints applying to the assessment, National Heritage was not assessed. However, the Great Western Tiers aggregate of ENGO-proposed reserves and existing Conservation Area(s) would certainly enhance the National Heritage value of the already National Heritage listed TWWHA.

The precedent had already been set for extending the TWWHA below the cliffed escarpment (Mole Creek, Liffey Falls and Drys Bluff) so the Great Western Tiers is already partly within the TWWHA. Adding the balance would therefore contribute to the integrity of the site.

The assessment therefore verifies that the collection of ENGO-proposed reserve lands, considered in conjunction with the adjoining Great Western Tiers Conservation Area, if added to the Tasmanian Wilderness World Heritage Area, would contribute to the integrity of the TWWHA and therefore have World Heritage significance and, hence, National Heritage significance.

Conclusion

A selection of the ENGO-proposed reserves along the northern part of the Central Plateau and the Great Western Tiers was verified as being of conservation importance, much being of National Heritage and World Heritage significance, especially because of the important value-adding and contribution to integrity that these areas could make as additions to the TWWHA.

Recommendations

1. Recognise that decision-making on the ENGO-proposed reserve lands of heritage significance along the Great Western Tiers must be integrally linked with the Great Western Tiers Conservation Area, the critical link to the Tasmanian Wilderness World Heritage Area.
2. Add the ENGO-proposed reserve lands identified in this report, together with the closely associated Great Western Tiers Conservation Area to the Tasmanian Wilderness World Heritage Area.

Extensive high rainfall, glaciated, upland karst system developed in Ordovician Gordon Group limestone. More than 200 caves known, some of which are spectacularly decorated. Very large variety of surface and subsurface karstic landforms and features, many of which are individually significant at a national level or higher. This system is one of the three or four most extensively developed karst systems in Tasmania. It corresponds to Kiernan's (1995) NW48 area. Significant surface and underground karst features include the following:

> … the Mole/Lobster system includes Westmorland Cave, Herbet Pot, Wet Cave, Honeycomb Cave and Pyramid Cave, taking the headwaters of Mole Creek from where they first sink underground below Westmoreland Falls to their final emergence at Scott's Rising; the Kubla Khan system is internationally renowned for its underground scenery, geomorphological and biological values; Croesus, Lynds and Tailender Cave systems, all magnificently decorated and significant at a national scale for aesthetic, geomorphological and biological values; The Devils Pot–Marakoopa and King Solomons–Kohinoor–Soda Creek systems are significant for tourism at a state and national level; The Mersey Hill–Den Cave system is an extensive series of near horizontal passages, potentially useful in determining long-term erosion rates in the Mersey catchment; The My–Cyclops–Baldocks–Sassafras Cave system is important for preserving relicts of early cave tourism and for its biological values—the glow-worm displays in Sassafras Cave are at times spectacular; Many other caves are also significant. Significant and visually spectacular surface karst features include: Sassafras Rising, Scotts Rising, Croesus Cave outflow, Tailender Cave, Little Trimmer Cave, Lynds Cave, Kubla Khan Exit Cave, and Soda Creek Cave Springs are significant karst springs; Westmorland Cave, Kelly Pot, Devils Pot, Execution Pot, Circular Ponds and Howes Cave are representative of many important and spectacular streamside sinks, many with underground waterfalls; Dogs Head Hill and Cheops Pyramid are significant karst residual hills.

—Tasmanian Geoconservation Database

Mole Creek Karst cluster

FID 121, 124, 142, 129,136, 131, 133, 134, 135, 141, 148, 151, 155, 158

Introduction

This collection of ENGO-proposed reserves is centered on the Mole Creek Karst although not all areas are necessarily karst.

A brief outline of the heritage assessment is provided in the table below.

Summary—Mole Creek Karst		
ENGO reserve parcel no.	**Heritage significance**	**Remarks**
FID 142	Located in a karst landscape with many sinkholes. Part of the Dogs Head Hill/Union Cave system of the Mole Creek Karst. Dry open eucalypt forest—mapped as threatened plant community *Eucalyptus amygdalina forest and woodland on sandstone*. Important as buffer to the Dogs Head Hill/Union Cave system, including the Moss Palace and its phytospeleothems. High Conservation Value.	'Dogs Head/Union Cave system. This system drains the Dogs Head Hill hum, a conical shaped karst residual hill containing many vertical percolation water caves. These drain to Union Cave, a large stream cave with a sump located 150 m into the cave.' Management Plan for Mole Creek Karst National Park. **Recommendations:** Add FID 142 to the adjoining Dogs Head Hill Forest Reserve. Consider adding the Dogs Head Hill Forest Reserve to the adjoining Mole Creek Karst National Park. See Lichon (1992).
FID 136	Critically important surface catchment of Croesus and Lynds Cave systems. Much of the famed Croesus Cave is not within the Croesus block of the national park but under FID 136 section of state forest. Also important contribution to integrity (karst, scenery, geoconservation) of TWWHA. (See report for details of significance). High heritage conservation value.	A critically important parcel of land above several caves systems of outstanding heritage conservation value. Protection would link up the Croesus and Marakoopa blocks of Mole Creek Karst National Park. **Recommendation:** Add the whole of this parcel to Mole Creek Karst National Park and to then add this and the Croesus block to the Tasmanian Wilderness World Heritage Area. **NOTE**: The boundary for World Heritage nomination purposes should extend to include that part of the Mersey River Forest Reserve and an informal reserve east of the Mersey River, that is the river becomes the boundary. Southern boundary would be the powerline spur off the Lake Mackenzie Road.
FID 131	Very small parcel adjoining Croesus Cave section of Mole Creek Karst National Park.	Probable logical addition to national park but needs local decision-making.
FID 133	Very small parcel adjoining Croesus Cave section of Mole Creek Karst National Park.	Probable logical addition to national park but needs local decision-making.

Summary—Mole Creek Karst		
ENGO reserve parcel no.	**Heritage significance**	**Remarks**
FID 134	Very small parcel adjoining Croesus Cave section of Mole Creek Karst National Park.	Probable logical addition to national park but needs local decision-making.
FID 135	Very small parcel adjoining Croesus Cave section of Mole Creek Karst National Park.	Probable logical addition to national park but needs local decision-making.
FID 141	Threatened plant community *Eucalyptus amygdalina* forest and woodland on sandstone. The south-western part (slopes of Solomons Dome) includes part of the catchment of the King Solomons Cave karst area (but not KS Cave itself). More importantly, the eastern half of the area includes the bulk of the catchment of the very significant Kubla Khan cave system and is hence critical for the long-term protection of this icon cave. All of FID 141 is very important. High heritage conservation value of national to global significance.	Major link between King Solomon and Kubla Khan blocks of the Mole Creek Karst National Park. **Recommendation:** Add FID 141 and FID 136 to Mole Creek Karst National Park. Add FID 141 together with FID 136 and the Solomons and Kublai Khan blocks of Mole Creek Karst National Park to the Tasmanian Wilderness World Heritage Area.
FID 148	Inadequate data. **Not assessed**. May be important for karst conservation.	Very steep land falling to Mersey River. Requires further investigation.
FID 151	Several dolines apparent. Inadequate data. **Not assessed.** May be important for karst conservation.	Narrow sliver of land adjoining Mount Rowland Regional Reserve.

Summary—Mole Creek Karst		
ENGO reserve parcel no.	**Heritage significance**	**Remarks**
FID 158	Tall eucalypt forest of *E. regnans* and *E. obliqua.* About 15% recently clear felled logged. Intact stands of *E. regnans* are increasingly rare. (Mount Roland RR+CA is potentially national significance) (State significance)	Elongate stand of mainly tall eucalypt forest adjoining Mount Roland Regional Reserve and abutting Mount Roland Conservation Area. Intact stands of *Eucalyptus regnans* are increasingly rare. Adding this block to the adjoining Mount Roland Conservation Area would significantly enhance the heritage conservation values of the combined Mount Roland Regional Reserve and Conservation Area.

Croesus and Lynds Caves (Kansas and Mill Creek Area)

FID 136

This parcel is clearly of high heritage conservation value, the evidence for such being presented below. Most are quotes from recent, relevant documents.

> **Marakoopa Cave block** is part of the Tasmanian Wilderness World Heritage Area (TWWHA). Other parts of the park are potentially of World Heritage value, but remain outside the TWWHA. In particular, karst in the Mole–Lobster catchment, Kubla Khan Cave and **Croesus Cave** areas 'would, collectively and individually, contribute significant further values' to the TWWHA
> —Department of Parks, Wildlife & Heritage 1990). (Mole Creek Karst National Park Management Plan 2004)
>
> **Croesus Cave block**
> This block protects the entrances to two outstanding caves: Croesus Cave and Lynds Cave. Most of these caves and their catchments are located in adjacent state forest.
> —Mole Creek Karst National Park Management Plan 2004)
>
> The Croesus Cave system (Hidden Cave/Tatana Magra/Croesus Cave/Rubbish Heap/Lynds Cave/Rathole/Tailender Cave/Shooting Star Cave.) This system is highly complex hydrologically, involving radical changes in subsurface streamflow directions under different streamflow conditions. All the above caves and/or catchments are likely to be hydrologically connected to some extent during very high flows, however at base flow, streams revert to discrete systems. At base flow, Croesus Cave is probably fed mainly by percolation water, and has hence developed a magnificent set of rimstone gours, covering the floor of the cave for almost 1 km. At high flows it receives large amounts of streamflow, either from surface streams overtopping blind valleys, or from high stage branches of underground streams. It contains significant glacially related sediment deposits, being the type section for the Croesus Cave Member. It is a significant platypus habitat. It is a highly significant recreational cave. Lynds Cave is also a spectacular, highly decorated cave of high scientific and recreational value. Tailender Cave, Rathole and Shooting Star Cave are also highly decorated caves and require climbing skills to negotiate. The latter cave is 247 m deep (eighth deepest in Australia) and was only explored in 2002. Tailender and Shooting Star are particularly delicate

caves, where each visit is likely to cause significant further impacts to speleothems. This system is only partially reserved by the Croesus Cave block. The park boundary is located approximately one-third the distance along Croesus Cave, the upper two thirds and all of its catchment being located under state forest. Only a small proportion of the downstream end of Lynds Cave is located within the park. The remaining caves are within state forest. —Mole Creek Karst National Park Management Plan 2004)

Croesus–Lynds–Tailender Caves
Croesus Cave, Lynds Cave and Tailender Cave are springs that feed the Mersey River from catchments on the slopes of Western Bluff.

Because of likely genetic relationships between the caves and the implications of this in terms of the hydrology, it is particularly important that the caves and their catchments are managed as a single integrated system.

The source of the cave stream in Croesus Cave is enigmatic and no streamsink sources have yet been confirmed. It has a modest discharge compared with the two other caves. Water chemistry and other evidence suggest that a significant proportion of the discharge is derived from diffuse percolation and slow moving groundwater sources. However, at times in the past, the cave has evidently carried more vigorous flows capable of mobilising coarse gravels, which can only have been washed in from the surface.

The two upstream entrances to Croesus Cave, known as Top Hole and April Fools, may represent former inflows. Their location at the downstream end of a drainage line which extends below Rubbish Heap Cave raises the possibility that Kansas Creek formerly contributed water to Croesus Cave prior to its capture by Lynds Cave. If Kansas Creek overtopped Rubbish Heap Cave during a flood event, it could be expected to flow to the same enclosed depression as Top Hole and April Fools. Vanishing Creek may also drain to the same depression if it exceeded the capacity of its normal sinks. The potential for subterranean pathways capable of delivering flood flows to Croesus Cave also needs to be considered.

Tailender Cave is fed by at least five principal sinks including Aqueduct Swallet, Blue Lake, Vanishing Creek and Nettle Sink. Tracers introduced at some of these streamsinks have been detected at Shooting Star Cave and Rat Hole, indicating that these caves are part of the same karst drainage system as Tailender Cave.

The Croesus Cave block encompasses a small proportion of the hydrological system described above. —Mole Creek Karst National Park Management Plan 2004

Assessment

The following lengthy extract is helpful background to assessing the value and significance of FID 136:

The Mersey District Forest Management Plan classifies state forest in the Mill Creek–Kansas Creek catchment as conditional forest under Forestry Tasmania's Management Decision Classification System. Conditional forests have special circumstances, in this case karst values.

Forestry Tasmania considers that management options for these forests require further investigation before a decision can be made as to whether the area, in part or whole, should be managed in the longer term as part of either the production or protection zones. Wood production is excluded from the conditional zone.

The joint protocol is primarily concerned with day-to-day management issues, and does not address zoning or tenure. Given the significance and sensitivity of Croesus Cave and Lynds Cave, the PWS considers the Mill Creek–Kansas Creek catchment warrants a more secure context for management than conditional forest status. This is because:

- This catchment contains some of Australia's most outstanding caves. Their significance for conservation is well established and is deserving of the highest level of protective management.
- The caves are partly protected within the park, but the current reserved area does not protect the whole of the caves or their catchment. The caves extend across the tenure boundary, which does not provide a rational basis for managing the caves and karst system of which they form part.
- As state forest, the catchment is potentially subject to activities such as timber harvesting, mineral exploration and quarrying. Notwithstanding constraints under relevant codes of practice (e.g. Forest Practices Code, Mineral Exploration Code of Practice, Quarry Code of Practice), these activities are incompatible with protection requirements for the karst at this site.

  Avoiding disturbance to soil–vegetation systems and natural runoff characteristics is critical to the integrity of features and processes in caves, particularly at Croesus Cave where baseflow is derived primarily from diffuse percolation sources. The complex hydrology and the potential for fossil conduits to be reactivated during floods (see Section 3.4) compounds the difficulty of protecting the caves from disturbance within the catchment. While wood production is excluded from Conditional forests, the zoning could be changed under a future forest management plan or an amendment to the current plan.
- The caves contain features that make this karst system unusually vulnerable to impacts from catchment-based activities, notably the magnificent rimstone speleothems in Croesus Cave. Evidence that some of the rimstones are subject to erosion linked to changes in water chemistry highlights the delicately poised thresholds, which govern natural processes within the karst system (Eberhard 1993). Whether the changes in water chemistry result from past catchment management practices is difficult to establish with scientific certainty, but this possibility must be considered in planning for future management.

  —Mole Creek Karst National Park Management Plan 2004

The review of geoconservation values of the Tasmanian Wilderness World Heritage by Sharples in 2003 provides a solid recommendation about the value of the Mole Creek Karst, the Croesus cave system in particular:

> **Integrity criterion 44(b)** (i) (Inclusion of key interrelated elements):
>
> The majority of extensive karst areas within the TWWHA (see Figure 15) are entirely contained within the TWWHA together with their entire catchment areas (compare Figures 15 & 5). Particularly important and extensive undisturbed karst systems for which this is true include the Weld River valley and New / Salisbury River karsts, which are discussed further below.
>
> However, this integrity condition is not met for several important karsts, which straddle the TWWHA boundary, particularly:
>
> - Mole Creek karst
> - Hastings karst
> - Mt Picton–Riveaux karst.
>
> Recommendations for incorporating parts of these karsts into the TWWHA and/or managing their karst values in sympathy with the TWWHA karsts are made in Sections (3.3), (3.4) and (4.2) of this report. With these exceptions noted, the overall high degree of inclusion of entire karsts with their catchments gives the TWWHA adequate integrity under this criterion to comprehensively represent an interrelated assemblage of karst

landforms, and to allow maintenance of ongoing natural karst geomorphic processes. (Sharples 2003).

Mole Creek Karst (in Sharples 2003 p.167)

Parts of this area have previously been recommended for inclusion in the TWWHA (DPWH 1990).

The Mole Creek karst geomorphic system is one of the most extensive and well-developed karsts in Tasmania (Kiernan 1984, 1989a; Eberhard 2003), and is a highly significant exemplar of the karst World Heritage geoconservation values of the TWWHA (see Section 3.2.2). However, only a portion of the karst system is located within conservation reserves and (the existing and recommended extensions of) the TWWHA (see Section 3.3 & Figure 15). Large contiguous, hydrologically connected and equally significant portions of the karst are situated on adjoining freehold and state forest land tenures outside the TWWHA boundary (Eberhard 2003). For example, the large and deep, recently-discovered pristine 'Shooting Star' cave, with its outstanding speleothem displays, lies partly in state forest, however its catchment is partly in the adjoining TWWHA (Eberhard 2003, Gray 2003).

The integrated nature of the entire karst means that effective management and protection of the World Heritage values of the Mole Creek karst cannot be successful unless the freehold and state forest portions of the karst are managed in sympathy with the TWWHA portions. A major process has been under development over the last three years to create a framework for cross tenure management of the Mole Creek Karst (*The Natural Heritage Trust Mole Creek Karst Integrated Catchment Management Strategy*, Eberhard 2003, Gray 2003, p. 359–360), and will be pursued further under a Meander Valley Partnership Agreement between the Meander Valley Council and the state government (R. Eberhard pers. comm.). **The draft Mole Creek National Park Management Plan also recommended extending reserve status to an important part of the state forest section of the karst, in the Croesus and Lynds Cave area.** —Sharples 2003

Conclusion

A major part of FID 136 is the Kansas and Mill Creek catchments, which are so vitally important to protecting the Croesus and Lynds caves system, the caves themselves and their catchments. The cave catchments extend right up to the 'tiers' or cliffs (Kiernan, pers.comm.) that form the current boundary of the TWWHA in this locality.

Adding the TWWHA (Part of Mole Creek Karst National Park is already World Heritage listed) would contribute significantly to the value and integrity of the TWWHA.

FID 136 is of very high conservation value and of at least National Heritage significance. It would contribute to the integrity of the Tasmanian Wilderness World Heritage Area.

Recommendations

1. Add FID 136 to adjoining Mole Creek Karst National Park.
2. Add the Croesus Cave block plus FID 136 to the Tasmanian Wilderness National Park.

Overall heritage summary—Mole Creek Karst

It should be noted that the Marakoopa Block of the Mole Creek Karst National Park is already part of the Tasmanian Wilderness World Heritage Area. For whatever reason, the non-contiguous blocks were not added to the TWWHA but there is ample documentation, comment and recommendations about the very high heritage significance of the Croesus Cave, King Solomons Cave and Kublai Khan Cave Blocks.

This assessment of FID 136 and FID 141 finds them to be of very high natural heritage value, especially because they are integrally related to the King Solomon and Kublai Khan Cave blocks, either because the caves extend under these parcels or because they include the critically important catchments of the caves.

Protecting FID 136 and FID 141 and their addition to Mole Creek Karst National Park would consolidate these park blocks and contiguity with the Marakoopa Block. Protecting the catchments of the King Solomons Cave and Kublai Khan Cave Blocks would qualify them for adding to the TWWHA. The consolidated package of land (FID 136 and FID 141 + King Solomon and Kublai Khan Cave blocks) would make a very significant contribution to the value and integrity of the TWWHA.

Ample documentation supports the very high conservation significance of the Croesus Cave, King Solomons Cave and Kublai Khan Cave Blocks. The ENGO-proposed reserve blocks FIDs 136, 141, 131, 133, 134, 135 would greatly enhance the protection and integrity of these three important cave systems.

Recommendations

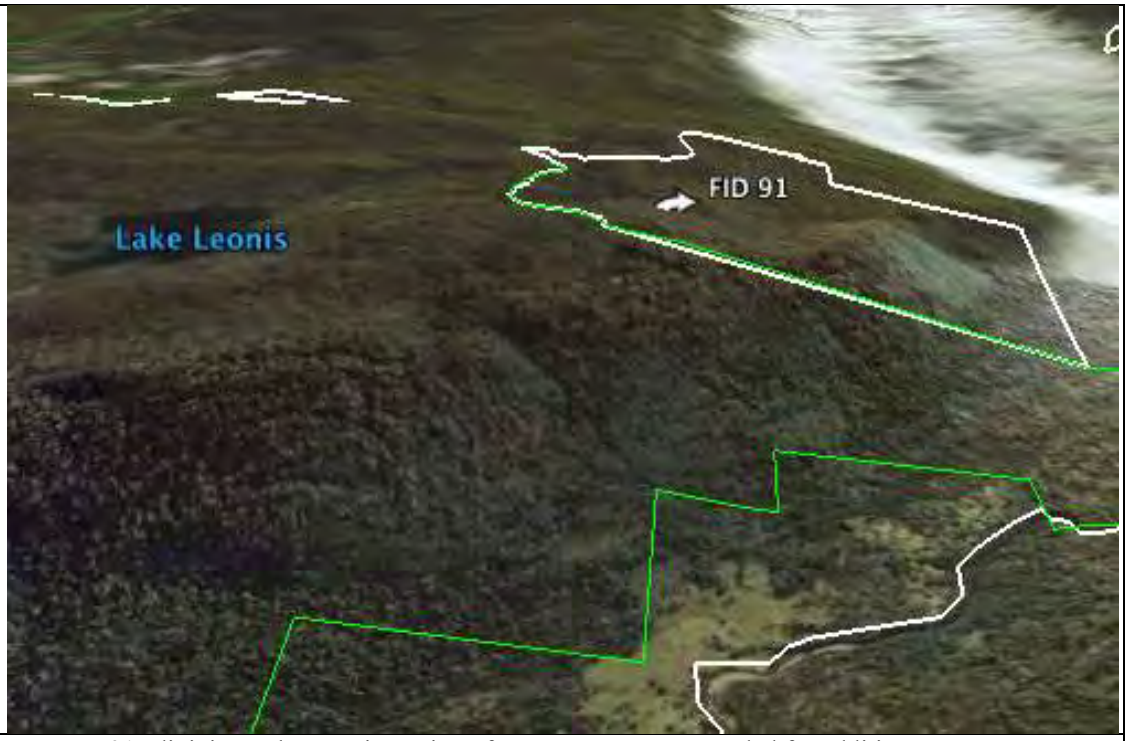
1. Add FIDs 136, 141, 131, 133, 134, 135, 139 to Mole Creek Karst National Park.
2. Add FIDs 136, 141, 131, 133, 134, 135, 139 together with the Croesus Cave, King Solomons Cave and Kublai Khan Cave Blocks of Mole Creek Karst National Park to the Tasmanian Wilderness World Heritage Area.
3. Include in the TWWHA for World Heritage nomination purposes, part of the Mersey River Forest Reserve and adjoining informal reserve east of the Mersey River (the river becomes the World Heritage boundary). See report on FID 136.
4. Add FID 142 to the adjoining Dogs Head Hill Forest Reserve.
5. Consider adding the Dogs Head Hill Forest Reserve to the adjoining Mole Creek Karst National Park.

Mersey Valley escarpment cluster

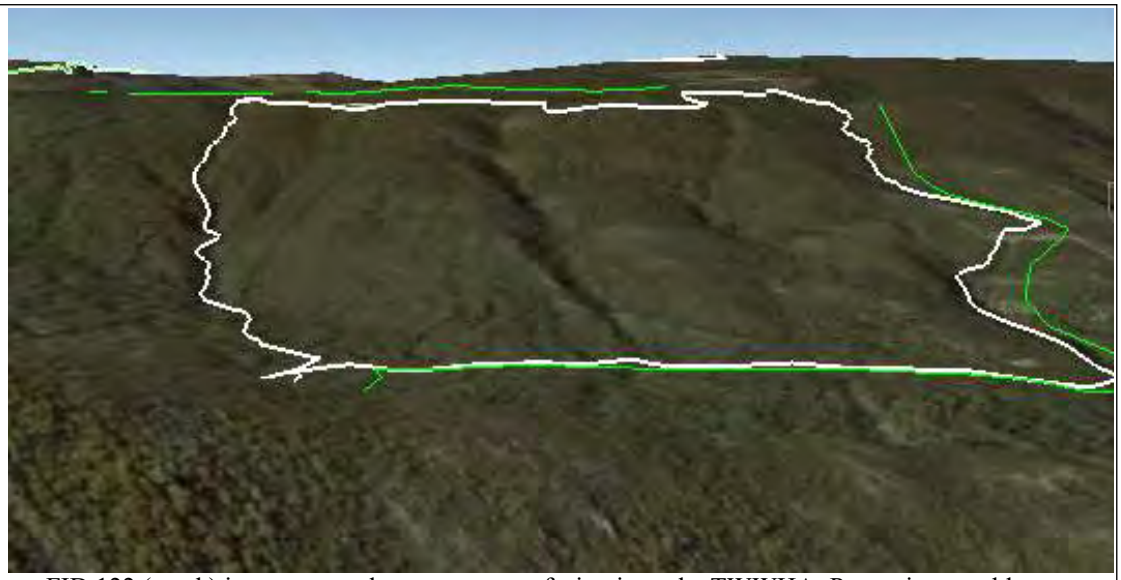
FID 112, 91, 94, 107, 122

Heritage summary—Mersey Valley Escarpment cluster		
ENGO reserve parcel No.	**Heritage significance**	**Remarks**
FID 112	FID 112 is an integral part of the glacial landscape otherwise already included in the adjoining Walls of Jerusalem section of the Tasmanian Wilderness World Heritage Area. Adding this glacial step would contribute to the integrity (glacial, landscape) of the TWWHA. High heritage conservation value.	By adding FID 112 to the TWWHA, the boundary would be much more appropriate. (Accessible in lowland position rather than a combination of cliff lines and straight line across gorges etc.) **Recommendation:** Add FID 112 to the adjoining TWWHA.
FID 91	Intact forest on glacial exit valley. Possibly includes large moraine on a terrace. Beneficial addition to TWWHA (boundary improvement)	Important as a buffer to limit vehicular access to the Lake Leonis glacial tarn in the immediately adjoining section of TWWHA.
FID 94	Narrow sliver. Not assessed. Consider at local level.	

Heritage summary—Mersey Valley Escarpment cluster		
ENGO reserve parcel No.	**Heritage significance**	**Remarks**
FID 107	Appears to be incorrectly mapped vegetation. Mostly mapped as eucalypt but most is rainforest with the occasional remnant tall eucalypt trees. Demonstrates a compressed sequence from rainforest on lower terrace, relic eucalypt on mid slope, then rainforest transition to moorland. Demonstrates the role of downslope change to fire movement from the west, reduced intensity and frequency allows survival of rainforest. Would contribute to the integrity (ecological diversity) of TWWHA. High heritage conservation value.	A long narrow strip of land adjoining TWWHA. Mostly a stepped escarpment slope. Definite value for addition to TWWHA. Benefits include improved accessible boundary in place of contour boundary and protection of rainforest fire barrier.
FID 122 (north)	A mostly treeless rocky knob above a stream that presently forms the boundary of the TWWHA. High heritage conservation value.	A narrow sliver of land between the TWWHA and logged private land. A very logical addition to the TWWHA to create a much more appropriate boundary than the existing.
FID 122 (south)	A steep treeless escarpment facing into the TWWHA.	Recommended for addition to TWWHA—improve visual protection and improve boundary.



FID 91 adjoining Lake Leonis section of TWWHA. Recommended for addition to TWWHA.



FID 122 (south) is a steep treeless escarpment facing in to the TWWHA. Protection would contribute to catchment and visual protection of the TWHWA.

Dove River cluster

FID 130, 132, 140 and Dove River Forest Reserve, Dove River Conservation Area, Swift Creek Conservation Area]

Context for assessment

The three ENGO-proposed reserve lands parcels (FID 130, 132 and 140) need to be assessed collectively, together with the closely associated:

- Dove River Forest Reserve
- Dove River Conservation Area
- Swift Creek Conservation Area.

These six parcels of land form a consolidated block of highland landscape to the east of Cradle Mountain Lodge and Visitor Centre. It is assumed that it is this consolidated block that is being considered for adding to the adjoining Tasmanian Wilderness World Heritage Area. FID 130 and Dove River Forest Reserve form the core of this cluster.

The greater part of the three ENGO-proposed reserves is already the subject of informal protection within state forest.

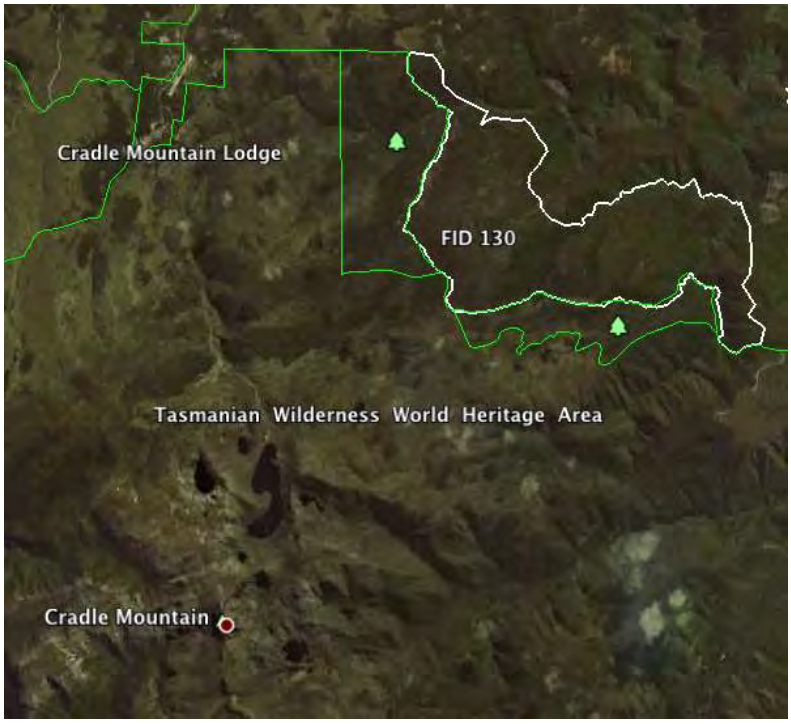
Assessment

The western part of FID 130 comprises a patch of eucalypt forest on an exposed ridge, mainly *E. delegatensis* with some smaller patches of *E. subcrenulata* and has not been informally reserved. In the deep valley tributary to the Dove River, there is extensive *Nothofagus* rainforest connecting to the more extensive rainforest in the Dove River Forest Reserve. A vegetation pattern of alternating bands of rainforest with ridge communities of *Acacia melanoxylon* and/or *E. delegatensis* extends into the adjoining World Heritage Area. Some old, selective logging disturbance exist on FID 130.

The composite block of ENGO-proposed reserve lands and various formal reserves has a diverse mosaic of highland vegetation ranging from moorland in the west, through Acacia scrub and forest, eucalypt forest to well developed *Nothofagus* rainforest. Essentially all is in a natural condition.

Some rehabilitation required for old logging on FID 130.

ENGO reserve parcel No.	**Heritage significance**	**Remarks**
FID 130 FID 132 FID 140	A diverse mosaic of vegetation ranging from moorland through eucalypt forest to rainforest. FID 130 shares with the adjoining Forest Reserve a superb series of spur–gully sequences of tall eucalypt–rainforest on low fire frequency steep slopes. Adding the package of ENGO-proposed reserve parcels and the three formal reserves to the TWWHA would: • contribute to the value and integrity of the TWWHA • further protect the scenic landscape associated with Cradle Mountain (logging in FID130 would be visible from Cradle Mountain, distant 8 km on facing slope) • significantly improve the boundary of the TWWHA, dispensing with a length of contour boundary High conservation value. Contribute to global significance.	The combination of the three ENGO-proposed reserve parcels and the three immediately adjoining formal reserves represent an integrated consolidated package, which would make a valuable contribution to the value and integrity of the TWWHA.
FID 146	Disjunct area. Already informally protected. No specific conservation attribute identified. May require local assessment. Not of heritage significance at national or global level.	
FID 144	Tiny parcel. Not assessed.	
FID 155	Small parcel, partly cleared on road frontage. Not assessed.	



FID 130 includes elevated land visible from many parts of the treeless landscape in the adjoining TWWHA. Logging of FID 130 would likely be visible from the TWWHA, including from Cradle Mountain.

Summary

The cluster comprising FID 130, 132, 140 and Dove River Forest Reserve, Dove River Conservation Area, Swift Creek Conservation Area represent a consolidated package of very diverse vegetation adjoining the otherwise largely treeless moorlands of the Cradle Mountain section of the Tasmanian Wilderness World Heritage Area.

The vegetation patterns of alternating tall eucalypt and rainforest are particularly noteworthy in terms of localised ecological diversity.

It is concluded that the consolidated package, including FID 130, 132 and 140 as an integral part of the package, is of very high conservation value and with it, FID 130, 132 and 140 are of high heritage conservation value.

The combination of these parcels of land would effectively protect the catchment of the Dove River and represent a very valuable addition to the adjoining Tasmanian Wilderness World Heritage Area.

Recommendation

1. Add FID 130, 132 and 140 plus Dove River Forest Reserve, Dove River Conservation Area, Swift Creek Conservation Area as a consolidated block to the adjoining TWWHA.

Vale of Belvoir cluster

FID 176 (plus nearby FID 160)

Introduction

FID 176 is a large parcel of land that is part of a very large tract of natural landscape, which includes a number of large protected areas including:

- Black Bluff Nature Recreation Area
- Reynolds Falls Nature Recreation Area
- Vale of Belvoir Conservation Area
- Winterbrook Falls Forest Reserve.

Assessment

The assessment is preliminary only.

The area is part of a large tract of mostly intact lands, some with wilderness qualities. There A number of enclaves of private lands are within the protected areas and one small one is east of FID 176.

FID 176 needed to be assessed as an integral part of the larger package of lands outlined in the Introduction. The combination of FID 176 with those existing protected lands, the package of lands represents an outstanding intact landscape with a great diversity of landscape, landforms, geology and natural vegetation. Doubtless there are species records, which add to the conservation potential of the area.

Boundary considerations

The northern (external) boundary of FID 176 presents a surprisingly appropriate and mostly well-defined boundary for any protected area, in many places following a river. Much of the west and north boundary would be appropriate for a World Heritage Area.

Recommendations

1. Consider FID 176 to be of high heritage conservation value of at least state and likely national significance and that, if added to the TWWHA, it would contribute significantly to the integrity of the World Heritage Area.
2. Provide separate conservation planning for FID 176, together with the adjoining major protected areas:
    - Black Bluff Nature Recreation Area
    - Reynolds Falls Nature Recreation Area
    - Vale of Belvoir Conservation Area.
    - Winterbrook Falls Forest Reserve

    to develop a consolidated package of lands to add to the Tasmanian Wilderness World Heritage Area.

NOTE: The Reynolds Falls Nature Recreation Area provides a direct physical link between the TWWHA and the Tarkine assessment area and the Granite Tor Conservation Area which is within the area currently being assessed by the National Heritage Council as part of the Tarkine National Heritage assessment area.

CHAPTER 7

North Coastal

Chapter 7

North Coastal

(Mostly ENGO-proposed reserve lands along north coast)

Introduction

The North Coastal section of this report is mostly a collection of ENGO-proposed reserves in the north of the state, which have no direct affinity with the World Heritage Area or with the North East cluster. Most of the ENGO-proposed reserve lands are associated with existing smaller protected areas on the coastal lowlands. None were assessed as being of global significance, one was assessed as having National Heritage significance and the balance were considered to be mainly of state significance.

The contents of this section of the report are set out below.

Dismal Swamp

[FID 261, 263, 265]

Introduction

Dismal Swamp has been recognised both as being of geoconservation and biodiversity significance. It is described in detail by Sharples as a karst 'polje' or flat-floored depression in a karst landscape. Dismal Swamp is located south-west of Smithton in the far north-west of Tasmania in a landscape largely cleared and developed for agriculture. The closed basin is forested with a blackwood (*Acacia melanoxylon*) forest. Three ENGO-proposed parcels of land are in the swamp.

South-west part of Dismal Swamp. The section in foreground is an ENGO Interim Protection Site (see adjacent image). Photo by Tourism Tasmania and Richard Bennett on http://www.pleasetakemeto.com/australia/dismal-swamp/photos/dismal-swamp-42683 — not for publication.

Three ENGO parcels in Dismal Swamp Polje. Only the two parcels on the left are on the floor of the polje. Image Google Earth with IGA overlay.

Geoheritage

Dismal Swamp is listed on the Tasmanian Geoconservation Database (TGD) as being of national significance.

Biodiversity

Dismal Swamp has been listed on the Register of the National Estate.

Dismal Swamp Area

Source:	Go to the Register of the National Estate for more information.
Identifier:	12059
Location:	Togari
Local Government:	Circular Head Municipality
State:	TAS
Country:	Australia
Statement of Significance:	Criterion C.1 the Dismal Swamp Nature Reserve located within this place provides an important scientific reference area for understanding the ecology of Blackwood communities. Criterion D.1 Dismal Swamp area is a very good representative example of the formerly extensive north-west Tasmanian wetlands vegetation types, including in particular the Blackwood swamp forests and associated EUCALYPTUS brookerana and LEPTOSPERMUM communities.
Description:	Forested swamp land. Very old valley backwater. Even aged stands of Blackwood occur in the area as a result of regeneration following commercial logging operations.

Dismal Swamp is one of the few blackwood swamps in north-west Tasmania that has not been artificially drained. For that reason it was declared a CAR reserve. The swamp is of particular nature conservation significance as one of the few remaining in the region. Its natural (karstic) hydrological processes continue to operate at natural rates and magnitudes of change, allowing the continued existence of a natural swamp forest community.

Dismal Swamp also has considerable geoconservation value as one of the best-expressed examples of a polje in Australia. It has significance as an exemplar of an element of geodiversity that is uncommon in Australia. The swamp, with its very flat floor and almost complete surround of steep marginal slopes, conforms closely to the ideal form of a polje.

Dismal Swamp conforms very well to Sweeting's (1972) description of the typical Dinaric poljes:

> Spate (1990) considered that compared to other known or suspected Australian poljes (in Western Australia, in the Mt Gambier and Portland regions of South Australia and Victoria, and in the Mole Creek area of Tasmania), Dismal Swamp is closest to the 'classical' polje type specimens of eastern Europe, and as such could be considered an Australian 'type'. In conventional geoconservation parlance, this means the significance of Dismal Swamp can be said to be Representative or Outstanding at a National level.'
> —Sharples 1999

It is noted that two of the three ENGO-proposed parcels (two westernmost [FID 261, 265]) are located in the bed of the polje whereas the third [263] is mostly on a hill above the polje but incorporating a section of the eastern escarpment. Forestry Tasmania has developed the elevated parcel with a visitor centre and an adventure facility. These are not directly related to

the heritage conservation significance of the polje and blackwood swamp forest and presumably are not threatened by logging.

Heritage assessment

It is likely that Dismal Swamp has heritage values of national significance, given that it is:

- listed on the Tasmanian Geoconservation Database (TGD) as being of national significance
- a geoconservation site that has been subject to expert comparison at the national and international level
- recognised as being of national heritage significance based on representative and remnant plant community value (Register of the National Estate)
- already reserved (in part) as a state nature reserve.

Blackwood swamp forest is largely confined to Tasmania and has been subject to extensive drainage and clearing. Dismal Swamp is regarded as an excellent example of its type and on that basis has been recognised as a CAR reserve (Sharples 1999).

NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Karst polje	(b) *the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural ...history;*	'... one of the best expressed examples of a polje in Australia, which is to say that it has significance as an exemplar of an element of geodiversity which is uncommon in Australia.' —Sharples 1999
Acacia melanoxylon swamp community	(b) *'the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or ... history;'*	*Acacia melanoxylon* swamp community is a nationally uncommon plant community—essentially confined to Tasmania—and now a rare aspect of Australian vegetation.
	(d) *the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:* *… (ii) a class of Australia's natural ... environments;*	The place represents an excellent example with intact natural hydrological processes and minimal disturbance and which demonstrates the principal characteristics of Acacia dominated swamp forest in Australia.

Heritage assessment conclusion

Based on both geoconservation and biodiversity values, Dismal Swamp in the north-west of Tasmania is of definite natural heritage value and of national significance.

Condition and integrity

Although subject to some early timber exploitation, Sharples considers that the hydrological processes responsible for maintaining the swamp forest community still operate. The vegetation is essentially intact and there are no significant invasive species apparent.

Recommendations

1. Recognise as being of national heritage significance the two parcels [FID 261, 265] of ENGO-proposed reserve lands within Dismal Swamp based on geoconservation and biodiversity values.
2. Protect the two parcels [FID 261, 265] of ENGO-proposed reserve lands within the Dismal Swamp and add to the Dismal Swamp Nature Reserve.

Bibliography

Sharples C 1999, 'The Dismal Swamp Polje of northwest Tasmania: a case study in geo-conservation' in *Cave Management in Australasia* 13, proceedings of the Thirteenth Australasian Conference on Cave And Karst Management, Mt Gambier, South Australia.

The Australasian Cave and Karst Management Association Inc., p. 52–74.

http://www.pleasetakemeto.com/australia/dismal-swamp/photos/dismal-swamp-42683

Leven Canyon cluster

[FID178, 183, 196]

Introduction

This small cluster of ENGO-proposed reserve parcels is made up of three parcels of land immediately adjoining the Leven Canyon Regional Reserve.

Context for assessment

The Leven Canyon Regional Reserve comprises a very rugged landscape bisected by a deep gorge carved by the Leven River.

Almost the whole of the reserve and the three ENGO-proposed reserve parcels are largely intact natural vegetation, mostly dry eucalypt forest but with some rainforest. FID 178 may have been subject to past logging or some other disturbance.

Assessment

Not assessed in detail.

A significant area of threatened plant community *Eucalyptus amygdalina* forest and woodland on sandstone occurs on FID 196.

The Leven Canyon cluster is listed against three geoconservation values in the Tasmanian Geoconservation Database, one of which is specific to the Leven Canyon.

Recommendations

1. Add the three ENGO-proposed reserve land parcels adjoining the Leven Canyon Regional Reserve.
2. Review the case for more formal protection of Leven Canyon Regional Reserve as a nature reserve or conservation area.

Narawntapu cluster

[FID 188, 190, 194, 201, 203, 206, 232, 234, 239]

Context for assessment

The ENGO-proposed reserve land parcels listed above are all forested hinterland parcels inland of Narawntapu National Park on the north coast of Tasmania. As such, the existence of the national park and the adjoining Briggs Regional Reserve provide an important context for assessing the heritage values and significance of the ENGO-proposed reserve lands.

Preliminary assessment indicated that the Briggs Regional Reserve was an integral part of the conservation core to this tract of land, providing the critical link between the national park and the forested inland. Accordingly, the assessed values of some of the ENGO-proposed reserve parcels is based on the presumption that the Briggs Regional Reserve will eventually be given a higher level of protection than its present tenure provides.

Assessment

An indicative assessment of the heritage value and significance—a steep forested catchment flowing into wetlands in the park which logically deserves to be protected.

Summary—Narawntapu cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 234	Contribute to the integrity of Narawtapu National Park (adding wet eucalypt forest, catchment protection). High heritage conservation value. State significance.	A steep forested catchment flowing into wetlands in the park so logically deserves to be protected. Only minor informal reserves at present. **Recommendations:** Protect the whole of FID 234 and add to Narawntapu National Park. Investigate in more detail the Sheepwash Creek catchment given the diversity of intact forest vegetation.

Summary—Narawntapu cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID239	Large tract of mostly dry eucalypt with mosaic of smaller patches of wet forest. Substantial core area of informal protection in south-western part, albeit non-commercial woodland/dry forest. Deserves, consolidation formalisation and expansion to full catchment boundaries. Significant heritage conservation value. State significance, prospect of national heritage significance if part of a larger consolidated protected area linked to Narawntapu National Park.	Provides connectivity between the Narawntapu/Gibbs protected areas in the north and Holwell Gorge State Reserve and Coppermine Creek Forest Reserve in the south. Mostly intact forest but some recent logging coupes. Existing informal reserves provide only token connectivity. **Recommendation**: Explore options for establishing a substantial protected area combining formalising informal reserves and protecting at least all intact forests within FID 239.
FID 206	About 50% recently clear fall logging. Not high heritage conservation value.	Small sliver of land adjoining recent logging coupe and Coppermine Creek Forest Reserve—may be a misidentification or mapping error. **Recommendation:** No action.
FID 201 FID 203	Both parcels adjoin the Mount Careless Forest Reserve. FID 203: Most is intact forest but northern panhandle extensively disturbed. Notwithstanding the disturbance from logging and roads, this panhandle, with rehabilitation, represents an important last opportunity to re-establish connectivity with the northern Narawntapu forest block. Significant heritage conservation value. State significance	FID 201: Part area previously disturbed by mining or similar. FID 203: If added to adjoining Mount Careless Forest Reserve would significantly add to the value and catchment protection of the reserve. **Recommendation:** Add both FID 201 and FID 203 to adjoining Mount Careless Forest Reserve and consider option of upgrade to nature reserve status.
FID 190	Small parcel of forested land adjoining Mount Careless Forest Reserve. Not assessed.	**Recommendation:** Consider locally.

Summary—Narawntapu cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 188	Threatened plant communities: • *Eucalyptus amygdalina* forest and woodland on sandstone • *Eucalyptus ovata* forest and woodland Significant amount of disturbance by both logging and sand mining. Significant heritage conservation value. State significance, possible national significance for threatened plant communities.	Parts informally protected—but not the threatened plant communities! **Recommendation:** Consider at least the eastern two thirds of FID 188 for formal protection. Protect the threatened plant communities from sand mining, quarrying.
FID 194	Mostly intact wet forest but with significant selective logging on ridge tops. Catchment flowing into main stream in Mount Careless Forest Reserve. Important value (locally uncommon/rare rainforest and *E. regnans* forest State heritage significance.	Addition would greatly enhance the conservation value and effective protection, especially stream catchments. **Recommendations:** Add to Mount Careless Forest Reserve (highly recommended) Consider upgrading Mount Careless Forest Reserve and recommended additions to nature reserve status.
FID 232	Most is low forest or woodland with some swampy areas. Flora of heritage conservation significance has been recorded near the quarry. Species not searched. Insufficient data to complete assessment. Probably not high heritage conservation value. May have local conservation significance.	A major quarry, quarry processing plant and haul road are located within this area. The area still has options for connectivity to Narawntapu National Park but likely involves private land. **Recommendation:** Refer for local analysis of conservation values and significance.

Conclusions for Narawntapu cluster

A group of ENGO-proposed reserves form a cluster south of the existing Narawntapu National Park. The cluster was assessed for conservation values and found to contain a significant concentration of values. Some ENGO-proposed parcels were found to be directly relevant to the existing park and have the potential to greatly enhance the values and integrity of the Narawntapu National Park.

Further away from the park the lands became a little less directly relevant to the park. They were found, however, to have significant conservation values and deserve closer attention to maximise the opportunities for more effective and integrated protection of this largely intact landscape.

Notwithstanding that data supported only state significance, it is possible that additional data may raise the possibility of the cluster being of national significance.

Recommendations for protection action are made in the above summary tables.

Long Hill–Frankford Road cluster

Context for assessment

Several small forest reserves are in the area including:

- Franklin Rivulet Forest Reserve (north of FID 218)
- Virginstow Forest Reserve (South of FID 218).

It also contains significant areas of informal reserves on state forest including parts of the ENGO-proposed reserve lands.

Summary—Long Hill–Frankford Road cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 195	Adjoins Virginstow Forest Reserve Threatened plant communities '*Eucalyptus amygdalina* inland forest and woodland on Cainosoic deposits' and '*Eucalyptus ovata* forest and woodland' extensive within parcel. The whole of FID 195 is already the subject of an informal reserve on state forest. A major power transmission line crosses the northern end. High heritage conservation value. State significance.	FID 195 is adjoined on the west and east side by eucalypt plantation but connects to intact native vegetation to both the north and south. **Recommendation:** Formally protect FID 195 and add to Virginstow Forest Reserve (intact threatened plant communities).

Summary—Long Hill–Frankford Road cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 218	Large parcel of intact forest—mostly *Eucalyptus amygdalina—Eucalyptus obliqua* damp sclerophyll forest. Significant parts are already informal reserves. As well as representing lowland forest of conservation value FID 218 plays a critical role in providing connectivity to the wider landscape creating a much more effective potential protected area. High heritage conservation value of state significance.	Adjoins Franklin Rivulet Forest Reserve in the north and Virginstow Forest Reserve in the south, connecting south-westward to FID 195 (see above). **Recommendations:** Protect the whole of FID 218 and consolidate formal protection of the aggregate comprising: • Franklin Rivulet Forest Reserve • FID 218 (ENGO-proposed reserve parcel) • Virginstow Forest Reserve • FID 195 (ENGO-proposed reserve). Investigate feasibility of achieving connectivity with: • the Narawntapu cluster of protected areas and proposed additions to north east • Long Hill–Brush Lagoon cluster to the south.

Reedy Marsh cluster

[FID 161, 165, 169, 170, 172, 177, 180, 186]

Context for assessment

The most important contextual element that will influence the assessment of the various ENGO-proposed reserve lands in this cluster is undoubtedly the large Reedy Marsh Forest Reserve and, only slightly separated to the south of that, the Brushy Rivulet Forest Reserve.

Summary—Reedy Marsh cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
[FID 161, 165, 169, 170, 172, 177, 180, 186]	See individual parcels below	All FID in cluster were assessed as a single cluster because all share the common feature of adjoining Reedy Marsh Forest Reserve.

Summary—Reedy Marsh cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 177	Completely selectively logged. Adjoined on two sides by plantation. Would appear to contribute nothing of significance to the Reedy Marsh Forest Reserve. No significant heritage conservation value.	Small block on western boundary of Reedy Marsh Forest Reserve. **Recommendation:** No action on heritage grounds.
FID 180	A significant part has been logged—part selectively, part by clear felling. Not high heritage conservation value but potentially important addition to Reedy Marsh Forest Reserve, which adjoins on three sides. Would make a valuable contribution to the reserve and consolidate it, significantly reducing the boundary length.	**Recommendation:** Add FID 180 to the Reedy Marsh Forest Reserve even though a significant part has been logged.
FID 186	A large parcel of forest on the northeastern boundary of Reedy Marsh Forest Reserve. Includes artificial storage Brushy Lagoon. Given the extent of logging, assessment was preliminary only. Probably not important heritage conservation value.	**Recommendation:** Do not add FID 186 to the Reedy Marsh Forest Reserve given the very extensive logging and the limited contribution to Reedy Marsh Forest Reserve. **NOTE:** The unlogged western panhandle of FID 186 might be usefully added to the forest reserve. Conduct a local review of values especially with respect to plant and animal records.
FID 169	Forested block, in block with group of small hills. Most has been selectively logged.	**Recommendation:** Add to the Reedy Marsh Forest Reserve. Notwithstanding that a significant part of FID 169 has been selectively logged.
[FID 165, 170, 172]	Small blocks on boundary of Reedy Marsh Forest Reserve. Not assessed other than for boundary improvement purposes.	**Recommendation:** Add to adjoining Reedy Marsh Forest Reserve.

Summary—Reedy Marsh cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 229 (Emu River area)	Adjoins Emu River Forest Reserve About 30–40% logged. Mostly *Eucalyptus obliqua* wet forest (undifferentiated) High heritage conservation value of state significance.	Notwithstanding partial logging, FID 229 would contribute significantly to the value and integrity of Emu River Forest Reserve.

Conclusions on Reedy Marsh cluster

The Reedy Marsh Cluster made up of eight ENGO-proposed reserves, together with the existing formal reserves, in particular Reedy Marsh Forest Reserve were considered to have considerable natural heritage potential. They form part of a substantial and largely intact landscape that is very vulnerable to degradation by roads, logging and other activities. Together these lands represent a potentially important state protected area.

While recommendations have been made relating to individual parcels, it is recommended that an integrated conservation planning exercise be conducted to obtain the best results from the significant existing conservation opportunities.

Old Park cluster

FID [191, 192, 199]

Context for assessment

The three parcels of ENGO-proposed reserve lands in this cluster all immediately adjoin the Old Park Forest Reserve.

Further, Old Park Forest Reserve is connected via informal reserves to a large tract of rainforest over which there is a conservation covenant. The combined aggregate of the forest reserve, ENGO-proposed reserve land parcels, the private land conservation covenant and the connecting informal reserves, add up to a significant parcel of native vegetation, much of it rainforest.

Assessing the ENGO-proposed reserve lands therefore needs to be seen in the context of the larger aggregate of native habitat.

Summary—Old Park cluster		
ENGO-proposed Reserve No.	**Heritage significance**	**Remarks**
[FID 191, 192, 199]	Most of each block is naturally treeless—grassland and moorland. Most of Forest Park Forest Reserve and much of the forested sections of the ENGO-proposed reserves is well-developed *Nothofagus* rainforest and so is of conservation significance. High heritage conservation values of state significance.	Most of Old Park Forest Reserve and forested parts of the ENGO-proposed reserve lands are *Nothofagus* rainforest. Several minor roads traverse FID 199. **Recommendation:** Add all three ENGO-proposed reserve parcels [190,192 and 199] to the Old Park Forest Reserve. Further investigate, particularly with regard to fauna records.

Three ENGO-proposed reserve parcels (white edge) adjoin Old Park Forest Reserve (light green shade—centre). One parcel (left) provides connectivity to a large private land conservation covenant further west.

Duck River

[FID 257]

Context for assessment

Adjoins Duck River Forest Reserve.

Assessment

Summary—Duck River cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
[FID 257]	No threatened vegetation communities. FID 257 includes part of the Trowutta–Sumac Karst Systems listed on the TGD as having 'continental' (national) significance: Area comprises extensive karst development with diverse karst landforms that have been largely unexplored. Significant features include an outstanding sinkhole lake (Lake Chisholm) that is possibly the best example of its type in Australia (Timms 1992) — TGD High heritage conservation value (part only). Likely only state significance, possibly national if considered in conjunction with karst values in nearby Tarkine.	Unidentified large building in western end (a mine?). Numerous agricultural encroachments, mostly small, some larger (pasture land). Extensive recent clear fell logging across central northern section. Some older logging. Most of FID 257 is seriously disturbed and unlikely to be of heritage conservation value. Western and southern section, particularly karst area likely of high heritage conservation significance. **Recommendation:** Conduct detailed review of ENGO-proposed reserve FID 257 to delineate any areas of conservation importance in south and west, taking any karst data into account.

Trowutta cluster

Context for assessment

FID 241 is a relatively small parcel of ENGO-proposed reserve land

Summary—Trowutta Cluster		
ENGO-proposed reserve	**Heritage significance**	**Remarks**
FID 225	Not assessed. Assumed to be part of existing formal reserve.	On ListMap, shows as already part of Roger River State Reserve.
FID 241	Intact tall (wet) eucalypt forest *(E. obliqua*) and rainforest. Adding to forest reserve would significantly improve boundary. High heritage conservation value. At least state significance but contributing to integrity of Trowutta Forest Reserve which is assessed as having national and possibly global significance (see Tarkine). FID 241 may contribute to national significance via Trowutta Forest Reserve.	Small parcel of forest that appears to be identical to that in the immediately adjoining part of Trowutta Forest Reserve (mostly *Nothofagus* rainforest) **Recommendation:** Add FID 241 to Trowutta Forest Reserve, THEN Include Trowutta Forest Reserve (together with FID 241) in the Tarkine protected area (national park) proposal.

CHAPTER 8

North East

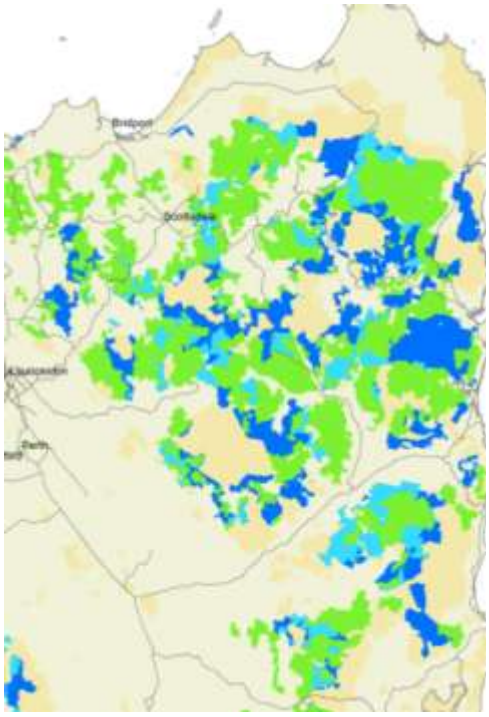
Chapter 8

North East

North Eastern cluster

Introduction

The ENGO-proposed reserves to be verified by the Independent Verification Group are made up of numerous parcels of land throughout the north-east and east of Tasmania. While some have been assessed as individual parcels of land, some are so located and linked as to form natural groupings that might logically be assessed together. One such grouping is described in this assessment as the North East cluster.



Assessment of the numerous ENGO-proposed reserve lands (dark blue and light blue) must address the context, especially the juxtaposition with existing protected areas (cream) together with adjoining and adjacent state forests (green).

The collection of ENGO-nominated reserve lands in the north-east of Tasmania. For the purpose of assessment for heritage significance all those areas east of the Midland Highway and north of the Esk Highway have been processed as a single group. What is absent from this diagram is the many existing reserves with which the ENGO-proposed reserves are linked.

Defining the North East cluster

The North East cluster is defined as all ENGO-proposed reserves north of the Esk Highway and east of the Midlands Highway, including north of the Tasman Highway but not including the several isolated parcels on the north coast near Weymouth and Noland Bay. This assessment area approximates the Ben Lomond Bioregion, one of nine such bioregions recognised in Tasmania. It also includes some parts in the coastal Flinders Bioregion.

The reality is that there is a physical habitat link between the North East cluster and the East Coast Corridor cluster, which continues south from the Esk Highway. One critical habitat links the two defined clusters, occurring just east of St Marys where the Saint Patricks Head State Reserve extends across the highway.

For ecological and conservation purposes it is therefore important to recognise the physical habitat links and hence see many of the relict native habitats in the north-east and east as still retaining a significant degree of regional connectivity.

Key documents

Two key documents provided valuable guidance for this section of the verification process:

- North East Bioregional Network and Wilderness Society 2007. *Linking landscapes: A wild country vision for North East Tasmania*). This document provides an important conceptual background on the rationale for selection of the land parcels presented as ENGO-proposed reserves in the North East cluster.
- McQuillan* PB 2011. Report (9A) to the Independent Verification Group, December. (Draft).

Context for assessment

A glance at a map of the ENGO-proposed reserve lands in the North East of Tasmania (see below) will reveal numerous parcels of land, often quite elongate, some relatively small but with a number of larger areas. Viewed in isolation, this collection of land parcels looks more like a ‘can of worms’ than a vision for heritage conservation. However, of great importance is the context of these many areas—the ENGO-proposed reserves are mostly intimately associated with the existing network of protected areas which includes a significant number of ‘formal reserves’ on state forest. Viewed in this context, the reserves are an integral part of a larger aggregate of existing and prospective protected areas.

Connectivity

During the assessment considerable emphasis was placed on the value of habitat connectivity in assessing the overall conservation value of the ENGO-proposed reserve lands. Connectivity conservation is a relatively new science and is still evolving but there is a strong consensus on the imperative of connectivity for success of conservation over time. The definition of ‘connectivity conservation’ adopted in Worboys, Francis & Lockwood (2010) has been used as a guide.

Connectivity conservation

Connectivity conservation is defined using biodiversity conservation criteria, but also includes social and institutional dimensions. Connectivity conservation describes actions taken to conserve landscape connectivity, habitat connectivity, ecological connectivity or evolutionary process connectivity for natural and semi-natural lands that interconnect and embed established protected areas. It may be represented by direct interconnections or by the ecological interconnectedness of disjunct conservation areas. The strong connectedness of people to natural and semi-natural connectivity lands is also recognized. This connection of people (and their groups and institutions) to land, combined with a shared conservation vision and actions such as communication, cooperation, collaboration and partnerships offer significant means for facilitating connectivity conservation outcomes.

—Worboys, Francis & Lockwood (2010)

It is important to be clear that ecological connectivity at the regional scale should be much more than simple or even token linear corridor connections of vegetation between protected areas. For connectivity to be effective the connecting corridors must, as far as practicable, be capable of allowing movement of all relevant species, not just a particular species. Each species will have different requirements for movement and this should be taken into account when designing corridors. There is no point in designing a ridge top corridor if there are species that never use or venture into such habitat.

While this heritage assessment process is not a conservation planning and protected area design mission, attention was paid to the relative value of the recognisable corridors for achieving long-term biological conservation. While there are no definitive 'rules' about designing corridors, the wider and more diverse corridors were rated higher in terms of conservation value than narrow, single-habitat type corridors.

Recommendations were made where opportunities to improve connectivity were recognised.

The document *Linking landscapes* (North East Bioregional Network & Wilderness Society 2007), recognises that connectivity should not be limited to a single strand approach and where opportunities remain for multi-stranding or regional networks of corridors then these would be far preferable to relying on single-strand corridors.

There are many informally recognised linear corridors within state forests in the North East and East Coast Corridor but these are mostly very narrow stream-side or roadside corridors. While these serve a local role in conservation they are not adequate nor can be relied upon for long-term species movement across the landscape at a regional scale.

The simple criteria used to assess the relative contribution of connectivity to conservation value of lands assessed were:

- the wider the better
- multiple habitat corridors better than single habitat
- multiple connectivity corridors better than single connectivity
- likely robustness over time, including risks from 'edge effect'.

While some ENGO-proposed reserves were recognised for their contribution to connectivity, some were more than mere connecting corridors and might be regarded as potential protected areas in their own right, making multiple contributions to conservation value and heritage significance.

ENGO-proposed reserves (green) lands and existing reserves (blue) in North East Tasmania. Note that many of the proposed reserve lands adjoin existing reserves, and so were assessed in that context.

Some individual ENGO-proposed reserve areas were clearly conceived as prospective additions to existing larger protected areas such as Ben Lomond National Park while others

are intended to connect between existing reserves, so called 'linking landscapes'. The purpose or objective of a few parcels was not so apparent.

A significant number of protected areas already exist in various forms, ranging from national parks and reserves through the numerous forest reserves to regional reserves. Additionally, there are numerous areas of informally reserved land within state forests. Considered in isolation, many individual protected areas are comparatively small and undoubtedly are sub-optimal for the landscape in terms of ecological sustainability. The literature makes it apparent that many of the protected areas in the North East (including the Douglas Apsley landscape) are the product of initiatives driven by a range of processes and activities directed at either particular parcels of land or seeking representation of particular plant or animal communities without the benefit of a regionally integrated conservation master plan.

The ENGO-proposed reserves now presented for verification of their heritage values are based on a regional-scale process undertaken by ENGOs, the concept called 'linking landscapes'. This exercise appears to have addressed at least key elements of the type of conservation planning strategy advocated in technical bulletins by the Secretariat of the Convention on Biological Diversity. See extract below.

Strategy Advocated by the CBD Secretariat for
MAKING PROTECTED AREAS RELEVANT

- ✓ ***Improved linkages between protected areas:*** by creating biological corridors that allow species to move, and genes to flow, from one protected or conserved area to another;
- ✓ ***Improved protected area management:*** by better managing existing protected areas to ensuring species survival within these areas and other intact habitats and species persistence within intact habitats;
- ✓ ***Improved protected area design:*** by ensuring that the design, layout and configuration enhances species survival and enhances connectivity with the surrounding landscape;
- ✓ ***Improved management of the surrounding matrix:*** by encouraging natural resource sectors to adopt practices that either positively impact (or at least do not negatively impact) biodiversity conservation and connectivity; and
- ✓ ***Improved connectivity to allow species to migrate in the face of climate change:*** by ensuring species have a wider range of options for movement and adaptation in the face of climate change

Clearly a primary focus of the 'linking landscapes' work that generated the ENGO-proposed reserves in the North East is 'connectivity'. The global literature (e.g. Bennett 2003, Anderson & Jenkins 2006, Mackey, Watson & Worboys 2008) strongly endorses the concept of connectivity between protected areas.

The 'five star' of terrestrial connectivity is seamless uninterrupted habitat providing a substantial width corridor between protected areas. In reality, this is not always achievable and indeed, for some species such as birds, may not even be essential. The precautionary approach to conservation planning should be, wherever the opportunity still exists, to retain and protect the widest and most continuous habitat link practicable. In some situations where connectivity has been severed, a case may exist for rehabilitation and restoration of pre-existing connectivity.

Connectivity is much more than just a narrow 'pathway for animals to walk along' rather, as far as practicable, connecting corridors must be well-designed and as wide as practicable to ensure that the corridors themselves are capable of supporting prevailing natural ecological

processes ('functionally linked') and to be sufficiently robust to avoid being degraded through 'edge effect' by adjacent land use activities—so they need to be buffered from such activities.

'Connectivity'—definition IUCN

The maintenance and restoration of ecosystem integrity requires landscape-scale conservation. This can be achieved through systems of core protected areas that are functionally linked and buffered in ways that maintain ecosystem processes and allow species to survive and move, thus ensuring that populations are viable and that ecosystems and people are able to adapt to land transformation and change.

Given the importance of connectivity of habitat for conservation, connectivity has been accorded due weighting in assessing the conservation value of the ENGO-proposed reserve lands, both individually and collectively.

Some individual parcels are unlikely to have independent or 'stand-alone' high conservation value only revealing their real conservation significance when their context is established and taken in to account. For example, some of the 'linking' corridors appear to have very limited independent conservation significance until their contribution to regional connectivity between other important habitat areas is recognised.

The provisional heritage assessment undertaken for the verification process therefore was largely directed at the aggregate of ENGO-proposed reserves in the context of existing protected areas.

Given the disposition of the ENGO-proposed reserves, their relationship to existing protected areas and the underpinning vision of *Linking landscapes*, it was decided that heritage assessment might be best conducted at three different levels:

- regional cluster
- local clusters
- individual ENGO-proposed reserve parcels.

For convenience and because of some identified issues, some clusters of land parcels have also been assessed separately e.g. areas proposed as additions to Ben Lomond National Park.

The third level of assessment was only conducted in those cases where a parcel appeared to have either independent or 'stand-alone' values or appeared to have little connectivity or relationship to the overall aggregate North East cluster.

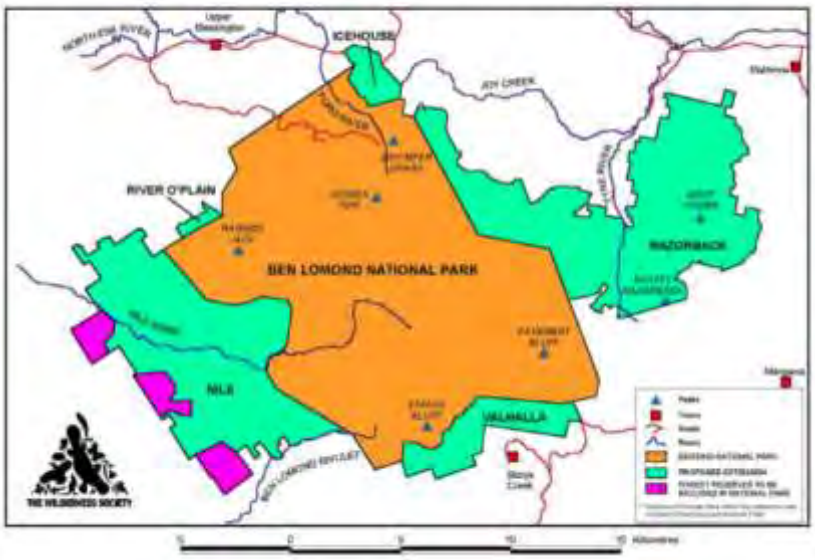
A number of categories of natural attributes warrant mention as making important contributions to the overall conservation values of the region and are briefly addressed below.

Geological

During the Jurassic geological era, around 183 million years ago, a massive dolerite intrusion occurred in Gondwana, forming what is today known as the 'Karoo-Ferrar large igneous province' extending across what is now five continents. The massive dolerite sill in Tasmania, together with counterpart formations in Antarctica, Argentina, South Africa and India, are like giant bookmarks indicating the incremental breakup of Gondwana. The Tasmanian dolerite is the largest dolerite formation in the world and despite its antiquity is still evident in much of the Tasmanian landscape, the remnant occurrences in the North East being the most north easterly relics of this once enormously extensive eruption.

The dolerite of the Central Plateau is an extensive glaciated plateau surface, demarcated in the north by the Great Western Tiers. Complementing this, in the north-east of Tasmania, the

dolerite is still evident in a whole range of landforms from the extensive dolerite capping of the residual Ben Lomond plateau and Mount Barrow, through all stages of eroded mountain with residual castle-like dolerite cappings through to the final erosional stage where the only evidence of there having been a dolerite sill cap is in remnant talus and dolerite boulders on mountain tops.



The Wilderness Society's proposed Ben Lomond National Park Extension appears to be the basis of the cluster of ENGO-proposed reserves.

The residual dolerite cappings are of geoconservation heritage significance and contribute significantly to the aesthetics of the landscape in the North East.

Rainforests in the North East

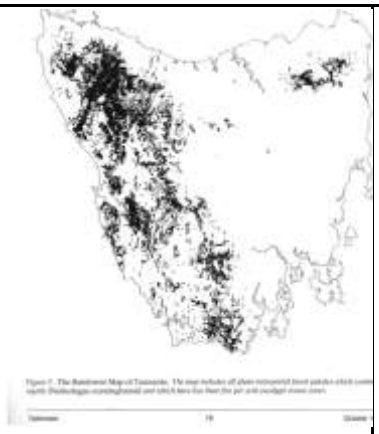
Most rainforest in Tasmania is in the high rainfall and geographically diverse western half of the island. A significant outlier cluster of rainforest patches is found in the North East of the state, almost all of those patches are in the North East cluster assessment area.

The main rainforest community found in the North East is the undifferentiated *Nothofagus* rainforest—*Nothofagus cunninghamii* often being found in association with sassafras *Atherospermum moschatum*.

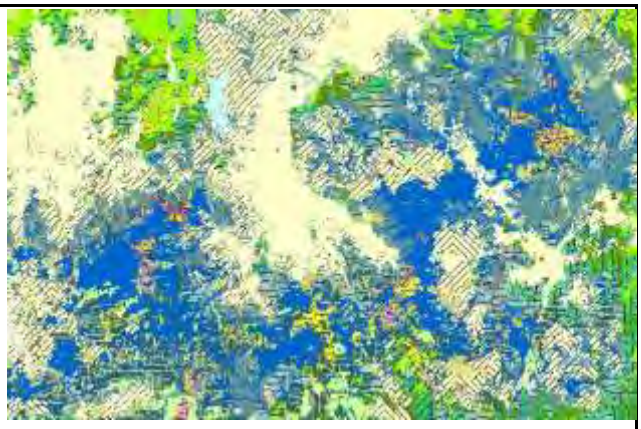
Recent genetic studies have indicated a genetic difference between the *Nothofagus* of the North East and the more extensive *Nothofagus* forests of western Tasmania (Worth 2009). This suggests that the *Nothofagus* population in the North East has long been separated from those of western Tasmania, resulting in genetic divergence. Genetic differences in the north-eastern populations of Sassafras *Atherospermum moschatumare* are also apparent for this ancient species, which appears to have evolved in Tasmania (Worth, Marthick et al. 2011).

From a range of considerations, it is reasonable to conclude that the geographic outlier occurrence of rainforests (collectively) in the north-east of Tasmania is of high heritage conservation value, of state significance and likely to be of national significance.

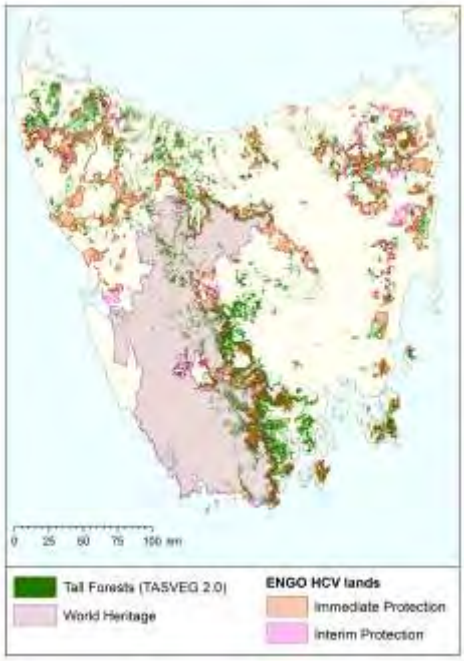
A significant number of the ENGO-proposed reserves contain rainforest, which contribute to the overall high conservation value of the proposed reserves collectively. Again, it should not be assumed that rainforest of conservation value occurs throughout each and every parcel of land; rather it is an indicator of the overall high heritage conservation value of the collection of ENGO-proposed reserves. The *Linking landscapes* document provides details of the occurrence of rainforest in some specific localities. The extracted vegetation map below outlines the distribution pattern of the main rainforest occurrence in the North East.



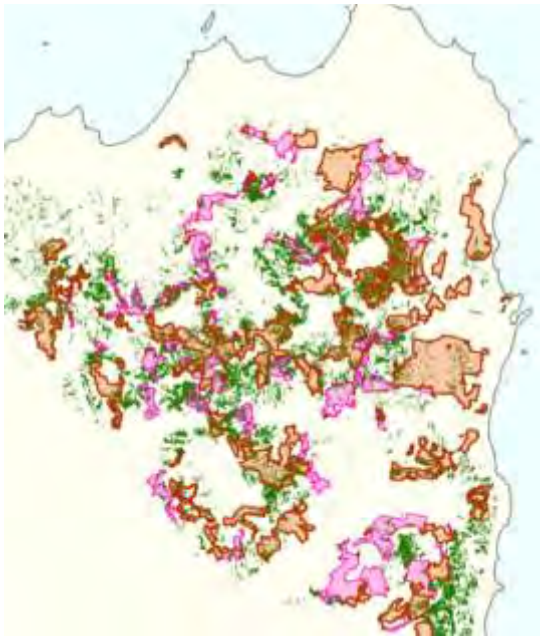
Rainforest distribution in Tasmania.



The distribution of the main occurrence of *Nothofagus* rainforest in the North East cluster assessment area. Tall eucalypt forests (*E. regnans* and *E. delegatensis* wet sclerophyll often overlap or are intimately associated with the areas mapped as rainforest (blue).



The main tract of tall eucalypt forest ecosystem in Tasmania extends in a corridor from central Tasmania down to the south coast. Another well-defined cluster of tall eucalypt forests is in the North East. Many of the ENGO-nominated reserve lands in the north include tall eucalypt forest.



Detail showing the distribution of tall eucalypt forests relative to the ENGO-proposed reserves (brown and purple). This diagram also illustrates the difference in distribution pattern of the tall eucalypt forests in the North East—mostly small and fragmented—compared with the more extensive stands in the Southern Forests.

Tall eucalypt forests in the North East

The tall (wet) eucalypt forests in the North East, while geographically limited are nevertheless a significant component of the natural vegetation in the North East cluster (see map above). The tall eucalypt distribution is patchy, probably in response to soil and local rainfall patterns. Much of the tall eucalypt forest that originally occurred in the region has been cleared for farming or logged, and in many cases converted to eucalypt plantations. Coupe clear fall logging is conducted in tall eucalypt forest whereas selective logging appears to be the logging method adopted in adjacent dry sclerophyll forests.

Given the commercial value of the tall eucalypt forests of Tasmania, they have been in constant demand for timber production, competing with conservation. Many old growth areas have been harvested and some converted to plantation. **The result is that old growth tall eucalypt forests in the North East have been so extensively eliminated that they are now a premium conservation resource.**

Many of the ENGO-proposed reserves have occurrences of tall eucalypt forest, which contribute to the overall, collective high conservation value of the proposed reserves. Again, it should not be assumed that tall eucalypt forest of conservation value occur throughout each and every parcel of land—rather it indicates the overall high heritage conservation value of the collection of ENGO-proposed reserves. The *Linking landscapes* document provides details of the occurrence of tall eucalypt forest in some specific localities.

High conservation value, threatened species, threatened plant communities

The document *Linking landscapes* (2009) was considered to be a reliable source of information on the occurrence of threatened species of plants and animals and threatened vegetation communities. Many threatened species and communities have been identified in the North East, in particular in the North East cluster assessment area. Given that the ENGO-proposed reserve parcels directly reflect *Linking landscapes*, its database is directly relevant to the verification process. No-one should assume that these threatened attributes are evenly distributed or occur in each and every ENGO-proposed reserve parcel but rather they are just one of the indicators of the conservation value of the identified prospective protected areas.

Mitochondral DNA reveals a lineage of giant freshwater crayfish (*Astacopsis gouldi*), which is genetically divergent from the remaining populations in north-western Tasmania (Sinclair 2011). This cryptic lineage from the North East may therefore be of extremely high conservation value.

> Conservation efforts for *A. gouldi*, combining habitat restoration with in situ management of wild populations and some population augmentation into once wild rivers, would have a positive impact for conservation of freshwater ecosystems in northern Tasmania —Sinclair 2011, McQuillan 2012.

Wilderness

Wilderness is not considered a significant conservation attribute in the North East cluster and was not factored into the assessment of heritage value. There are, however, very significant areas of high integrity intact forests, which represent a premium heritage conservation resource where natural processes have some prospect of persisting.

Conclusion

The combined attributes below, which were documented as occurring within the ENGO-proposed reserves in the North East cluster assessment area, contribute to the aggregate assessed heritage significance:

- rainforest

- tall eucalypt forest
- threatened species and threatened vegetation communities
- geoconservation
- genetic diversity and local endemism.

The combination of the significant conservation values in existing reserves in the region and the ENGO-proposed reserves within the North East cluster represents a highly significant set of conservation values—a regional scale tract of natural landscape of high heritage conservation value.

The existing reserves and the ENGO-proposed reserves are effectively linked and complementary—bringing existing and potential protected areas into a 'linked landscape' despite the:

- often convoluted boundaries of individual ENGO-proposed reserves
- numerous areas of cleared land or highly modified native vegetation adjoining the existing reserves and ENGO-proposed reserves.

It is this connectivity of habitat across the wider regional landscape, the combination of the ENGO-proposed reserve lands with existing protected areas that greatly enhances the conservation significance of the North East cluster and with it the heritage value of the ENGO-proposed reserves.

It is therefore concluded that the ENGO-proposed reserves, considered in the context of the existing reserve system, would make a major contribution to an interconnected system of protected lands that collectively would represent an area of high heritage conservation value of state and national significance**.**

Boundary considerations

Although the ENGO-proposed reserves were holistically assessed in the context of existing reserves, some boundary issues have been identified should the ENGO proposals be adopted without change as additions to the existing reserve system. A number of these issues have been documented for example, as in the Ben Lomond (sub) cluster. There are a series of minor prolongations and peninsulas in the ENGO-proposed areas that deserve critical review in the interests of adopting more appropriate boundaries for the protected area system.

Note on integrity

Deleting some strategically located areas of ENGO-proposed reserves from protection could impact significantly on, and reduce the conservation value of, adjoining lands by severing existing habitat connectivity**. It is therefore important to see the aggregate of ENGO-proposed reserves as an integrated package of lands, which relate to each other and to existing protected areas.**

Assessment at local cluster level

Having verified that the aggregate of ENGO-proposed reserves is of conservation value, and of heritage conservation significance at both the state and national levels, it was apparent that some parts of the North East cluster deserved to be more closely assessed and commented on. Several localities appear to be particularly important as 'core areas' in the larger regional context. Two of the more obvious are centred on Ben Lomond National Park, Mount Maurice Forest Reserve and Mount Victoria Forest Reserve, both of very high heritage conservation value in their own right.

Ben Lomond sub-cluster

FID 118, 119, 124, 126, 127, 137, 145, 156, 166, 208

Context for assessment

There appears to be a significant difference between the Wilderness Society's proposed extensions to Ben Lomond National Park and the relevant ENGO-proposed reserves with no apparent rationale.

Nile River forests

This block of forests is on the slopes below the western boundary of Ben Lomond National Park. Information available about the rationale for the ENGO-proposed reserves in this locality has presented a number of questions and apparent anomalies, namely:

- The protection of FID 137 or its addition to Ben Lomond National Park creates several enclaves of state forest between FID 137 and the park. There appears no logic in the delineation of FID 137. Is this a mapping error or is there some aspect of this exclusion which has not been provided?
- FID 117, FID 119 and FID 126 together all but create a third large enclave, albeit mostly of private land. FID 119 would appear to offer little conservation benefit and create an unnecessary management problem. Again the logic of FID 117 and FID 119 is not clear.

FID 145—although data on heritage is deficient, this narrow strip would improve the park boundary, changing it from a straight line across a rocky slope to a road (in part).

The above anomalies do impact on assessing the conservation value of the ENGO-proposed reserves. For example, FID 137, which if considered as only indirectly connecting to the national park, has less significance than if it is part of a continuous tract of protected forest linking to an existing protected area.

All of the ENGO-proposed reserves adjoining or adjacent to Ben Lomond National Park, as prospective additions to the park in effect 'retro fit' the park. The existing park is all higher than 600 m above sea level. All of the ENGO-proposed reserves would have the effect of extending the park to lower elevations and hence incorporating vegetation and habitat not presently represented in the park—a very commendable and much needed redesign of the existing protected area. This consideration is relevant to assessing heritage significance as the assessed areas can be valued for their 'value adding' potential rather than in isolation.

Capturing lower elevation forests in the reserve system is also likely to be useful to assist adaptation to climate change and would likely increase the proportion of 'source' (higher productivity) habitat for a range of species in the reserve system.

Heritage assessment

Geoconservation

Not surprisingly, the Ben Lomond mesa (plateau) landform is regarded as being of particular geological and geographic interest. The formation, including the immediate slopes below the escarpment, falls within a number of recognised listings in the Tasmanian Geoconservation Database (LISTmap), namely:

- 'Ben Lomond Terrain', geographical significance. Continent (national) (TGD)
- 'Ben Lomond Glacial Ice Margins', geographical significance sub-region, notable example of type (TGD)

- 'Ben Lomond and other Dolerite Horst Mountains', geographical significance, regional Statement of Significance: These dolerite horst mountains form the major 'up thrown', fault controlled landforms in north-east Tasmania associated with the Tertiary NNW faulting. Listed (TGD)
- 'Ben Lomond Dolerite Horst Mountain', geographical significance regional, Statement of Significance: dolerite horst mountain which forms a major up thrown, fault controlled landform in north-east Tasmania associated with the Tertiary NNW faulting (TGD)
- 'Ben Lomond Dolerite Periglacial System', geographical significance, sub-region Statement of Significance: Ben Lomond illustrates typical features of periglacial terrain in north-eastern Tasmania (TGD)
- 'North-east Tasmania Dolerite Periglacial Systems', geographical significance, sub-regional significance. Statement of Significance: illustrates typical features of periglacial terrain in north-eastern Tasmania (TGD).

Although most listings are only of local or regional significance, the 'Ben Lomond Terrain' is regarded as being of 'continent' or national significance.

The Tower Hill to the east (ENGO FID 156) is geologically related to Ben Lomond and has been assigned its own geoconservation recognition:

- 'Tower Hills Dolerite Residual Peak', geographical significance, sub-regional significance (TGD)
- 'Tower Hills Dolerite Periglacial System', sub-regional significance (TGD)
- 'North-east Tasmania Dolerite Residual Peaks', sub-regional significance (TGD)
- 'North-east Tasmania Dolerite Periglacial Systems', sub-regional significance (TGD).

Biodiversity

Vegetation

The vegetation map below illustrates the concentric vegetation pattern centred on the Ben Lomond plateau (pink), which closely coincides with the Ben Lomond National Park. The surrounding vegetation (light green) is dominated by a single forest community, '*Eucalyptus delegatensis* dry forest and woodland'. Most of the ENGO-proposed reserves on the west and south side of Ben Lomond comprise *E. delegatensis* dry forest and woodland. This forest community is only poorly represented in the national park so that any additions of this to the park would make a very significant contribution to its biodiversity integrity.

Threatened vegetation community

Eucalyptus amygdalina forest and woodland on sandstone (DAS in TasVeg 2.0)

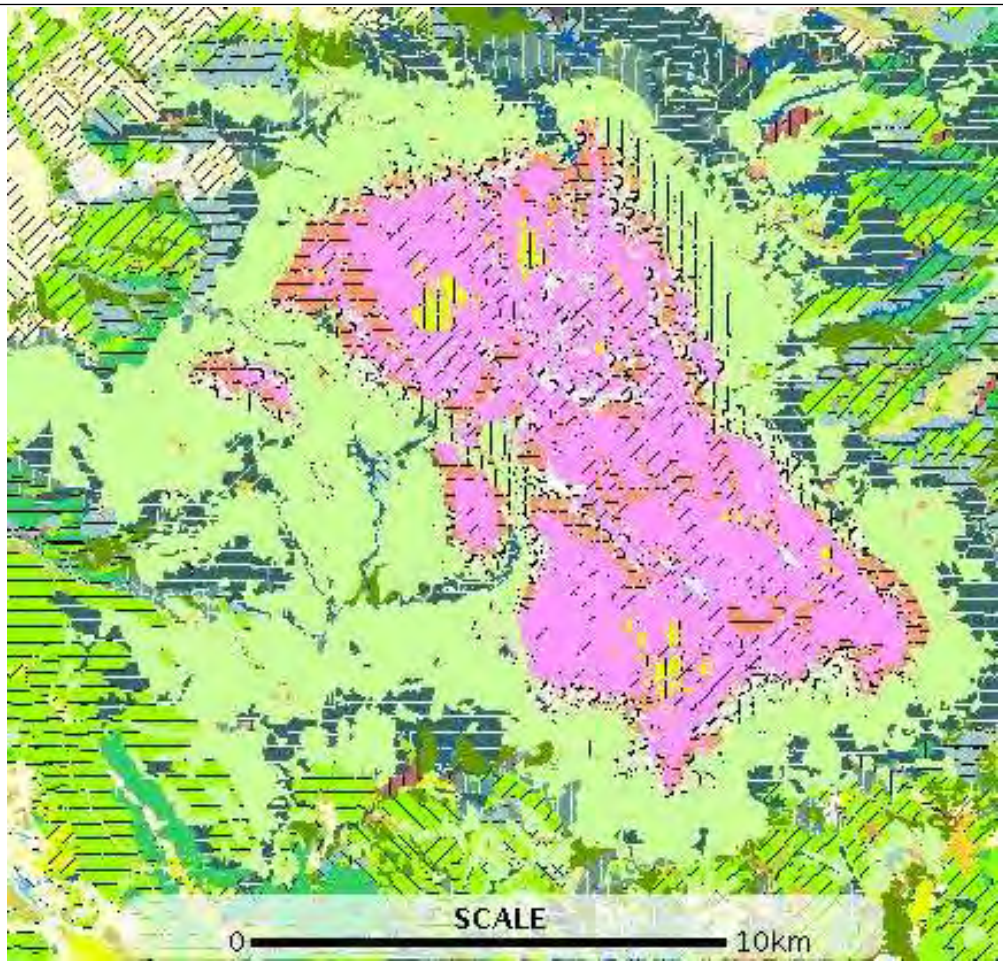
This is the main threatened vegetation community relevant to the forested ENGO-proposed reserves adjoining or adjacent to Ben Lomond National Park. Plotting of the LISTmap data revealed that almost all of this community is outside the ENGO-proposed reserves lands, on private land and has been extensively clear felled.

Rare, threatened species

The following list was provided in ENGO documentation:

- *Acacia pataczekii* (wally's or pataczek's wattle)—rare; verification check—Tasmanian endemic, rare, NE of Tas. (DPIPWE Tas)
- *Bossiaea obcordata* (spiny bossiae)—rare; verification check—status is rare in Tasmania but is common in NSW, Qld and Vic. (DPIPWE Tas and PlantNET)
- *Hierochloe rariflora* (cane holy-grass)—rare

- Pimelea axiflora axiflora (bootlace bush)—rare
- *Prasophyllum stellatum* (Ben Lomond leek orchid)—endangered
- *Pterostylis atrans* (dark-tip greenhood)—rare; verification check—rare in Tasmania, not endemic in Tasmania
- *Teucrium corymbosum* (forest germander)—rare
- *Aquila audax fleayi* (wedge-tailed eagle)—critically endangered.



Vegetation map illustrating concentric pattern around the central plateau surface of Ben Lomond. The light green rim is ***Eucalyptus delegatensis*** dry forest and woodland.

None of the data contained in the ENGO material is specific to any of the ENGO-proposed reserves so that it is not possible, based on that data, to identify any specific values at the individual area level. General conclusions can be drawn at the landscape level, that all of the ENGO-proposed reserves surrounding Ben Lomond are vegetated with *Eucalyptus delegatensis* dry forest and woodland. At the local level, this would make an important conservation contribution to the park, if added.

Despite the general assessment that can be made at the vegetation community level, the extraordinary configuration of ENGO-proposed reserves raises the appropriateness of the resultant boundaries and indeed the heritage value of the individual areas.

The various ENGO-proposed reserve can be summarised as follows:

ENGO-proposed reserves	Heritage significance	Remarks
FID 145	Not known. Addition to park would improve boundary (move to road).	Small but useful eucalypt forest addition to Ben Lomond National park.
FID 137	Significant: poorly represented *E. delegatensis* dry forest and woodland. State significance only.	Adding this area to the park is ONLY supported subject to review of the 4 enclaves that would be created (parts of FID 137 are only 250 m wide strip).
FID 124	Only significant (state) if connected to the park.	Addition to the park only supported if physically connected to park.
FID 117	Little heritage significance without protection of adjoining forest enclaves. Local significance only.	Add section south of road to Castle Carey Regional Reserve.
FID 118	Small strip of forest. No identified heritage value.	Small but may be useful forest addition to adjoining reserve and to improve boundary.
FID 119	Limited heritage value without connectivity to park. Local significance only.	No connectivity with park. Parts only 200 m wide. Addition to park not supported unless the enclave to the east is also considered for protection.
FID 126	Comprises poorly represented (in park) *E. delegatensis* dry forest and woodland. Assessed as important contribution to heritage significance of Ben Lomond National Park. National significance.	Notwithstanding some logging, this forest block represents a high value addition to the national park. The southern panhandle provides connectivity to the Castle Cary Regional Reserve.
FID 127	Token connectivity to park (but scope for improvement) so assessed as part of the Castle Cary/ Sawpit Ridge Forest Reserve habitat island. State significance.	In terms of land use and management, is much more related to Castle Cary Regional Reserve (west) and Sawpit Ridge Forest Reserve (south-east). If a northward connectivity to park could be achieved (via state forest), heritage conservation value would be greater.

ENGO-proposed reserves	Heritage significance	Remarks
FID 156	Difficult to assess given extraordinary configuration. The convolutions and created enclaves make no sense in conservation planning terms. Western two thirds makes direct beneficial contribution to the park. Eastern third (east of Calders Gully Road and a line between Tyne Road and eastern enclave) is of limited conservation value in its present form as boundaries are most inappropriate. Part (west) state/national significance	If FID 156 were added to Ben Lomond NP, it would create a number of undesirable enclaves. Some high conservation value but needs further review and conservation planning of this locality. Makes a contribution to the North East cluster being national significance.
FID166	Mostly intact eucalypt forest.	Linked to Ben Lomond via Joy Creek Forest Reserve and FID 156. Boundary trade-offs could be made to improve width of connectivity corridor to Joy Creek Forest Reserve.

Recommendations

1. Add FID 145 to Ben Lomond National Park (boundary improvements).
2. Comprehensively review the prospect of a consolidated tract of forest, including FID 137, for a single addition to the western side of the park, avoiding enclaves.
3. Add FID 124 to park only if intervening land is available to establish full connectivity to park.
4. Add section of FID 117 south of road to Castle Cary Regional Reserve.
5. Add whole of FID 126 to Ben Lomond National Park.
6. Conduct a conservation planning process to optimise conservation benefits and enhancements to the national park.

Conclusions on ENGO-proposed reserves associated with Ben Lomond National Park

All of the ENGO-proposed reserves directly linked to the Ben Lomond National Park are verified to be of conservation importance and of at least state significance and likely national significance.

In (heritage) conservation planning terms, there is a clear-cut case for extending the Ben Lomond National Park to include areas of the otherwise poorly represented *E. delegatensis* dry forest and woodland. What is in question is just what form those park additions might take. Adopting all of the ENGO-proposed reserves as additions to the park without further

consideration could seriously compound boundary management. The author is of the opinion that there is a prima facie case for further planning in the area to ensure that all additions to the park are consolidated and that boundaries are appropriate.

Examining the ENGO-proposed reserves lands associated with Ben Lomond National Park raised some serious questions about the merits of specific parcels of land and some of their boundaries. The reasoning behind the boundaries of some of the selected areas is not apparent.

Conclusions on Ben Lomond core area

The Ben Lomond 'core area', comprising Ben Lomond National Park and associated ENGO-proposed reserves, was confirmed as an area of high conservation significance, independent of other protected lands in the North East. The Ben Lomond core area makes an important contribution to the aggregate of protected lands and proposed protected lands in the North East cluster.

Mount Maurice cluster

FID 187, 202, 205, 208, 213, 216, 221, 236

Introduction

The Mount Maurice cluster is an aggregate of ENGO-proposed reserves centred on the existing Mount Maurice Forest Reserve, a reserve previously identified as being of high conservation value, especially because of the stands of cool temperate rainforest.

Vegetation is a mix of rainforest and eucalypt forest, including some tall eucalypt forest. The main eucalypt dominant is *E. delegatensis* but there is some *E. regnans*.

Context for assessment

Mount Maurice Forest Reserve is easily recognised as being one of a number of important 'core areas' in the North East cluster, importantly, retaining physical habitat links to adjacent remnant forest areas in the region.

Although the 'Ben Nevis' block [FID 208] has limited connectivity to Ben Lomond National Park, its intimate connection to the Mount Maurice Forest Reserve to the north is much more important in assessing heritage values and significance. The Mount Maurice Forest Reserve, added to by the Regional Forest Agreement (RFA) process, is a substantial block of forest in formal and informal reserve. The reserve in turn has prospects of being able to maintain its connectivity northward to other remnant habitat so that a regional 'linking of landscapes' is still an option.

The Mount Maurice Forest Reserve has previously been specifically recognised for its high conservation value, including as part of the RFA. A rapid appraisal by the author verified the high conservation value of the reserve in its present form, particularly for its combination of:

- rainforest
- tall eucalypt forest
- threatened plant communities
- geoconservation sites.

The various ENGO-proposed reserves, which directly link to the Mount Maurice Forest Reserve need to be assessed in the context of that link to the existing high value protected area.

Assessment

All of the ENGO-proposed reserves, which directly link with the Mount Maurice Forest Reserve, have the potential to enhance the conservation value of the existing reserve and to contribute independent conservation value (see *Linking landscapes*).

FID 208 is one of the three largest of the ENGO-proposed reserves in the North East cluster and deserves some specific consideration. It is a sizable block of mainly forested lands linking Mount Maurice Forest Reserve in the north to Ben Lomond National Park in the south. It provides reasonably effective connectivity between Ben Lomond National Park and Mount Maurice Forest Reserve. Topography is mostly steep to moderately steep and includes two well-known dolerite capped residual peaks, Ben Nevis and Mount Saddleback. FID 208 contributes critical connectivity between the Ben Lomond and Mount Maurice Forest Reserve 'core areas'.

Similarly, on the north side of Mount Maurice Forest Reserve, ENGO-proposed reserve FID 236 is extensive and effectively links the reserve northwards to other nodes of natural habitat in the region. It provides critical connectivity northward from Mount Maurice, ultimately to the Cameron Regional Reserve.

FID 208 and FID 236 are therefore of particular conservation value because of their contribution to connectivity of regional-scale habitat of conservation importance.

Both FID 208 and FID 236 are substantial parcels of forest, which independently have significant conservation values but also substantially enhance the conservation value of Mount Maurice Forest Reserve and so make a significant contribution to the overall aggregate of remnant native forest habitat in the North East of the state.

The conceptual as well as actual connectivity contributed by FID 208 and FID 236 is a physical habitat link between the Ben Lomond core to the Cameron Regional Reserve in the north, northern-most of the North East cluster and representing a link distance of more than 75 km. Without such critical connectivity, the heritage conservation value of the North East cluster would be greatly diminished.

Other smaller ENGO-proposed reserves parcels [FID 187, 205, 213, 216 and 221] directly adjoining Mount Maurice Forest Reserve, all qualify as potential additions to that reserve and would significantly enhance the already high conservation importance of the reserve. As such, these parcels would make an important contribution to the heritage value and integrity of the Mount Maurice Forest Reserve 'core area'.

In summary, all of the ENGO-proposed reserves that link to the Mount Maurice Forest Reserve:

- represent tracts of mostly native forest habitat of importance for species and communities of conservation importance—regional or state significance
- contribute to the value and integrity of the already recognised high conservation value of Mount Maurice Forest Reserve—at least state significance
- contribute critical connectivity between Mount Maurice Forest Reserve and other habitats of conservation value across the region.

The ENGO-proposed reserves, together with the Mount Maurice Forest Reserve (Mount Maurice cluster) represent a substantial habitat aggregate of even greater conservation value than the existing reserve—a case of the conservation value of an area being greater than the sum of the parts—a product of the habitat connectivity between components.

The Mount Maurice cluster is therefore verified as an area of high heritage conservation value. It is of at least state significance and likely of national significance. Further, the cluster makes a major and critical contribution to the high heritage conservation value of the whole

North East cluster. Collectively these lands are of at least state and probably National Heritage significance.

NOTE: This assessment is based on retaining and permanently protecting of the existing informal and formal reserves within and adjoining each of the assessed ENGO-proposed reserves, for example, Ringarooma River, Tombstone Creek, Paradise Plains, South Esk and Mount Victoria Forest Reserves are integrally related to FID 208 and it is the aggregation of FID 208 and these reserves that represents an area of high conservation value.

Boundary considerations

Study of the ENGO-proposed reserves lands associated with Mount Maurice Forest Reserve raised a number of concerns about the appropriateness of the boundaries in the event all ENGO-proposed reserves land parcels are adopted in their entirety as part of the protected area system in the region.

Recommendations

1. Explore opportunities to establish formal reserve connection between Mount Barrow State Reserve and the Mount Maurice-Ben Lomond habitat network. (It appears that there are no existing formal reserves or ENGO–proposed reserves that establish connectivity with Mount Barrow—some token informal corridors are apparent)

Heritage summary—North East cluster		
NATIONAL HERITAGE		
Attribute	**Relevant criterion**	**Value**
Region of high biodiversity* *(including species, plant communities) (95 recognised vegetation communities, including 17 'threatened vegetation communities')	(a) Events and processes	An area that contains a high level of biodiversity at both species and ecological levels, in a diverse landscape, with altitude ranges from sea level to 1,573 metres (Legges Tor, second highest mountain in Tasmania). *a.5 Centres for richness and diversity (natural values)*

Regional of geological and geomorpholog-ical significance	(a) Events and processes	Dolerite capped landforms, which demonstrate all stages of erosion from plateau through mesa, butte and residual. Region of limited to marginal glaciation and periglacial landforms remote from main glaciated areas in western Tasmania (Ben Lomond demonstrates glacial landforms). *a.1 Geomorphology, landscape and landform*
A region of aesthetically diverse and attractive mountains, forests and coasts.	(e) Aesthetic characteristics ('*exhibiting particular aesthetic characteristics valued by a community*')	Dolerite capped plateau and associated cliff lines, residual dolerite capped 'castle' type mountains. Aesthetically outstanding forests (rainforest, *E. regnans, E. viminalis* e.g. The White Knights). *e.1 Features of beauty, or features that inspire, emotionally move or have other characteristics that evoke a strong human response.*

Summary of heritage values

While there may be some elements of World Heritage significance to be found in the North East cluster, particularly Ben Lomond plateau, the area was not assessed against World Heritage criteria.

Assessed against the National Heritage criteria, the North East cluster assessment area readily meets two criteria and could well meet a third.

The region is physiographically diverse with an impressive altitudinal range of more than 1,500 metres. A series of prominent plateau and mountains are characterised by cappings of the once huge dolerite sill that in geological antiquity extended across most of Tasmania.

Boundary considerations

Notwithstanding the collective assessment of the North East cluster of ENGO-proposed reserves and associated existing protected areas as being of national significance, some boundary issues need to be addressed. Some have already been addressed in the sections on the Ben Lomond and Mount Maurice 'core area' clusters. Others have been identified in the summary table.

Some apparent inappropriate boundaries of ENGO-proposed reserves were satisfactorily resolved when details of existing adjoining informal and formal reserves were taken into account.

'Missing Links'

A number of apparent 'missing links' were identified and remain unexplained. Reference is made in the Mount Maurice section of the apparent lack of formal connectivity to Mount Barrow State Reserve. This deserves close attention so as to effectively physically connect the state reserve into the otherwise regional scale 'linked landscapes'.

Another important missing link is inland of the Bay of Fires Conservation Area where a potential direct link between FID 231 and Doctors Peak Forest Reserve–Mount Pearson Reserve–Bay of Fires Conservation Area 'core cluster' of protected areas and FID 258 and westward to Blue Tier Forest Reserve. It is apparent that a substantial corridor of unlogged/old growth forest could provide high quality connectivity between FID 231 and FID 258. Consideration should be given to exchanging some logged/plantation sections of FID 258 for the proposed corridor of unlogged forest. A corridor could be designed from Mother Logans Road south west to FID 258 (use centre line from 596226.26 E 5435338.13 m S to 597550.52 m E to 5435820 m S).

Another apparent missing link is between Little Beach State Reserve and FID 129 (link is state forest, mostly unlogged) north of Douglas Apsley National Park.

Recommendations

1. Explore opportunity to address 'critical missing link' between FID 231 and FID 258 by adopting a substantial connecting corridor of intact forest from Mother Logans Road, south-west to FID 258. (Consider exchanging some of the regrowth/plantation in FID 258 for the unlogged forest in the proposed connecting corridor)

Conclusions on heritage assessment of North East cluster

Faced with such a large number of individual parcels of ENGO-proposed reserve land to be assessed, a holistic approach was valid in lieu of a reductionist approach of separately assessing each individual parcel.

The heritage assessment of the North East cluster involved an initial assessment at the regional landscape level, moving to a selection of core areas or 'sub-clusters' as the need emerged.

The substantial number of formal protected areas combined with the numerous ENGO-proposed reserves is a very substantial network of native vegetation. Collectively it is an important conservation resource. The North East cluster contains many conservation attributes including rare and endangered species, threatened plant communities, regionally uncommon vegetation, outstanding scenery and more.

With the help of the ENGO-proposed reserves all of the larger and more important formal reserves in the region would be linked by one or more corridors of native habitat. This connectivity would greatly enhance the value and significance of each protected area as well as the collective value and significance of the remnant native habitats of the region. This is a clear case of the value of the whole being greater than the sum of the individual parts. Instead of being a cluster of separate, relatively small, protected areas, if effective connectivity is ensured, the collective protected lands virtually become a single large regional protected area and can be legitimately considered as such. **Instead of a geographic cluster of reserves of mostly state significance, the 'regional protected area' becomes an ecologically linked protected area system, one of the major protected area entities of Australia, and so deserves to be recognised as being of National Heritage significance.**

Comprehensive assessment against the National Heritage criteria of the North East cluster, including all existing formal reserves, was not a part of the assigned terms of reference would not have been possible in the available time. However, the author has no doubt that if considered as a single protected area, it would readily qualify as being of national significance.

Assessing some 'core areas' (e.g. a cluster around the Mount Maurice Forest Reserve), confirmed the high to very high conservation values of key components of the North East cluster. Some of the 'core areas' in the cluster are of state and in some cases national

significance, for example Ben Lomond (glacial) and Mount Maurice (rainforest–tall eucalypt forest).

Where relevant and necessary, findings were made for individual parcels and recommendations made on their future. Details are summarised in the summary table (see Section 11).

CHAPTER 9

South East

Chapter 9

South East

ENGO-proposed reserves in South East not associated with TWWHA

The ENGO-proposed reserves were assessed both in recognisable cs and for some, at the individual parcel level.

Contents

East Coast corridor cluster

The 'East Coast corridor cluster' extends from St Marys (Saint Patricks Head State Reserve) in the north to the Tasman Peninsula in the south. The greater part of the 'cluster' is within the South East Bioregion. A narrow coastal strip in the far northern section is mapped as being within the Flinders (coastal) bioregion.

Preliminary investigation revealed that a series of ENGO-proposed reserves extending south from near St Mary's township in the north to near the Arthur Highway in the south were part of an essentially continuous tract of sub-coastal forested lands. Several other parcels of land, not physically linked to the main tract of forest occupied the Forestier and Tasman Peninsulas, were assessed separately as they lacked the physical connectivity to the main corridor.

Technically this 'East Coast corridor' is physically linked to the 'North East cluster' through the Saint Patricks Head State Reserve, which straddles the Esk Highway. This regional connectivity was considered to be a vital element in assessing heritage conservation values and heritage significance.

Context for assessment

The most important element of the context for assessing the ENGO-proposed reserves in the 'East Coast corridor' is the potential role that those lands play in linking existing protected areas and hence providing effective habitat connectivity at both a local and regional scale.

Assessing the conservation value and heritage significance of the proposed reserves, both individually and collectively required an understanding of the context of adjoining and adjacent protected areas, both formal and informal. Many formal forest reserves and reserves of other designations as well as a substantial number of informal reserves were evident on LIST Map.

Douglas Apsley landscape cluster

Introduction

The series of ENGO-proposed reserves clustered in near the Douglas Apsley National Park were found to have physical habitat connectivity to the 'North East cluster'. For heritage assessment purposes they could also have been included in that same cluster. For convenience the Douglas–Apsley cluster was treated separately although for overall assessment the proximity and connectivity to the North East cluster is an important contextual consideration.

The lands that make up the Douglas Apsley Landscape assessment area comprise:

Existing protected areas:

- Douglas Apsley National Park
- St. Patricks Head State Reserve
- Little Beach State Reserve
- Apslawn Forest Reserve
- Hardings Falls Forest Reserve
- Saint Pauls Regional Reserve
- Dog Kennels Regional Reserve

ENGO-proposed reserves:

- FID 129 (Mount Elephant)
- FID 93
- FID 123
- FID 103
- FID 113

Context for assessment

The existing Douglas Apsley National Park was central to assessing the Douglas Apsley landscape cluster, as it is a major 'core area' of mostly intact natural eucalypt forest in a hilly to mountainous landscape.

Several of the larger ENGO-proposed reserves immediately adjoin the national park and are assumed to have been conceived as additions to that park. Others are only indirectly connected to the park.

Importantly, all of the above listed parcels of land are interconnected and hence retain natural habitat connectivity throughout.

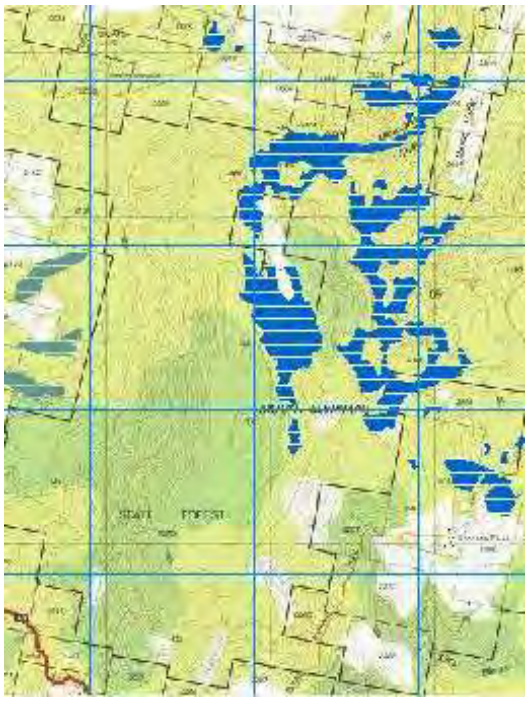
FID 129 Mount Elephant

This is an unusually complex looking parcel of land on Mount Elephant. The complex boundary derives from the extensive interface with small private land parcels.

Mount Elephant has a collar of karstic limestone known as the Mount Elephant Karst, which is listed for geoconservation significance (regional on Tasmanian Geoconservation Database—TGD). Mount Elephant is a distinctively-shaped mountain, no doubt contributing to its popular name. The area is fully forested, including significant areas of the rare and threatened plant community 'rainforest fernland'.

Much of the forest on the steep slopes is unlogged wet sclerophyll *E. delegatensis* and *E. obliqua* with rainforest in the many steep gullies, including rainforest fernland.

The blind velvet worm *Tasmanipatus anophthalmus*, a listed endangered species, has a very localised distribution, the core area being 40 km^2 around Mount Elephant and the catchments on its eastern slopes. The giant velvet worm, *T. barretti* (rare) is found in areas nearby but does not overlap with *T. anophthalmus*.



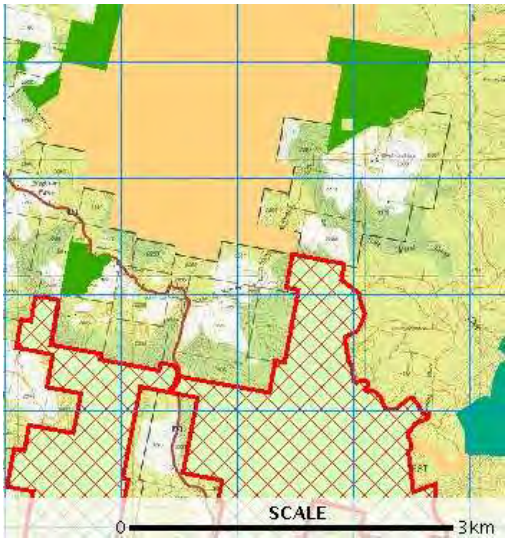
Threatened plant community 'rainforest fernland' on Mount Elephant Mountain [FID 129]

Preliminary assessment of the Mount Elephant FID 129 area is that it has independently important conservation values and is significant at the state level and potentially also national level. FID 129 has habitat links to both the north and south. In the north there is limited connectivity to Saint Patricks Head State Reserve—in the south, to the Lower Marsh Creek Forest Reserve.

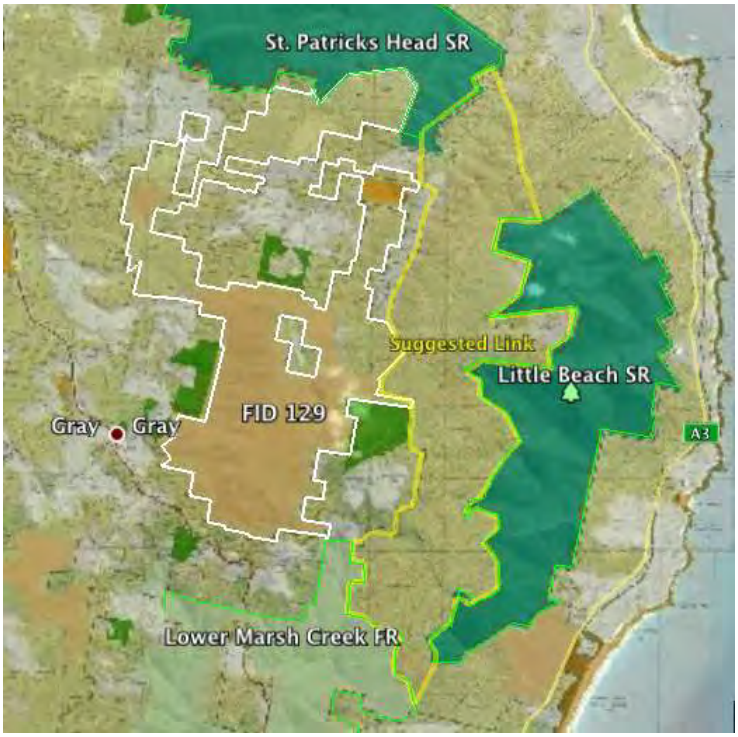
FID 129 is already an informal reserve on state forest.

The assessment identified an apparent missing link—the lack of connectivity between Mount Elephant [FID 129] and Little Beach State Reserve to the east. Little Beach State Reserve is key to achieving more robust and effective connectivity between the North East cluster and the Douglas–Apsley cluster rather than relying on the Mount Elephant link, which offers minimal connectivity.

Notwithstanding that the strip of forest between Mount Elephant and Little Beach State Reserve has been selectively logged, as a longer-term proposition it would make an important contribution to a critical connection between the two regions.



There is only a token link between FID 129 (green) (Mount Elephant) and Lower Marsh Creek Forest Reserve (hatched). A much more robust link would be available via state forest and Little Beach State Reserve to the east.



The suggested connectivity link (yellow edge) between FID 129 and Little Beach State Reserve would greatly improve connectivity between the forests of the North East and the Douglas Apsley.

Heritage assessment summary by ENGO-proposed reserves

Douglas Apsley landscape cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 129	High (endangered species, threatened plant communities, karst) see above. Conservation values confirmed.	Mount Elephant
FID128	-	Very small detached area, not recommended as National Heritage
FID 93	Wet *E. sieberi*, wet *E. delegatensis, E. obliqua* dry forest and dry forests including *E. delegatensis* dry forest and woodland, *E. amygdalina* forest and woodland on dolerite forest. Makes very important contribution to catchment protection of existing Douglas Apsley National Park (value adding). Many Aboriginal sites. High conservation value, national significance	Large intact natural forest and woodland. Very logical addition to Douglas Apsley National Park Provides critical connectivity to Apslawn and Hardings Falls and hence onwards to Swan River and Cygnet River Forest Reserves.
FID 123 (east)	Wet *E. sieberi*, wet *E. delegatensis, E. obliqua* dry forest and dry forests including *E. delegatensis* dry forest and woodland, *E. amygdalina* forest and woodland on dolerite forest. Seven or more Aboriginal sites. Various including threatened plant community *E. brookeriana,* rainforest fernland. Makes very important contribution to catchment protection of existing Douglas Apsley National Park (value adding). Conservation values confirmed.	The eastern section was considered separately from the western section. Potentially very important addition to Douglas Apsley National Park and would contribute substantially to the integrity of the park (catchment, wilderness, natural processes etc.)

Douglas Apsley landscape cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID123 (west)*	Conservation values not established.	West of Break O'Day Forest Reserve. A problematic area. Significant amounts of coupe logging. Value for connectivity needs further analysis, and knowledge regarding the future of the forest to the south (Break O'Day)
FID 103	Data limited. Requires further investigation.	Linked back to FID 123 and Douglas Apsley National Park via Mount Puzzler FR (small gap?). About half has been logged. Linked westward to FID 113 via Dickies Ridge FR, onwards to St Pauls Regional Reserve.
FID 113	Data limited. Requires further investigation.	Extensively logged (coupe logging?). Could be useful addition to adjoining St Pauls Regional Reserve.

Conclusions

CAVEAT: Data on parts of this cluster of ENGO-proposed reserves was limited so the assessment is therefore provisional for some parts, especially the more western parts (FID 103 and FID 113).

Mount Elephant [FID 129] is considered sufficiently distinctive and with identified rare and endangered local endemic animals (blind velvet worm), threatened plant communities (rainforest fernland) and well-developed tall eucalypt and rainforest on very steep terrain as to be independently assessed as being of high heritage conservation value. FID 129 can also contribute significantly to sub-regional connectivity between the North East cluster and the Douglas Apsley Landscape cluster. (**NOTE:** A superior connectivity option has been identified above)

The ENGO-proposed reserves immediately adjoining the Douglas Apsley National Park have recognisable conservation values, including the contribution that they could make to the integrity of the national park. The two large ENGO-proposed reserves immediately adjoining the park have their own conservation attributes (e.g. threatened plant community *E. brookeriana*, rainforest fernland, Aboriginal cultural sites) but their greatest conservation value comes from their juxtaposition with Douglas Apsley National Park and the substantial contribution they can make to the park's integrity, including protecting the headwaters of the catchment of the Apsley and Douglas Rivers. FID 93 and FID 123 (east section) are considered to be of high heritage conservation value.

The author has reservations about the western part of FID 123 and FID 103, and FID 113 and recommends further investigation of these lands.

Overall, the eastern most ENGO-proposed reserves in the Douglas Apsley Landscape cluster (as outlined above), together with associated forest reserves, state reserves and regional reserves and Douglas Apsley National Park represent a potentially very important protected area complex of state and national significance. **The heritage conservation significance of Douglas Apsley National Park would be considerably enhanced by protecting the ENGO-proposed reserves, more than doubling the effective area of Douglas Apsley National Park.**

FID 93, FID 123 (east section) and FID 129 are verified as being of high heritage conservation value and contribute substantially to the Douglas Apsley Cluster as being of national significance.

Boundary considerations

If FID 93, FID 123 (east section) and FID 129 were added to Douglas Apsley National Park, a number of boundary issues would arise. Some of these issues could be solved by also adding the other closely associated protected areas, so as to consolidate the protected areas into one management block. In particular these are:

- St Patricks Head State Reserve*
- Little Beach State Reserve
- Apslawn Forest Reserve
- Hardings Falls Forest Reserve

*__NOTE:__ the need to consider a superior connectivity link between St Patricks and Little Beach State Reserves.

Recommendations

1. Add FID 123 (east section) and FID 129 to Douglas Apsley National Park.
2. Add Apslawn Forest and Hardings Falls Forest Reserves to Douglas Apsley National Park.
3. Add FID 93 and Lower Marsh Creek Forest Reserve to Douglas Apsley National Park.

Other ENGO-proposed reserves

A series of mostly smaller and sometimes isolated parcels of ENGO-proposed reserves are summarised in the following table.

East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 87	Threatened plant community. Small areas of threatened community '*Eucalyptus amygdalina* forest and woodland on sandstone' (DAS), small area of rainforest scrub.	Campbells Hill. Mostly intact forest, wet and dry eucalypt with rainforest gullies. Some parts selectively logged. Extensive areas informal reserves. Adjoined on north by Royal George Forest Reserve and south by Snow Hill Forest Reserve. Network of narrow corridors linking eastwards to Cygnet River Forest Reserve (Douglas Apsley)
FID 82	Open finding. Conservation significance not assessed due to limited information. No decision	Part selectively logged (40%) Adjoins Cygnet River Forest Reserve. No particular benefit as an addition to that reserve—much longer boundary with no connectivity to west evident.
FID 77	Not assessed.	Small parcel immediately adjoining Cygnet Hill Forest Reserve. Logical addition (if not already in reserve). Mapping error?
FID 76	*Eucalyptus tenuiramis* forest and woodland on dolerite. *Eucalyptus pulchella* forest and woodland. Need to establish the conservation value of *E. tenuiramis* and *E. pulchella.* Eastern and north-eastern sections make significant contribution to value of adjoining Cygnet River Forest Reserve and Wye River State Reserve. Important contribution to regional connectivity. Data inadequate to fully assess conservation value.	Mostly eucalypt forest, about half of which have been selectively logged. The enclave in FID 76 is a puzzle because it is very little different to the surrounding FID 76 (mapping error?). Adjoins Wye River State Reserve, Wye River Conservation Area and Cygnet River Forest Reserve. **Recommendation:** Review to establish conservation values.
FID 70	Intact forest. No connectivity benefits. Local significance only.	Adjoins Wye River State Reserve.
FID 72	Significant conservation values not established.	Very small area. No apparent heritage benefit from protection.

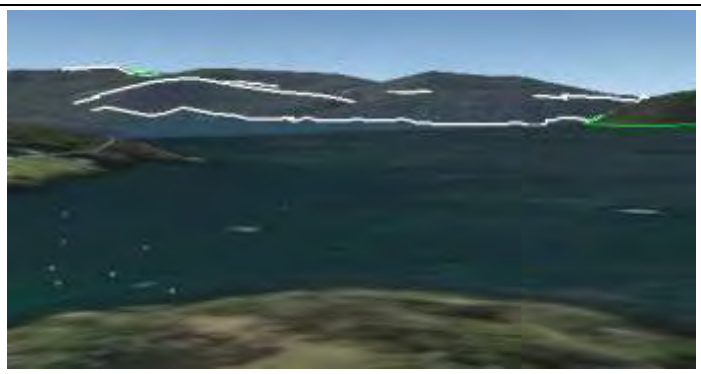
East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 68	Two Aboriginal sites. *Eucalyptus pulchella* forest and woodland *Eucalyptus delegatensis* dry forest and woodland Potential contribution including boundary improvement to adjoining protected areas. Not high value. Local significance.	Closely associated with Cygnet River Forest Reserve, Lost Falls Forest Reserve and a large unnamed Conservation Area. A very strangely shaped parcel of land. (Heritage significance?)
FID 60	No specific in-situ values identified. Likely same values as adjoining protected areas. Likely important conservation values based on contribution to surrounding reserves. Inadequate data for full assessment. Needs more detailed evaluation.	About 30% recently logged. Protected area on three sides (unnamed conservation area, Cygnet River Forest Reserve) Adding at least the unlogged (informal reserve) to the adjoining protected area would contribute to consolidating and improving boundaries.
FID 55	Not assessed. Useful contribution to consolidation of surrounding informal reserves.	Small area.
FID 48 FID 49 FID 53 FID 56 FID 57	Inadequate data for full assessment. Indicative assessment is that the areas are not of high heritage conservation value.	Small slivers of land along south-western boundary of Cygnet River Forest Reserve. Benefits of adding to Forest Reserve not immediately obvious and does not make any significant contribution to connectivity.
FID 51 FID 47	Moorland and unlogged forest. Inadequate data for full assessment. Preliminary assessment is that the areas potentially contribute to connectivity. Indicative assessment is that the areas do not contain important heritage conservation values.	Narrow strip adjoining Tooms Lake Forest Reserve. Useful addition to reserve but connectivity to protected areas to the north needs further investigation to bridge an obvious break in connectivity.

East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 45	North-western sector logged. Mostly wet sclerophyll forest. Enclave is mostly logged and replanted. Eastern half very important for connectivity at regional scale. Western (logged) part subsidiary importance for connectivity to Tooms Lake Forest Reserve and conservation areas. **Critically important** contribution to regional connectivity and hence to the heritage value and significance of other protected areas. Verified that FID 45 contains significant conservation values.	**Recommendations:** Add south-eastern half (south-east of enclave) to Butlers Ridge Nature Reserve. Explore an alternative substantial connectivity to Tooms Lake.
FID 40, 41, 42	Intact forest. Some broadleaf scrub. No connectivity benefits. No boundary benefits. FID 40,41,42 may be of local significance.	Narrow strips adjoining Butlers Ridge Nature Reserve. While the Butlers Ridge Nature Reserve may benefit from these additions in terms of extent of intact forest, it would be a case of swapping one poor boundary for another. Higher priority additions in the area would be to add areas of tall eucalypt forest and rainforest/broadleaf scrub to increase the ecological integrity of the Butlers Ridge Nature Reserve.

East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 39 (Buckland)	Threatened plant community *Callitris rhomboidea* forest Mostly intact forest. A few patches on western side have been coupe logged. Critically important contribution to regional connectivity (part of east coast corridor) Based on connectivity, condition of forest, threatened plant community, assessed as: important for conservation. (2,3) **NOTE:** Critical missing link between FID 39 and Three Thumbs State Reserve (Wielangta area) to the south. Habitat connectivity still exists but probably private land either side of Tasman Highway.	Large tract of mostly intact dry eucalypt forest and woodland with a few pockets of wet sclerophyll forest in contrast to area immediately adjoining to the west where there are many stands of wet forest including *E. regnans.* Several private nature reserves provide invaluable connectivity across the Little Swanport River—a vital link between the extensive protected areas to the north and the Wielangta forests to the south, which includes FID 39. **Recommendations:** Formally protect. Augment this corridor in the narrowest section.
FID 27	Small parcel of intact forest adjoined by logged lands to north-west and south. No formal connectivity to other protected areas. Inadequate data for full assessment.	**Recommendation:** Further investigate values.
FID 29	Reference was made to document 'Wielangta WildCountry Conservation Plan'. Deeply dissected forest country with mosaic of wet and dry forests. Some areas logged, including coupe clear fell logging and significant proportion already informal reserve. Rare opportunity in eastern Tasmania for protected area extending from coastline into wet forest. Provisional assessment is that area is of conservation importance. State level significance.	Sandspit River FR forms an enclave in FID 29. In the east, FID 29 borders on Cape Bernier Nature Reserve. FID 29 would be a critical core of any sizable permanent protected area to be established in the area.

East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 22	Threatened plant community *Eucalyptus globulus* dry forest and woodland. (Habitat tree for endangered swift parrot) No formal connectivity to other protected areas but prospects for connection to Woodvine Nature Reserve. High heritage conservation values present.	Part of a tract of forest otherwise extensively logged.
FID 21	Dry forest and woodland. No significant heritage conservation values identified. Provisionally assessed as not containing significant heritage conservation values.	Appears surrounded by private land
FID 17	Threatened plant community *Eucalyptus amygdalina* forest and woodland on sandstone. The forests of the Forestiere Peninsula are a microcosm of the southern forests of Tasmania with the three 'tall eucalypt' species—*E. regnans, E. delegatensis* and *E. obliqua* together with minor occurrences of *Nothofagus* rainforest. Of conservation importance.	Adjoins Tasman National Park in the east and Yellow Bluff Creek Forest Reserve in the north.
FID 07	Contributes to existing national park, including significant improvement to the boundary. Verified as containing significant heritage conservation values	These three ENGO-proposed reserves all adjoin the southern section of Tasman National Park. Addition to Tasman National Park would significantly improve the boundary and is recommended.

East Coast corridor cluster		
ENGO-proposed reserves	**Heritage significance**	**Remarks**
FID 10	Scenic forested foreshore that contributes significantly to the scenic integrity of the adjoining Tasman National Park. Contributes to protecting the scenic backdrop—and hence authenticity—of World Heritage listed Port Arthur (see simulated view from Port Arthur).	Already informally reserved. **Recommendation:** Add to Tasman National Park. Further extend the park along the foreshore, to incorporate informally reserved lands as far west as Andersons Road.
FID 14	Mostly wet forest of *E. delegatensis* and *E. obliqua.* Contributes to the ecological integrity of Tasman National Park. Contributes to protection of the scenic backdrop of World Heritage listed Port Arthur (ditto for FID 10).	**Recommendation:** Add to Tasman National Park.
FID 09	Inadequate data for full assessment. Indicative assessment is that the area is not of heritage conservation importance.	Small area of regrowth forest surrounded by more regrowth.
FID 12	A tract of mostly natural regrowth wet eucalypt forest (*E. delegatensis* and *E. obliqua)* but with some old growth surviving in gullies. May be important habitat. Inadequate data for full assessment.	Only small proportion already under informal reservation. Requires access to further relevant data and more detailed review.
FID 08	Appears to be intact forest. Inadequate data for full assessment.	Tract of mostly dry *E. obliqua* eucalypt forest immediately adjoining Tasman National Park. Addition to park would provide a more appropriate boundary (mostly along cleared private land)



FID 10 (white edge) viewed from Port Arthur—part of the Australian Convict Sites World Heritage Property. Protection of FID 10 contributes to the authenticity and scenic integrity of this important historic site.

Summary of heritage assessment

The assessment area, which is described as the East Coast corridor cluster, extends from Saint Patricks Head State Reserve in the north to the Tasman Peninsula in the south.

Compared with the network of connectivity opportunities in the North East cluster, for the greater part the connectivity options in the East Coast cluster were found to be limited to a single linear although mostly broad corridor. As a consequence, a number of the ENGO-proposed reserves were found to be critically important for formal protection of the single connectivity corridor. Omission of any one of those critical parcels would have the effect of breaking regional habitat connectivity, potentially permanently.

Importantly, it was found that:

1. Some individual parcels of ENGO-proposed reserves had independently high heritage conservation values and were worthy of formal protection.
2. A physically continuous connection of native habitat extends from near St Marys on the Esk Highway south to near the Arthur Highway.
3. The existing series of protected lands, both formal and informal, do not provide complete protection for the identified regional connectivity corridor.
4. Protection of most of the ENGO-proposed reserves in the 'East Coast cluster', together with confirmation and/or formalisation of existing formal protected lands in that corridor would essentially* achieve permanent protection of a regional scale habitat connectivity. (*There are several localities where the protection link is not assured and some attention is needed to resolve these anomalies or to improve the connectivity through additional protection.)
5. The East Coast connectivity corridor (E3C) is further enhanced by being physically connected to the North East cluster, essentially establishing a major habitat connection across the north-east and down the east coast of Tasmania—a latitude range of more than two degrees.
6. Formal protection of the East Coast connectivity corridor would have manifold conservation benefits including:
    a. enhancing the ecological value of existing protected areas

b. facilitating ongoing wildlife movement and recruitment in response to natural disasters and climate change

c. protecting new and additional habitats of conservation value.

7. In the case of some individual parcels of ENGO-proposed reserves, time limits prevented full discovery of data necessary to complete a full assessment of their conservation value. They have been identified for further investigation. Some smaller parcels, which appeared to not have recognisable conservation attributes, let alone important conservation values, were assessed as not having heritage conservation value of significance.

8. Whereas many parcels of ENGO-proposed reserves were considered to have conservation values of state significance, overall assessment of those parcels forming the East Coast connectivity corridor have been assessed collectively to have National Heritage significance—one of the more important latitudinally connected tracts of native habitat in Australia.

Forestier Peninsula and Tasman Peninsula

Although lacking connectivity to the East Coast Corridor there are important conservation values on the Forestier Peninsula and Tasman Peninsula, only parts of which have been formally protected.

At least three of the four ENGO-proposed reserves adjoining the Tasman National Park independently have high heritage conservation values and more importantly have the potential to make valuable contributions to the value and integrity of the park.

One area, FID 12, requires further investigation to establish if it contains conservation values. It is remote from the park and so is unlikely to make any direct contribution to its value.

Bruny Island assessment area

Introduction

The ENGO-proposed reserves on Bruny Island are mostly forested lands and represent about half of the forested lands on the island. Much of the balance is made up of three forest reserves and one national park in three parts.

The ENGO-proposed reserves on Bruny Island adjoin or surrounds three forest reserves and two parts of South Bruny National Park.

Context for assessment

The one ENGO-proposed reserve on Bruny Island (FID 05) needed to be assessed in the context of the aggregate of public forested lands, namely:

- FID O5
- Mount Mangana Forest Reserve
- Mount Midway Forest Reserve
- Mount Bruny Forest Reserve
- South Bruny National Park.

The conservation attributes of Bruny Island are well-documented including an important publication by the Department of Primary Industries, Water and Environment, Tasmania, cited as Cochran 2003.

Assessment

Forest types include *E. obliqua* and *E. delegatensis* and occur as both 'wet' and 'dry' communities. Bruny Island is the type locality for *E. obliqua,* the very first eucalypt species to be scientifically described (site near Waterfall Reserve).

Swift parrot *Lathamus discolor* is a nationally listed endangered species and a national recovery plan is in place. The assessment area is critical habitat for the endangered swift parrot *Lathamus discolor* and is listed as a 'Swift Parrot Important Breeding Areas' (SPIBA).

The swift parrot undertakes the longest migration of any parrot species in the world but breeding is restricted to eastern Tasmania, mainly in old or dead trees in dry forest on ridges by the sea. Nesting is largely restricted to old eucalypt trees, and the blue gum, *Eucalyptus globulus* is a very important species for feeding during the breeding season.

> In Crossley 2011, citing *Species Habitat Planning Guideline for the conservation management of Lathamus discolor (swift parrot) in areas regulated under the Tasmanian Forest Practices System,* An internal report prepared for the Forest Practices Authority, November 2010, p.19.[This document is still in draft form and has not yet been finalised].

During the breeding season swift parrots use a narrow near-coastal band of blue gums in south-east Tasmania. This habitat is mainly between Swansea and Dover including the Forestier and Tasman Peninsulas and Maria and Bruny Islands (Parks and Wildlife Service 2012).

> The annual Tasmanian swift parrot survey was conducted on 24–25 October 2009 under the auspices of the Threatened Species Unit and Birds Australia. Parrots were recorded at 39 of 86 sites surveyed on Bruny Island, compared with records at only 32 of 600 sites elsewhere in eastern Tasmania. On South Bruny, concentrations of at least 10–20 birds were recorded at five sites, and smaller numbers at eight additional sites. (Spirit of Bruny 2011)

'Mount Mangana stag beetle *Lissotes menalcas* is a species found on and named after Bruny Island's highest point' (Cochran 2003). It is not confined to Bruny Island and is currently state listed as endangered but it has been proposed to change that from endangered to rare.

> The delicate *Euphrasia fragosa* is only known from three populations, and Bruny Island has the only protected population in Tasmania.
>
> One of Australia's rarest birds, the endangered Forty-spotted pardalote, has half of its entire population living on Bruny Island, with its largest colonies carefully protected on both reserved and private land.
> —Cochran 2003)

The Tasmanian Department of Primary Industries, Water and Environment has given particular attention to biodiversity conservation on Bruny Island, engaging the community to participate in species conservation on the island.

> This floral diversity, combined with its isolation from the Tasmanian mainland, has resulted in a very rich, diverse and abundant animal and plant life. Approximately forty species of threatened plant and animal species have thus far been recorded on Bruny Island, it is the stronghold for several threatened species such as the Mt Mangana stag beetle, the Forty-spotted pardalote and the seastar *Smilasterias tasmaniae*.
> —Cochran 2003.

The department, in Cochran 2003 lists a total of 39 species recorded on Bruny Island as 'threatened' under Tasmanian legislation, and 13 listed under the national EPBC Act (see tables below).

FLORA				
Dicotyledons	1	1	-	2
Monocotyledons	2	-	-	2
Ferns	-	-	-	-
Sub-total	**3**	**1**	**0**	**4**
TOTAL	**3**	**6**	**4**	**13**

Table 2 Summary of species on Bruny Island that are listed on the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (as of September 2003)

	CRITICALLY ENDANGERED	ENDANGERED	VULNERABLE	TOTAL
FAUNA				
Mammals	-	1	2	3
Birds	-	3	-	3
Reptiles	-	-	1	1
Fish	-	1	1	2
Invertebrates	-	-	-	-
Sub-total	**0**	**5**	**3**	**9**
FLORA				
Dicotyledons	1	1	-	2
Monocotyledons	2	-	-	2
Ferns	-	-	-	-
Sub-total	**3**	**1**	**0**	**4**
TOTAL	**3**	**6**	**4**	**13**

Conclusions

The forests of South Bruny contain nationally significant concentrations of biodiversity values in the form of:

- critical habitat of a nationally endangered species of parrot *Lathamus discolor*
- important habitat of nationally endangered forty spotted pardalote *Pardalotus quadragintus*
- state and nationally listed threatened species (13 national, 39 state)

The forests of the assessment area of South Bruny Island are assessed as high conservation value and of national heritage significance.

The ENGO-proposed reserve [FID 05] is a major part (about 40%) of the important wildlife habitat on South Bruny and [FID O5], and is part of an integrated package also comprising:

- Mount Mangana Forest Reserve
- Mount Midway Forest Reserve
- Mount Bruny Forest Reserve
- South Bruny National Park.

It makes a critical contribution to the forests of South Bruny being assessed as being of national heritage significance. Most importantly, protecting the ENGO-proposed reserve [FID 05], together with the three forest reserves would represent a major consolidation of protection on the island, providing direct connectivity with three forest reserves and the national park.

ENGO-proposed reserve [FID 05] is verified as having conservation values and it is considered of National Heritage significance.

NOTE: FID 04 is a small parcel of land, presently an informal reserve, and was not assessed.

Boundary considerations

Although not ideal, the external protected area boundary that would be created by the protection of FID 05 would be appropriate under the circumstances.

Recommendations

1. Recognise the whole of the ENGO-proposed reserve [FID 05] as having important conservation value and contributing to National Heritage significance.
2. Add the whole of FID 05 to South Bruny National Park*, together with the three closely associated existing forest reserves:
    - Mount Mangana Forest Reserve
    - Mount Midway Forest Reserve
    - Mount Bruny Forest Reserve.

*It is suggested that the new park be named simply 'Bruny' or 'Bruni' National Park to make a more direct reference to Bruni D'Entrecasteaux, who named the island.)

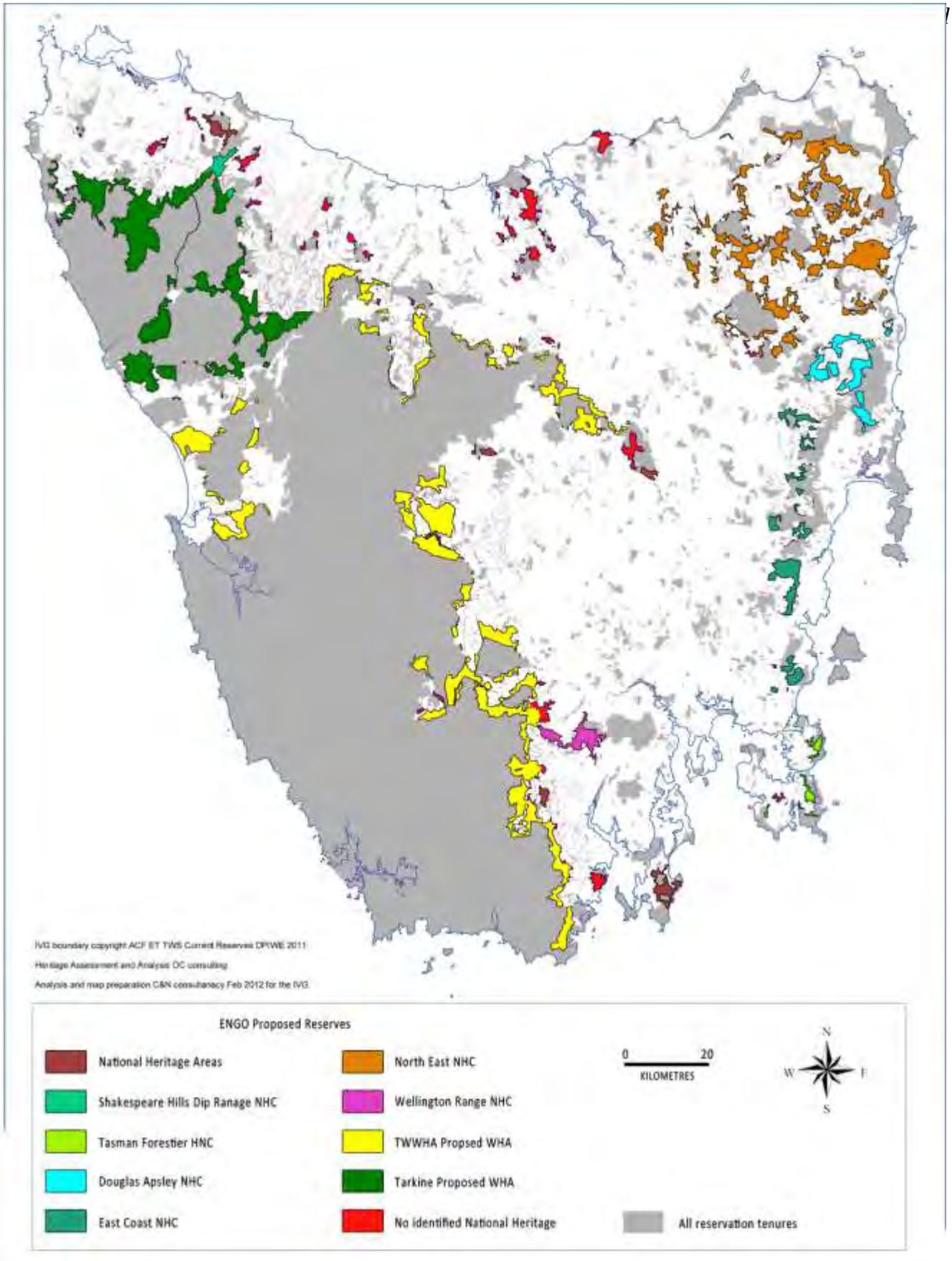
Bruni D'Entrecasteaux on Bruny Island

When French explorer Bruni D'Entrecasteaux first saw this island in 1792 it was the forests that impressed him. He wrote of ...

> … trees of an immense height and proportionate diametre, their branchless trunks covered with evergreen foliage, some looking as old as the world;
> 'closely interlacing in an almost impenetrable forest, they served to support others which, crumbling with age, fertilised the soil with their debris;
> … nature in all her vigour, and yet in a state of decay, seems to offer to the imagination something more picturesque and more imposing than the sight of this same nature bedecked by the hand of civilised man.
> Wishing only to preserve her beauties we destroy her charm, we rob her of that power which is hers alone, the secret of preserving in eternal age eternal youth.
> —Wikipedia

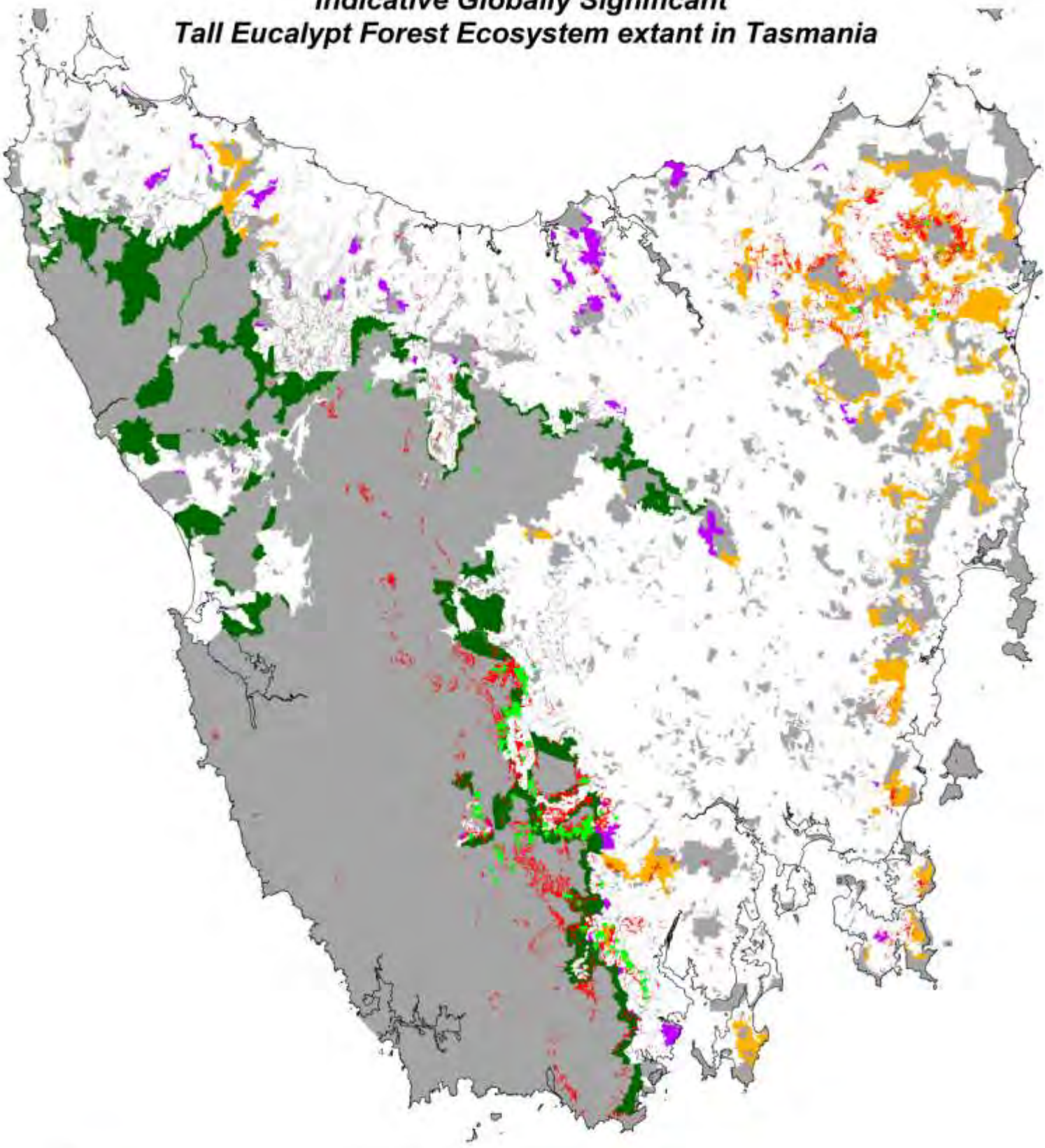
Map 1: Heritage areas and ENGO-proposed areas

l reserves



Map 2

Giant Trees and Indicative Globally Significant Tall Eucalypt Forest Ecosystem extant in Tasmania



Legend

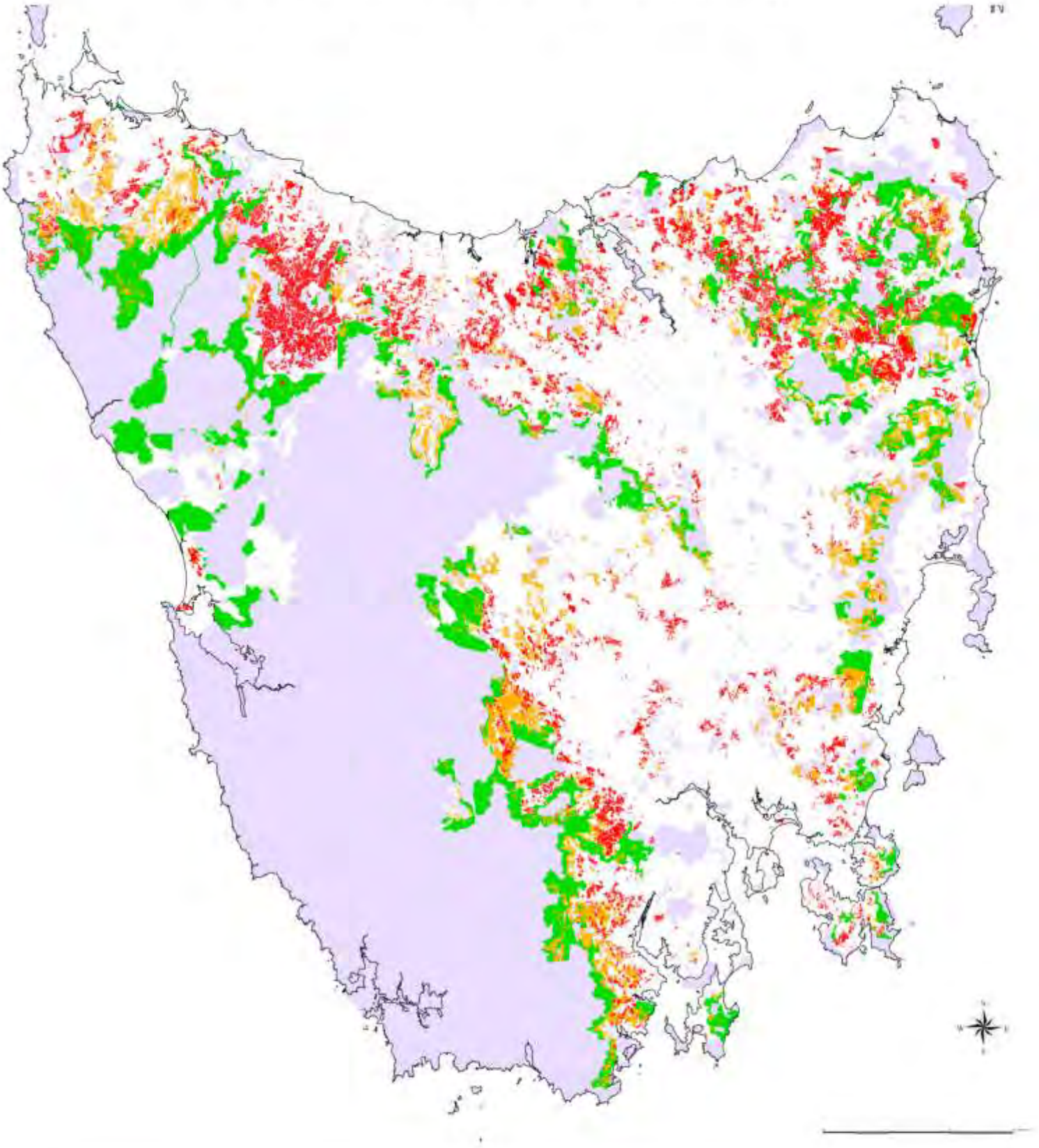
- Giant_trees.shp
- Indicative Extant Tall Eucalypt Forest Eosystem
- Proposed additions to World Heritage Area
  - Proposed additions to World Heritage Area
  - World Heritage
- Proposed national Heritage Areas
  - Proposed national Heritage Areas
  - National Heritage
  - All Reservation Tenures
  - No Identified National Heritage Values

Data Sources:
Proposed ENGO reserves ACF ET TWS 2011
Heritage identification DC Consulting
Disturbance: Forestry Tasmania 2011
Height Potential classes Forestry Tasmania 2011
Forest Type Forestry Tasmania 2011
Old-growth Forestry Tasmania 2011
Giant Trees Data Base FI 2011
Tasmanian Forest Group Dataset known as FORGROUP11 FT & PFT
TASVEG 2010 DPIPWE

Map production and Analysis C&N consulting Feb 2012

Map 3

Area Regenerated on State Forest since 1960 and Plantations on all Tenures (current)



Legend

- Plantations All Tenures
- Areas of State Forest Regenerated since 1960
- Proposed ENGO Reserves
- All Reservation Classess

ENGO Proposed Reserves, ACF ET,TWS 2011
Tasmanian Forest Group Dataset known as FORGROUP11 FT&PFT 2011
Regeneration data derived from 'Disturbance' FT 2011
Tenure derived from lcg_tenure14
Natural Management Planning Pty Ltd 2011
Map Preparation and analysis C&N Consulting Feb 2012

Appendix 1:

Spatially Identifying Tall Eucalypt Forests in Tasmania.

Methods Paper

Sean Cadman February 2012

Introduction

In order to spatially identify tall eucalypt forest a conceptual model has to be adopted, Hitchcock 2012 (in prep) has reviewed current thinking, research and methods for considering the 'tall forest ecosystem'. While acknowledging that a definition is not yet possible there are three components identified which can be used to establish an indicative spatial layer for this ecosystem in Tasmania.

The three components that can be spatially identified using current available data are: Vegetation Community, Height Potential, (by using height potential data the analysis is constrained to public land), old-growth and Forestry Tasmania's disturbance classes. Old-growth and regeneration year are surrogates for condition.

The most utilitarian spatial layer for use in determining the floristic component is TASVEG V2.0 the most recent iteration of which is Tasveg_2010_prototype. Descriptions of the TASVEG classes (Harris and Kitchener 2005) are given and can be used to set decision rules.

For the purpose of identifying the floristic component of an indicative 'tall forest ecosystem' five classes were chosen, two Eucalyptus regnans wet forest and E. viminalis wet forest are not sub categorized and are typically associated with a rainforest and or fern understory in addition those wet forest classes identified as having a rainforest understory were chosen: Eucalyptus delegatensis over rainforest, E. nitida over rainforest; E. oblique over rainforests. It needs to be acknowledged that there are mapping biases evident in these classes with poor mapping particularly in the NW of the state. However the alternative would be to use the undifferentiated class for these wet eucalypt forest species which while certainly containing areas with a rainforest understory also reflects a much larger area of true wet sclerophyll forest..

Methods

The selected Tasveg classes were unioned with FT pi-type data, forest with a height potential greater than 41m this is in two classes E1 and E2. All areas of E1 (height potential greater than 55m) were accepted, only areas of E2 that intersected with the selected TSVEG classes were accepted. ?

This was then intersected with all areas of State forest where regeneration has been undertaken since 1960. These areas were removed from the data. This was then intersected with the updated FT Old-growth layer to provide context.

In order to undertake further analysis the data was clipped using the 270 ENGO polygons, then cleaned using the Mtools Arc View extension. The resulting product was then simplified by removing redundant table fields. This was then unioned with the ENGO polygons (ivg_rsfinal) and a spatial index created. Several mapping products were generated.

Discussion

The methodological approach produced a coherent output consistent with expectations. The statistical breakdown is shown in tables 1 -3. The outputs were mapped as a spatial index normalized for area of the ENGO proposed reserves polygons (figure 1 below) and onto contextual layers to show the relationship to proposed World and National heritage areas (figure 2). The results demonstrate strongly the relationship of the indicative tall eucalypt forest ecosystem with the existing WHA, particularly in the Southern Forests. There is a large and important remnant in and around the Blue Tier. Other remnants are small and partially reflect mapping deficiencies, for example in the NW of the State, but also likely to be indicative of areas where this ecosystem was once more widespread and probably capable of recovering for example in the Mersey Valley and along the northern fall of the Great Western Tiers.

Results

Table 1 Public Land Indicative Tall Eucalypt Forest Ecosystem

Total all public tenures ha	Old-growth all public tenures	E1 greater than 55 m public land	E2 41 – 55 m Public land
95,700 ha	52,396 ha	26,892	69,123 ha

Table 2 ENGO proposed reserves Indicative Tall Eucalypt Forest Ecosystem

Total all public tenures ha	Old-growth all public tenures	E1 greater than 55 m public land	E2 41 – 55 m Public land
25,464 ha	11,872 ha	9,544 ha	15,920 ha

Table 3

ENGO Proposed reserve polygons containing the Indicative Tall Eucalypt Forest Ecosystem

ENGO polygon	Area of ENGO polygon	No of TEF polygons	TEF_HA	% TEF
115	2008.918	3	1.7720	0.09
252	60250.455	55	70.8900	0.12
135	0.773	2	0.0010	0.13
244	5178.569	6	8.8840	0.17
136	3514.553	2	8.0210	0.23

5	6338.380	33	20.6030	0.33
130	2119.294	7	7.0240	0.33
2	5256.599	30	19.1240	0.36
31	73.608	3	0.2740	0.37
206	16.789	1	0.0640	0.38
198	37239.439	89	171.2100	0.46
43	184.661	1	0.8580	0.46
186	1879.180	2	9.9750	0.53
114	433.692	2	2.4960	0.58
193	14280.267	33	89.0860	0.62
176	10593.246	29	70.4990	0.67
54	11518.676	30	82.5050	0.72
156	7937.327	26	61.4780	0.77
23	1034.297	5	8.9150	0.86
239	5929.145	53	57.6330	0.97
137	2533.653	9	25.7700	1.02
235	227.378	10	2.6990	1.19
243	1388.910	27	19.7740	1.42
133	0.280	1	0.0050	1.79
28	13.339	5	0.2740	2.05
39	9819.531	22	205.6850	2.09
17	2300.911	19	49.1030	2.13
233	1011.499	19	22.5590	2.23
200	198.060	1	5.5170	2.79
14	2046.760	36	57.5230	2.81
173	860.147	10	24.1930	2.81
91	155.074	8	4.5880	2.96
197	6287.827	152	189.7110	3.02
203	303.440	5	10.5470	3.48
58	5861.572	66	237.7090	4.06
212	3161.653	36	129.1650	4.09
191	416.244	5	17.2060	4.13
37	116.259	6	4.8880	4.20
184	1567.348	52	66.3810	4.24
207	1769.059	31	76.7810	4.34
107	784.253	24	35.8870	4.58
187	946.442	49	45.7270	4.83
44	8145.817	118	446.2690	5.48
112	3326.899	74	183.7400	5.52
34	926.652	19	51.5650	5.56
32	146.216	14	8.9380	6.11
208	16894.514	782	1088.8180	6.44
204	143.866	21	9.5190	6.62
181	2536.892	115	202.0360	7.96
33	15776.453	225	1295.2260	8.21
29	4418.232	83	378.2890	8.56
12	820.162	33	77.2930	9.42
209	468.666	29	44.9040	9.58
236	3191.027	101	311.4940	9.76
166	1093.888	66	122.0130	11.15
211	572.191	34	72.0670	12.59

225	1343.303	87	170.9520	12.73
24	76.430	6	10.5820	13.85
16	12.809	2	1.8220	14.22
222	32.047	8	4.7590	14.85
25	60344.791	2790	9024.7330	14.96
258	25482.140	813	3965.7400	15.56
182	175.712	13	27.5770	15.69
250	416.250	37	76.3180	18.33
30	2775.309	242	552.2820	19.90
158	124.417	1	26.7030	21.46
19	2664.679	327	665.0160	24.96
131	2.281	9	0.7200	31.57
13	1869.678	51	614.3430	32.86
35	3025.552	188	1032.2530	34.12
224	1376.305	84	485.7500	35.29
216	46.182	7	16.5980	35.94
18	389.058	65	143.8470	36.97
242	91.738	8	35.0590	38.22
26	1873.720	310	737.7300	39.37
226	453.493	13	179.2320	39.52
237	1470.215	144	606.8780	41.28
20	794.452	240	353.9440	44.55
247	270.372	25	125.2840	46.34
202	51.296	6	25.7660	50.23
205	143.347	29	75.4280	52.62
221	358.828	52	197.7650	55.11
220	21.341	1	13.9860	65.54
213	37.727	7	28.1010	74.49
36	5.581	7	4.2470	76.10
11	51.027	11	44.9630	88.12

Figure 1

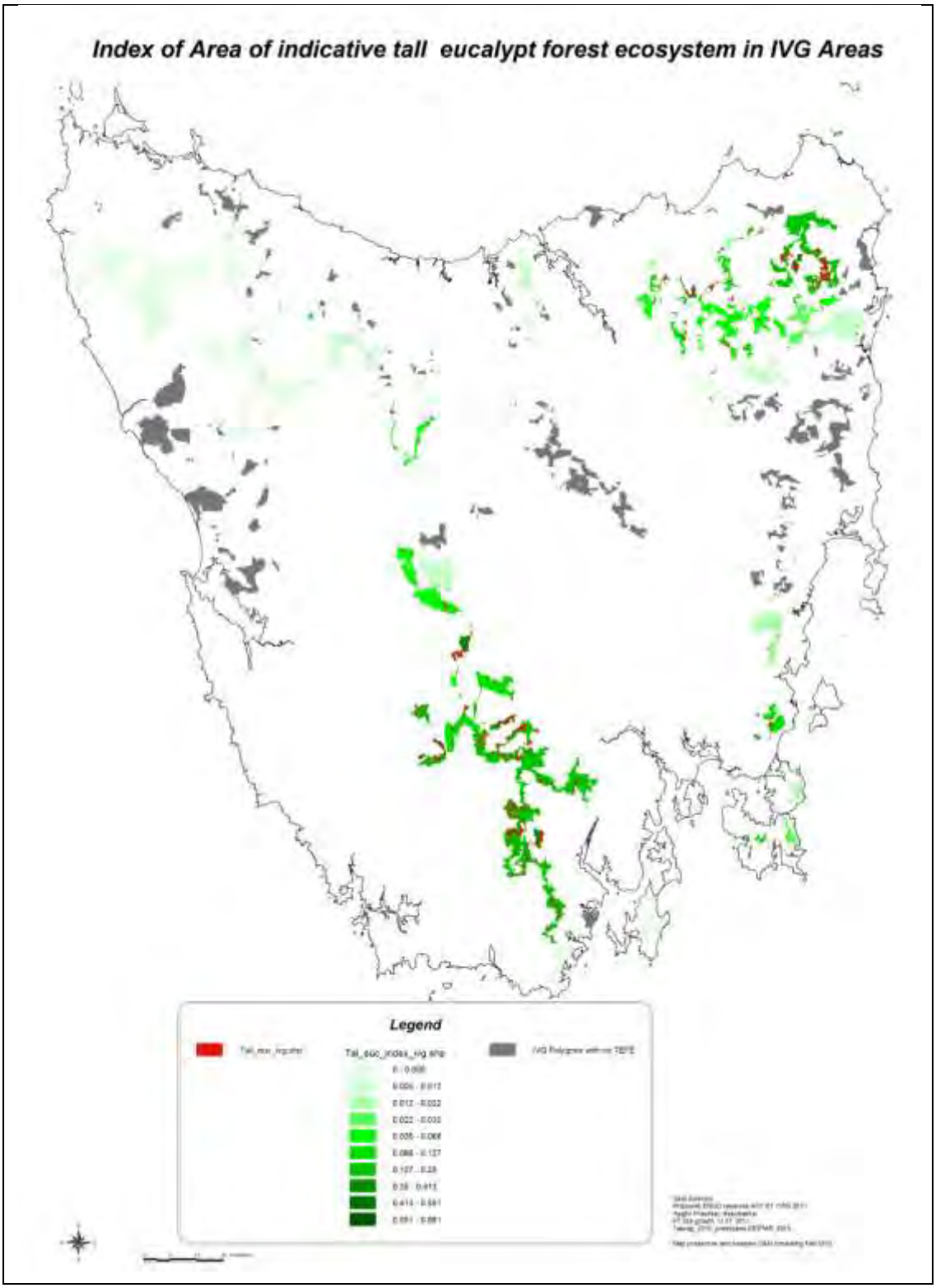
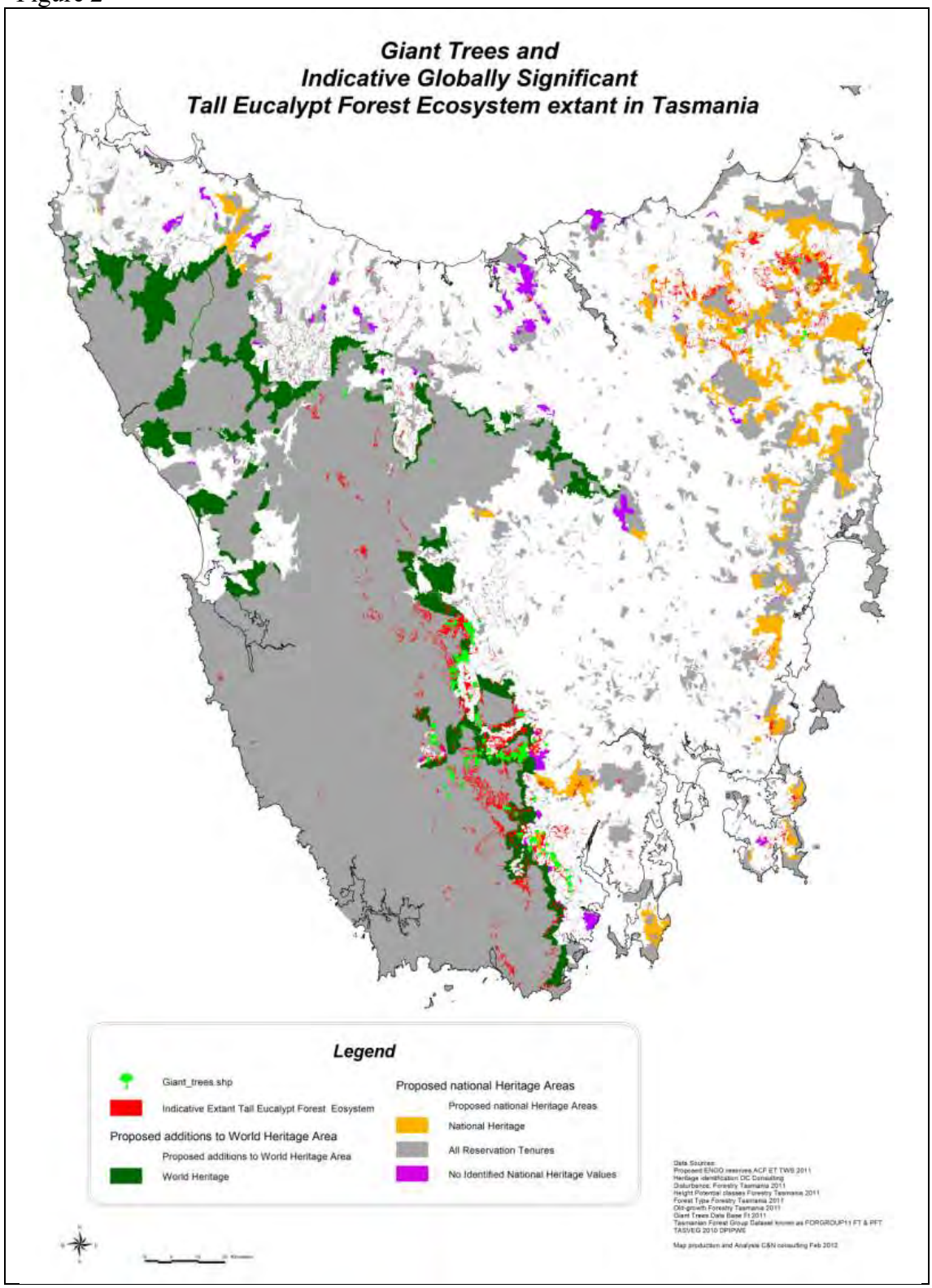

Index of Area of indicative tall eucalypt forest ecosystem in IVG Areas
Legend

Figure 2



References:
Hitchcock, P 2012 in prep Tall eucalypt forests as World Heritage
Harris, J and Kitchener, A 2005: From Forest to Feljdmark