



Central Highlands Weed Management Plan

2016 -2021



For further information about this plan please contact the Derwent Catchment Natural Resource Management Committee via: facilitator@derwentcatchment.org.

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Publication Details

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Contents

Introduction	5
Background	6
1.1 The region	6
1.2 Legal requirements of landholders	6
1.3 Principles of weed management	7
2 Plan objectives	7
3 Highlands and Upper Derwent Lakes weed management program	8
3.1 Key stakeholders	8
3.2 High conservation value areas	10
3.2.1 Threatened Vegetation Communities of the Highlands	10
3.2.2 Individual Threatened Flora Species	11
3.3 Significant agricultural areas	11
4 Methodology	12
5 Limitations and assumptions	14
6 Regional priorities	15
6.1 Threatened species and community areas of overlap	15
6.2 Agricultural priority zones	17
6.3 Causes of weed spread	19
6.3.1 Vehicles, machinery & equipment	19
6.3.2 Contaminated sand and gravel	19
6.3.3 Transported livestock feed	19
6.3.4 Garden escapes	20
7 Results	21
7.1 Weed species status	21
7.2 Sites of significance as seed sources	30
7.3 Weed control recommendations for each stakeholder	30
7.4 Central Highlands Council recommendations for weed control	32
7.5 Forestry Tasmanian recommendations for weed control	37
7.6 Hydro Tasmania recommendations for weed control	38
7.7 Tasmanian Parks and Wildlife Service recommendations for weed control	40
7.8 Department of State Growth recommendations for weed control	41
7.9 TasNetworks recommendations for weed control	43
7.10 Derwent Catchment NRM Committee recommendations for weed control	44
7.11 NRM South recommendations for weed control	45
7.12 Crownland Services recommendations for weed control	45

7.13	Inland Fisheries recommendations for weed control.....	45
7.14	Norske Skog recommendations for weed control	46
7.15	Tasmanian Aboriginal Centre recommendations for weed control	46
7.16	Tasmanian Land Conservancy recommendations for weed control	46
8	Monitoring & Evaluation.....	47
9	References	48
10	Appendix I	49
11	Appendix II	71
12	Appendix III	75

Introduction

This weed management plan is a working document which can be updated as new information becomes available. The plan uses a prioritisation process to identify high value areas for protection from weed infestations and invasion. It also documents the known weed distributions in the Central Highlands.

The focus of the plan is to support stakeholders in their ongoing weed management and investment into the region. To reflect this, a series of tables in Section 7 provide priority sites for weed control by stakeholder.

This document is designed to allow incorporation of on-going stakeholder input via the collection of data which can be integrated into this plan as activities are progressively implemented. This process aims to ensure all weed priorities are recorded so control works can be more effectively planned and budgeted into the future.

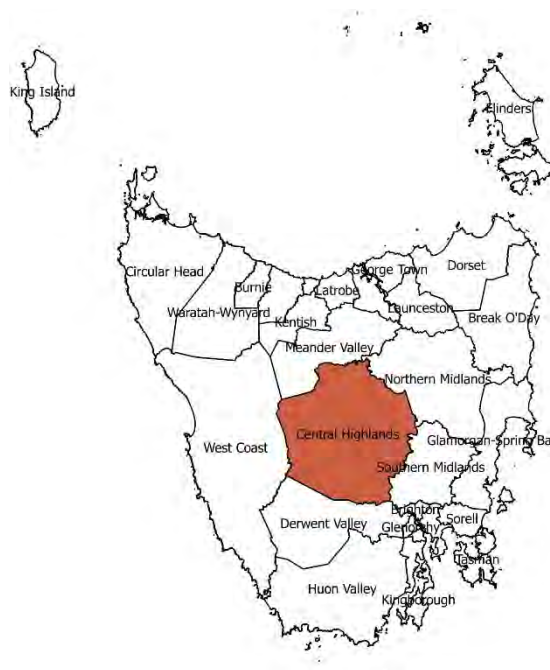
This plan also supports the implementation of individual Statutory Weed Management Plans and relies on the Southern Tasmanian Weed Management Strategy for the larger scale direction. The plan provides a strategy for managing weed threats on-ground by identifying priority weeds and the regionally specific causes of weed spread.

Background

1.1 The region

The Central Highlands municipality encompasses 7,976 km² and is located in the center of Tasmania. It shares borders with the municipalities of Meander Valley to the north, Central Highlands to the South, West Coast to the West and the Southern and Northern Midlands to the east.

Land use is varied and includes agriculture (production of beef, sheep, poppies, freshwater aquaculture and dairying), forestry (plantation and native forest harvesting), conservation and tourism (including Cradle Mountain, Central Plateau Conservation Area, Walls of Jerusalem and the Franklin Gordon Wild Rivers National Park), hydroelectricity production and urban/rural residential areas.



1.2 Legal requirements of landholders

The *Weed Management Act 1999* was proclaimed on 1 September 2000. It is the principal legislation concerned with the management of declared weeds in Tasmania. This legislation states that “landholders must take all reasonable measures to prevent their land being infested with a declared weed and prevent a declared weed on their land from spreading. All landholders must also meet the management requirements as outlined in Statutory Weed Management Plans in order to comply with the *Weeds Management Act 1999*”.

The objectives of the Act are:

- (a) minimise negative effects of weeds on the sustainability of Tasmania's productive capacity and natural ecosystems;
- (b) promote a strategic and sustainable approach to weed management;
- (c) encourage community involvement in weed management; and
- (d) promote the sharing of responsibility for weed management between government, natural resource managers, the community and industry in Tasmania.

1.3 Principles of weed management

Best practice principals are based on minimising weed spread and reducing the risk of new introductions. Preventing the introduction and spread of weeds is the most effective form of weed management. Many thousands of dollars can be saved by basic precautions, most importantly good hygiene practices.

Weed management requires a continuous, long-term commitment. Early detection of weed infestations followed by immediate control is the most successful weed management practice. It is also important to work from areas of low infestation and to address individual outliers before moving to more dense infestations. This approach ensures that light infestations do not become more difficult to address or provide a source of on-going infestation. Topography should also be considered moving from upslope to downslope to reflect the movement of water (and seed) in the landscape. It is also important to factor in maintenance of weed control efforts as part of budget allocation to successfully tackle weed problems.

In planning weed control works the environmental setting and local sensitivity should be considered. For example, in or near wetland areas foliar spray of large plants is inappropriate and mechanical control or hand control methods such as cut and paste or drill and fill should be undertaken. It may be that foliar spray is required on small plants after initial control measures due to large numbers of small seedling appearing. If so, herbicide should be water and frog safe e.g. Round Up Bioactive.

A key component of successful weed management is cooperation between landholders and land users to ensure a strategic approach. Legally, landholders and land users are both responsible for weed management and collective action is necessary where boundaries meet and adjacent landholder's impact upon or are impacted by others. Similarly, cooperation between government agencies and landholders is vital to establish the research, educational and legislative framework required for successful weed management. This plan focuses on Council and landholder responsibilities however additional efforts will be made to ensure that all stakeholders are engaged in the process and informed of weed control activities to develop a collaborative approach across the Municipality and between municipalities.

2 Plan objectives

This plan has been undertaken by the Derwent Catchment NRM Committee with the objective of supporting government agencies to budget on longer time frames for weed management. In the past, the annual program has required lobbying and reactive responses dependent on available

resources. It is hoped by developing a longer term plan that weed control works can be budgeted and factored into strategic control with more reliable funding.

The plan draws together information across the municipality with the objective of identifying weed distribution at a broader landscape level to support strategic management and identify priorities. This information has been collected in a survey of all roadsides conducted in 2016 and from data entered into the Natural Values Atlas post September 2011.

A key objective of the plan was also to ensure that weed control priorities focus on places of high conservation value and significant agricultural areas in the region. It was anticipated that a refinement of priorities and weed management using a staged approach would provide a strategy based on budget realities.

3 Highlands and Upper Derwent Lakes weed management program

The Central Highlands Weed Management Program, facilitated by the Derwent Catchment Natural Resource Management (NRM) Committee, has been coordinating a collaborative weed control program across the Highlands and Upper Derwent lakes for the previous 5 years. This program supports a strategic approach to weed control by consulting with major landholders including State Government departments, businesses, Local Government and private landholders who manage land across the municipality. The NRM facilitation role has been important because on the organizational focus on whole of catchment rather than an individual landowner or manager focus which make coordination unviable. The strategy for weed control to date has been to target outlying populations of weeds and weed infestations in high value areas. Refer to Appendix I for a table of proposed actions for 2015-16 and whether actions were implemented. A precis for the key stakeholders in the program follows.

3.1 Key stakeholders

The Central Highlands Council is the principal manager of local community infrastructure including roads, waste collection, public recreation facilities and area planning. The Council is responsible for weed management across council owned land and council managed roads.

The Department of State Growth is responsible for maintenance and works along the State managed road network.

The Department of Primary Industries, Parks, Water and Environment (DPIPWE), Biosecurity Section is responsible for the “protection of industries, environmental and public well-being, health, amenity and safety from the negative impacts of pests, diseases and weeds”. Biosecurity Tasmania work in

partnership with community and industry. Invasive species management is part of their portfolio. DPIPWWE is also responsible for National Parks which form a large component of the Central Highlands Municipality. This responsibility includes weed management across the protected area estate.

NRM South are a regional NRM body who partner with government, landholders, research organisations and community groups to help manage Tasmania's natural resources. Biosecurity and weed management is a focus area of investment and program activity for NRM South. Private land makes up 52% of all land in the municipality and NRM South aim to support local landholders in NRM activities. The Parks and Wildlife Service (PWS) manages a range of reserved lands that include national parks, regional reserves and conservation areas across Tasmania. PWS is responsible for management of 34% of land in the Central Highlands region. Parks have an ongoing commitment to weed control across this region and have also provided a substantial cash contribution to support the Poatina Fire Area Ragwort Program to the east of Great Lake which began last season.

Crown Land Services (CLS) facilitates the appropriate management, use and development of Crown land, including the licensing, leasing and sale of Crown properties. CLS is also responsible for management of unallocated Crown land.

Fifteen percent of land in the Central Highlands region is owned by forestry operations. Forestry Tasmania is a Tasmanian Government Business Enterprise responsible for management of large areas of forest across the State. Recent down turn in forestry activities has meant a reduction in on-ground weed management. Norske Skog also has plantation areas, which often adjoin State Forest. Norske Skog are a global company who operate a newsprint mill at Boyer on the outskirts of New Norfolk in the Central Highlands municipality. Norske are actively involved in weed management across their plantation estate.

Hydro Tasmania (Hydro) is a Tasmanian Government Business Enterprise and Australia's largest producer of renewable energy. Hydro are responsible for the management of land associated with extensive water infrastructure across the Central Highlands municipality.

TasNetworks is a Tasmanian Government Business Enterprise that supplies power from the generation source to homes and businesses through a network of transmission towers, substations and powerlines. They undertake weed control and vegetation maintenance under transmission lines as part of their contract as land managers.

Inland Fisheries Service (IFS) has jurisdiction over fish in all inland waters in the State. They are responsible for the management of the Recreational Fishery, Commercial Fishery and biodiversity, which covers native fish conservation, pest fish management and freshwater habitat protection.

The Tasmanian Land Conservancy (TLC) is a Tasmanian environmental organisation that owns and manages areas of high conservation value across the State. The Five Rivers is an 11,000-hectare reserve located within the Central Highlands municipality that encompasses the Nive, Serpentine, Pine, Little Pine and Little Rivers. Part of the Five Rivers Reserve is in the Tasmanian Wilderness World Heritage Area (WHA). The TLC have an active volunteer membership who participate annually in weed control within the reserve.

The Tasmanian Aboriginal Centre own and manage trawtha makuminya which comprises 6,878 ha of land, previously known as Gowan Brae. This land connects the TLC reserves at Skullbone Plains and Five Rivers and the Tasmanian Wilderness WHA. Active weed management is ongoing across this site.

Many agricultural land managers are active in weed management outside the bounds of State Forest and the Protected Area system where agriculture is the predominant land use.

Southern Highlands Progress Association and the Angler's Alliance are community groups with active members who invest time in weed eradication within the region. There are other small community groups and many individual landholders who contribute to weed management in the area.

3.2 High conservation value areas

Representing one of Australia's few alpine regions, the Central Plateau and the highlands region is considered to be highly vulnerable to the effects of climate change. Projected temperature rises are likely to increase threats from pests and disease. Increased shrub and tree invasion could lead to significantly transformed alpine ecosystems. It is anticipated that the changing role of fire will present considerable challenges. Unlike many other terrestrial ecosystems in Australia, Tasmanian alpine ecosystems have evolved largely in the absence of fire.

3.2.1 Threatened Vegetation Communities of the Highlands

There are 21 threatened vegetation communities found in the Central Highlands municipality of these 11 have more than 10% of their total distribution within the Highlands. Of the 11 communities, Highland *Poa* grassland, Highland grassy sedgeland and *Sphagnum* peatland have the majority of their extent within the region. For this reason alone, they form a priority for protection from weed invasion. Furthermore, the Highlands grassy sedgeland and Highland *Poa* grasslands are

at higher risk of weed invasion lying across a mixture of tenure types and close to roads. These areas form a high priority for conservation and weed management in the Central Highlands program. The *Diplarrena latifolia* rushland and wetlands occur across multiple tenures and are close to areas of known weed infestations. *Diplarrena latifolia* is an endemic species and these rushland communities are unique. The distribution of the communities across mixed tenures and close to roads increases the risk of weed invasion. More remote locations within protected areas have a lower risk of weed invasion and therefore generally require less control effort, unless outliers of priority weeds are identified close to these threatened communities.

Table 3.1 Threatened vegetation communities in the Central Highlands

Threatened Community	CHC total (ha)	State total (ha)	% in CHC
Highland grassy sedgeland	14669	18672	79%
Highland <i>Poa</i> grassland	16652	26094	64%
<i>Sphagnum</i> peatland	1938	3476	56%
<i>Athrotaxis cupressoides</i> open woodland	7368	16275	45%
<i>Eucalyptus tenuiramis</i> forest and woodland on sediments	18896	48113	39%
<i>Athrotaxis cupressoides/Nothofagus gunnii</i> short rainforest	1553	4501	34%
<i>Athrotaxis cupressoides</i> rainforest	1014	3578	28%
Subalpine <i>Diplarrena latifolia</i> rushland	309	1247	25%
Cushion moorland	615	3162	19%
Wetlands	2809	17933	16%
Riparian scrub	401	3124	13%

3.2.2 Individual Threatened Flora Species

There are 103 threatened flora species recorded in the Central Highlands, of these 21 are endemic to Tasmania. These species are listed as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 2000* (EPBC) and the Tasmanian *Threatened Species Protection Act 1985* (TSPA). Of the 103 species, 14 are listed under the EPBC Act the remainder are listed under the TSPA (See Appendix II for full species listings). Under the TSPA, 12 flora species are listed as endangered, 13 as vulnerable and the remainder as rare. All of these species have a wide distribution across the region and are frequently associated with threatened communities.

3.3 Significant agricultural areas

A core objective of this plan is to provide protection to key assets both natural and agricultural. Bothwell, Hamilton and Ouse districts contain the majority of the cropping land in the Derwent Catchment and are considered key agricultural assets. All irrigated cropping land and irrigated pastures have been identified as key assets in this plan. The protection of these areas is important

from an economic standpoint and significant investment in agricultural infrastructure has occurred. It is estimated that weeds cost Australian farmers around \$1.5 billion a year in weed control activities and a further \$2.5 billion a year in lost agricultural production (Commonwealth of Australia 2016). The minimisation and prevention of the spread of weed species within the agricultural areas is a priority in this plan.

4 Methodology

Weed distribution data (points and polygons) were collected using Global Positioning System (GPS) & Geographical Information System (GIS) by vehicle along Central Highlands Council maintained roads, council land and private land adjacent to roadways in core areas of the municipality. State Growth roads were also mapped in order to capture a holistic picture of weed distributions. The survey was conducted in late summer to autumn. Information was collected on the area occupied by the weed, the number of individuals and the infestation density, in accordance with the Natural Values Atlas record proforma (DPIPWE).

The focus of the mapping was declared weed species listed under the Tasmanian *Weed Management Act 1999*. Other weeds of significance were captured to create a more comprehensive picture of the extent of commonly occurring invasive species (Table 4.1). Where recent records exist in the Tasmanian Natural Values Atlas (NVA) on land beyond roadsides, this information has been included to build a broader understanding of weed distribution. We have also erred on the side of caution and included records of species recently recorded in the NVA but which may not have been observed due to seasonality.

The following list of recorded weed species are categorized as to whether they are: declared under the *Weed Management Act 1999*; recognised environmental weeds; or introduced species which are non-declared weeds. These non-declared species are often weeds of road sides and degraded areas.

Table 4.1 Recorded weed species

Species name	Common name	Status
<i>Carduus pycnocephalus</i>	Slender thistle	Declared
<i>Carthamus lanatus</i>	Saffron thistle	Declared
<i>Chamaecytisus palmensis</i>	Tree lucerne	Environmental weed
<i>Cirsium arvense</i>	Californian thistle	Declared
<i>Cortaderia</i> species	Pampas grasses	Declared
<i>Crocsmia x crocosmiiflora</i>	Montbretia	Environmental weed
<i>Cytisus scoparius</i>	English broom	Declared
<i>Echium plantagineum</i>	Paterson's curse	Declared
<i>Elodea canadensis</i>	Canadian pondweed	Declared
<i>Erica lusitanica</i>	Spanish heath	Declared
<i>Euphorbia lathyris</i>	Caper spurge	Environmental weed
<i>Foeniculum vulgare</i>	Fennel	Declared
<i>Genista monspessulana</i>	Canary broom	Declared
<i>Ilex aquifolium</i>	Holy	Environmental weed
<i>Jacobaea vulgaris</i>	Ragwort	Declared
<i>Lepidium draba</i>	Whiteweed	Declared
<i>Leucanthemum x superbum</i>	Shasta daisy	Non-declared
<i>Lupinus arboreus</i>	Tree lupin	Environmental weed
<i>Lycium ferocissimum</i>	African boxthorn	Declared
<i>Marrubium vulgare</i>	Horehound	Declared
<i>Onopordum</i> sp.	Cotton thistles	Declared
<i>Ornithogalum umbellatum</i>	Star of Bethlehem	Non-declared
<i>Pittosporum x</i>	<i>Pittosporum</i>	Environmental weed
<i>Pinus radiata</i>	Radiata pine	Non-declared
<i>Rosa rubiginosa</i>	Sweet briar	Non-declared
<i>Rubus fruticosus</i>	Blackberry	Declared
<i>Salix</i> species	Willow	Declared
<i>Typha</i> species	Cumbungi	Non-declared
<i>Ulex europeaus</i>	Gorse	Declared
<i>Verbascum thapsus</i>	Great mullein	Non-declared
<i>Vicia major</i>	Blue periwinkle	Environmental weed

Note: X signifies hybrid

The weed distribution information collected was used to identify priority areas for control and areas suitable for eradication zones by identifying outliers which require priority control.

The term eradication zone is used to describe areas that will be targeted for the removal of all declared and priority weeds. Priority sites are locations identified as critical in reducing risk of weed spread. The areas that require priority management within the region were determined by assessing the significance of natural and agricultural values (See section 6).

5 Limitations and assumptions

Although all care was taken to capture data of weed locations, the nature of this survey (being undertaken by vehicle driving slowly along the road) means the possibility of smaller stature weeds, some grasses and weeds not in flower may have been overlooked.

Due to budget constraints, a comprehensive survey across all land tenures was not possible. To address this, weed distribution data in the NVA was added to data collected during the survey. It will not be comprehensive and many weeds will have more extensive distribution than mapped in this project. However, we can only plan, based on the information available and treat this document as a living document to be added to when new priority weeds and locations for control arise.

6 Regional priorities

This section of the plan identifies:

- high conservation value areas as weed eradication zones;
- likely causes of weed spread around the region; and
- priority weed species for eradication.

We recommend a *two phase approach* to begin to address the weed issues in the Central Highlands.

Phase 1 aim to eradicate priority weed outliers and priority weeds within priority zones and

Phase 2 link priority zones with buffer areas and focusing on the WHA.

Phase1 identifies both sites and zones for control. Neither have priority over the other as outlier control is considered fundamental to best practice weed management. The zones are also vital as they prioritise weed control based on conservation and agricultural value protection.

Recommendation for control timing is included in the tables. Priority sites are listed in both table and map form to provide easily accessible location and distribution information. Eradication zones for ongoing weed eradication efforts are provided in map form with tables specifying the weed types and extent of individual infestations (see Maps 5-10).

Roadsides are currently maintained by Council and State Growth however the focus is on the road verges for safety reasons. This means that the remaining area of road easement often does not have an active weed control program. The majority of weeds observed were found to occur in these areas beyond the road verge and were often associated with fence lines. Roads act as a major pathway through the landscape for weed dispersal. Although not all roads or the entire lengths of a road are identified as priorities the weed control works in these areas are important. They are important because roads play such as important role in the transport and pathways of weeds into priority zones. The priority zones are instead a means of focusing investment to ensure key values are maintained as a matter of first preference.

6.1 Threatened species and community areas of overlap

To highlight high value conservation areas requiring a focus for weed control efforts we undertook an analysis of where threatened flora species and threatened communities overlapped. This approach was undertaken to help rationalise control efforts for those stakeholders with large areas of roads and reserved areas. The WHA and a 10 km buffer is also considered to be a high value area for control. These high value areas are recommended to be eradication zones. There were easily observable cluster areas where this occurred:1. Waddamana to Lake Echo, 2. Shannon to Lagoon of

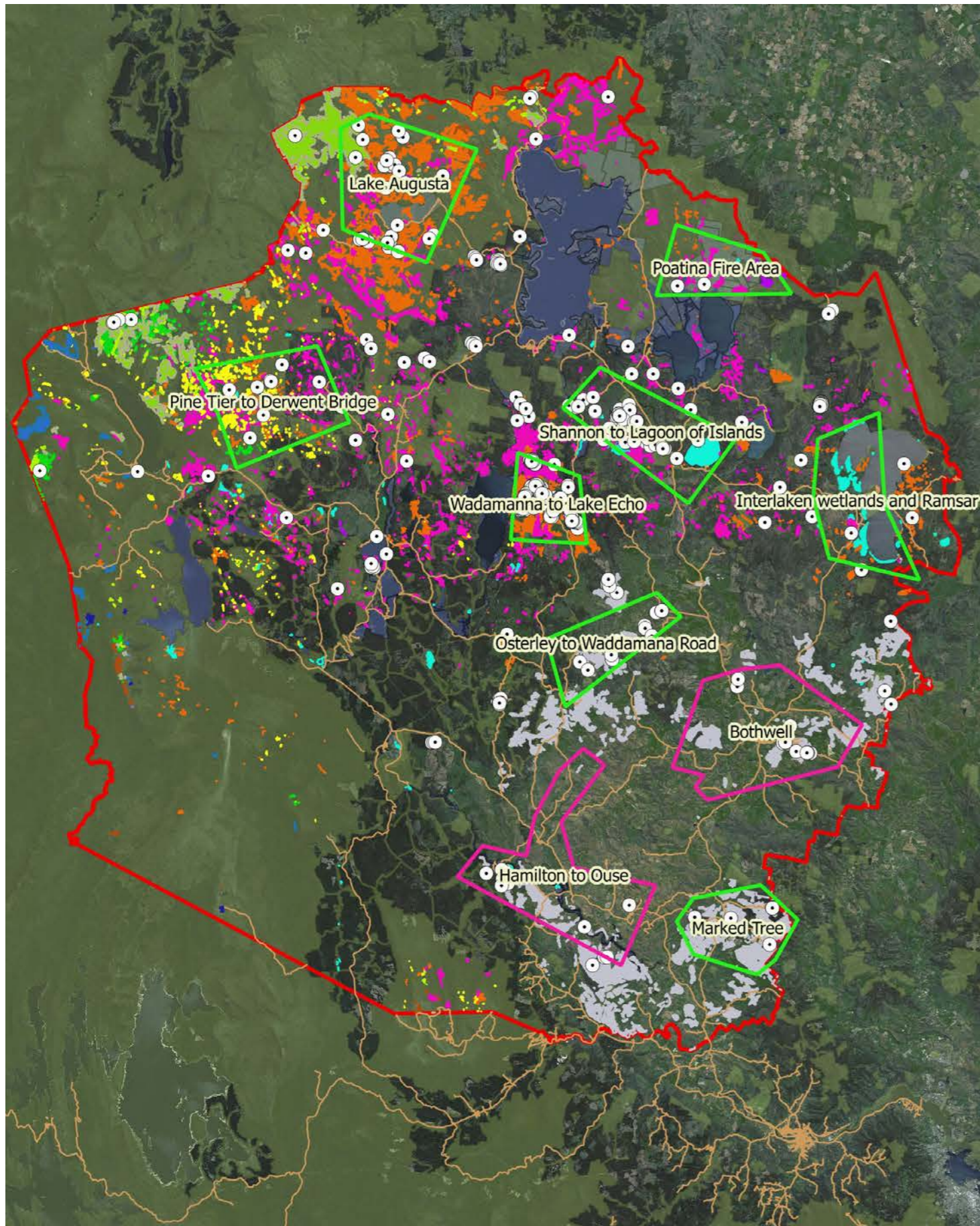
Islands, 3. Lake Augusta, 4. Interlaken wetlands and Ramsar, 5. Poatina Fire Area, 6. Pine Tier to Derwent Bridge, 7. Osterley to Waddamana Road and 8. Marked Tree area (see Figure 6.1).

- 1) **Waddamana to Lake Echo** has extensive areas of highland grassy sedgeland and highland *Poa* grassland with numerous records for the orchid species *Prasophyllum crebriflorum* and *Pterostylis pratensis* both of which have their main populations within the Highlands. There are also records of *Discaria pubescens*, *Muehlenbeckia axillaris* which also have the majority of their population within the Highlands. *Brachyscome radicata* and *Asperula Scoparia* var. *scoparia* recorded in this location have wider distributions.
- 2) **Shannon to Lagoon of Islands** contains significant wetlands and highland sedgey grasslands. Similar to the Waddamana lake to Lake Echo region, it has records of: *Pterostylis pratensis*, *Muehlenbeckia axillaris* and *Asperula scoparia* var. *scoparia*. In addition, a broader range of other species are found: *Isoetes humilior* (CHC restricted), *Scleranthus brockiei*, *Ranunculus pumelo* var. *pumelo*, *Calocephalus lacteus* (CHC and Midlands restricted), *Plantago glacialis*, *Amphibromus neesii*, *Stellaria multiflora*, *Eucalyptus gunnii* var. *divaricata* (CHC restricted), *Colobanthus curtisiae*.
- 3) **Lake Augusta** has extensive areas of highland *Poa* grassland. Threatened species recorded include *Ranunculus jugosus* (CHC restricted), *Muehlenbeckia axillaris*, *Viola cunninghamii*, *Australopyrum velutinum*, *Ranunculus collicola*, *Planocarpa nitida* (CHC restricted), *Uncinia elegans*, *Scleranthus brockiei*, *Epilobium willisii* (CHC main population).
- 4) **Interlaken wetlands and Ramsar** contains many smaller wetlands as well as the Interlaken Ramsar site and it is for this reason identified as a priority. Threatened species include: *Ranunculus pumelo* var. *pumelo*, *Colobanthus curtisiae*, *Scleranthus brockiei*, *Eucalyptus gunnii* subsp. *divaricata* and *Baumea gunnii*.
- 5) **Poatina Fire Area** is unique in having contiguous sections of the highland *Diplarrena latifolia* rushland as well as highland sedgey rushland. It is primarily for this reason that this area has been highlighted as a priority. In addition, the threatened species *Agrostis australiensis* and *Ranunculus jugosus* are found in the highland *Poa* grassland of this area.
- 6) **Pine Tier to Derwent Bridge** reaches from private land at Pine Tier through Gowan Brae and into the Central Plateau Conservation Area. This region contains large areas of highland grassy sedgeland and *Sphagnum* peatland. Threatened species in these communities include: *Isoetes humilior*, *Viola cunninghamii*, *Pterosphaera hookeriana*, *Carex capillacea* (CHC restricted), *Uncinia elegans*, *Hovea montana* (main population) and *Carex gunniana*.

- 7) **Osterley to Waddamana Road.** This area has a large area of *Eucalyptus tenuiramis* forest/woodland and contains *Ranunculus sessiliflorus*, *Discaria pubescens* (main population), *Cryptandra amara*, *Colobanthus curtisiae*, *Barbarea australis*, *Scleranthus fasciculatus*.
- 8) **Marked Tree.** This section is predominated by *Eucalyptus tenuiramis* forest and numerous threatened species are found in the area including: *Vittadinia muelleri*, *Vittadinia cuneata* var. *cuneata*, *Vittadinia gracilis*, *Austrostipa nodosa*, *Eucalyptus perriniana*, *Pentachondra ericifolia*, and *Poa mollis*.

6.2 Agricultural priority zones

Two zones for weed control have been identified as agricultural priority zones due to high value cropping and irrigated pasture infrastructure. This includes the area around Bothwell and Ouse to Hamilton. The increasing infrastructure associated with the Bothwell Irrigation Scheme means that over time this area is likely to increase and will need to be reviewed. These areas have a high level of weed invasion due to a long history of settlement and associated disturbance. The focus of recommended control is on species which have an ongoing and or potential impact on the costs of production for the agricultural industry. It is anticipated that once key weed infestations within these two priority zones are under control, the focus would shift to connecting these areas along Hollow Tree Road. This will also fit with the increased infrastructure investment associated with the Bothwell irrigation scheme.



Legend

Priority Zones

- Agricultural
- Conservation
- Threatened Flora & Threatened Veg Community overlap
- Roads

Threatened Veg Communities

- Athrotaxis cupressoides open woodland
- Athrotaxis cupressoides rainforest
- Athrotaxis cupressoides/Nothofagus gunnii short rainforest
- Athrotaxis selaginoides rainforest
- Athrotaxis selaginoides subalpine scrub
- Athrotaxis selaginoides/Nothofagus gunni short rainforest
- Cushion moorland
- Eucalyptus tenuiramis forest and woodland on sediments
- Highland grassy sedgeland
- Highland Poa grassland
- Sphagnum peatland
- Subalpine Diplarrena latifolia rushland
- Wetlands
- CHC municipality

0 10 20 30 km

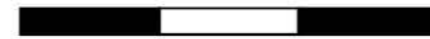


Figure 6.1 Priority Weed Management Zones

6.3 *Causes of weed spread*

Weeds are typically spread by propagules which can be transported by wind, water, animals and people. Understanding the life cycles of weed species is important in implementing effective management. This relates to timing for control, removal of plants and developing appropriate hygiene protocols. Hygiene protocols for reducing weed spread are currently limited for the Municipality. This is seen as a key cause for increasing weed spread. Weed hygiene protocols and their delivery to key weed control and asset management staff is a critical tool to accompany this plan and for ensuring this plan is as effective as possible. It is anticipated that most key stakeholder will have existing protocols however it is important to ensure that these are continually delivered to changing staff and improved knowledge of weed hygiene and management is updated for all staff.

6.3.1 Vehicles, machinery & equipment

Machinery and vehicles are known to be a major vector for weed spread. Earthmoving equipment or maintenance machinery, such as slashers, can carry thousands of viable seeds and fragments to new areas.

6.3.2 Contaminated sand and gravel

Another major vector is contaminated sand and gravel. Road maintenance often includes the movement of material from quarries around the Municipality. This is a common problem associated with all road construction across Australia. It is vital that all quarries, including informal quarries, are not contaminated with weeds.

Stockpile areas should be established with appropriate drainage and maintained free of weeds and should not be established in areas known to be weed infected e.g. Lyell Hwy at Butlers Rd intersection. Managing quarry sites and sand and gravel stockpiles is a key component of effective weed hygiene.

6.3.3 Transported livestock feed

Due to fire or drought events, there are times where feed is required to be brought in from other regions. Unfortunately, this is also a pathway for unwanted weeds to be introduced to an otherwise clean area. There are commonly accepted strategies for managing this risk:

- Check the origin of your hay or grain stock feed and ask whether it has come from a known weed infested area?
- Keep records of purchased hay or grain stock feed.

- Store and feed-out in a confined area away from drainage lines (stock containment areas) to reduce the likelihood of weeds being spread throughout your property.
- Monitor storage and feed-out areas regularly and be suspicious of unfamiliar plants that germinate for the next 12 months.

It is important to consider these strategies and to communicate widely about control methods at times of drought, fire and flood to prevent unwanted weed introductions.

6.3.4 Garden escapes

Environmental weeds are often garden escapes and are usually spread by: birds, suckering of the plants to nearby areas; and garden waste dumped inappropriately. In the past 30 years, at least 35% of all plants that have become environmental weeds in Tasmania were deliberately introduced as garden plants. Strategies to combat this problem include: community education programs and green waste collection schemes.

Montbretia is a good example of a garden escapee which is an environmental weed that is spreading in the region, particularly within drains and areas of low lying water. This species is a hybrid of two tropical South African species which originates from France. Montbretia is very hard to eradicate as it can re-sprout from small fragments of bulbs (corms). Although this species is not declared, it is an emerging threat as it easily out-competes native plants, particularly in native bushland and riparian areas. It should be monitored and removed where possible.

7 Results

This section provides a list of priority weed species (Table 7.1) surveyed and for which distribution was mapped (Appendix III). It also details the control measures required in priority zones based on survey information. Costs of control are provided based on estimated time required for control at each location.

7.1 Weed species status

Eighteen declared weeds and five non-declared weeds under the Tasmanian *Weed Management Act 1999* were recorded during the survey. Eight environmental weeds were also recorded in the municipality.

Thirteen species have been identified in this plan as priority weeds for whole of municipality control. These species have been selected as priority weeds due to the lesser extent of occurrence across the Municipality and/or the threat that they represent. Other species have been identified for control at specific sites as they represent outliers or are acting as a major seed source to local areas where there are few other records.

Table 7.1 Status assigned to weed species in the Central Highlands

Weed name	Priority	Action for Central Highlands	Reasons	Status
African boxthorn	Whole municipality	Eradication all sites	WONS - Limited distribution, achievable target - high priority weed for the Southern Tasmanian Weed Strategy	Declared weed
African lovegrass	Whole municipality	Eradication all sites	Limited distribution, achievable target	Declared weed
Blackberry	Site specific action	Control &/or monitor in priority zones, control outliers	WONS - Control further spread, impacting conservation & agricultural priority zones	Declared weed
Blue periwinkle	Recorded from one site	Eradication all sites	Limited distribution, achievable target	Environmental weed
Brooms	Site specific action	Control in priority zones, control outliers	WONS - Control achievable in highland lakes areas	Declared weed
Canadian pondweed	Beyond scope of plan	Beyond scope of plan	Widespread distribution in waterways, very hard to control	Declared weed

Weed name	Priority	Action for Central Highlands	Reasons	Status
Cumbungi	Site specific action	Control in priority zones	Limited distribution in highland lakes area, control achievable	Non-declared weed
Declared thistles (Saffron, Winged/Slender, Californian)	Site specific action	Control in priority zones	High risk weeds, potential to impact both conservation and agricultural values	Declared weed
Elisha's Tears	Whole municipality	Eradication all sites	Limited distribution, achievable target	Declared weed
Euphorbia	Recorded from one site	Eradication all sites	Limited distribution, achievable target	Environmental weed
Fennel	Whole municipality s	Control in priority zones, control outliers	High risk weed, potential to impact agricultural values	Declared weed
Foxglove	Whole municipality	Eradication all sites	Limited distribution, achievable target, toxic weed	Environmental weed
Gorse	Site specific action	Control in priority zones, control outliers	WONS - Control further spread in priority zones	Declared weed
Holly	Whole municipality	Eradication all sites	Limited distribution, achievable target	Environmental weed
Horehound	Site specific action	Control in priority zones, control outliers	High risk weed, potential to impact agricultural values	Declared weed
Montbretia	Whole municipality	Eradication all sites	Limited distribution, achievable target	Environmental weed
Mullein	Site specific action	Control as part of roadside maintenance	Widespread distribution along roadsides	Non-declared weed
Orange hawkweed	Whole municipality	Eradication all sites	Limited distribution, achievable target - Australian Alert List for Environmental Weeds	Declared weed
Pampas Grass	Whole municipality	Eradication all sites	Limited distribution, achievable target	Declared weed
Patterson's curse	Whole municipality	Control in priority zones, control outliers	High risk weed, potential to impact agricultural values	Declared weed
<i>Pittosporum</i> sp.	Recorded from one site	Eradication all sites	Limited distribution, achievable target	Environmental weed

Weed name	Priority	Action for Central Highlands	Reasons	Status
Ragwort	Site specific action	Control in priority zones, control outliers	High risk weed impacting conservation priority zones - high priority weed for the southern region NRM strategy	Declared weed
Spanish heath	Whole municipality	Eradication all sites	Limited distribution, achievable target - high priority weed for the Southern Tasmanian Weed Strategy	Declared weed
Star of Bethlehem	Whole municipality	Eradication all sites	Known from one site, achievable target	Non-declared weed
Sweet briar	Beyond scope of plan	Beyond scope of plan	Naturalised, control opportunistically	Non-declared weed
White weed	Whole municipality	Eradication all sites	High risk weed, potential to impact agricultural values	Declared weed
Willows	Site specific action	Control in high value conservation priority zones	WONS - Impacting conservation & agricultural priority zones	Declared weed

Below is a description of the species identified as priorities for control (see Appendix III for distribution maps of weed species).

African boxthorn (*Lycium ferocissimum*) is a woody shrub reaching up to 4 m in height, with glossy leaves and an extensive root system incorporating a long branched taproot. The trunk and branches are light brown and smooth when young, turning darker brown or grey with age. The twigs end in a hard, sharp spike or thorn.

The white flowers are usually produced in summer, although flowering can occur through most of the year. The fruit is an oblong berry approximately 10 mm long, going from a smooth green appearance to bright orange-red when ripe. Fruits contain numerous small, oval, flattened seeds. Seeds germinate at any time of the year and generally take two years to reach flowering stage (DPIPWE 2016).

ABT is found throughout most agricultural areas of Tasmania it is common along fence lines and beneath overhead wires as well as a long roadsides railways and waterways. Surprisingly only 8 sites were recorded as part of the roadside survey, and although the Statutory Weed Management Plan for African Boxthorn indicates this species is classed as Zone B - 'widespread infestations'. The recent on-ground survey results indicate it is less widespread and therefore a priority for eradication.

African lovegrass (*Eragrostis curvula*) is a densely tufted, perennial (long-lived) grass growing from 30 to 120 cm high. The leaves are dark green to blue-green, narrow, and 25 to 35 cm long. The flowering stems rise above the tufted leaves and carry a loose fanlike grey-green flower-head. It is not well recognized and awareness of the species is low in Tasmania. The distribution of African lovegrass is limited in Tasmania. Targeted surveys and treatment have been undertaken by Department of State Growth between Hayes and Ouse. The heaviest infestation is the northern approaches to Gretna. It is seen as a high risk species as climate models based on its known distribution in Africa show that the majority of Tasmania with the exception of the South-west is suitable for the species.

African lovegrass prefers disturbed soils on roadsides, riverbanks and waste places, from which it can invade adjacent degraded pastures and native grasslands. African lovegrass is generally unpalatable, produces copious seed, and can rapidly spread over and dominate degraded pastures. It competes with native species during regeneration after fire; it can also out compete pasture species. It becomes unpalatable to stock as it ages and contains low (3%) levels of protein, causing stock that graze on it to do poorly.

The Central Highlands is a Zone A municipality under the African Lovegrass Statutory Weed Management Plan. It was not recorded in the region when that weed plan was written. This has obviously changed and its eradication is a high priority.

Blue periwinkle (*Vinca major*) has broad-leaved runners that form a dense mat, shading out native plants and competing for moisture and nutrients. Its growth is particularly vigorous in riparian and other moist habitats. It competes with native plants for moisture, light, nutrients and recruitment niches. Its growth is particularly vigorous in riparian and other moist habitats. Once established, periwinkle's rampant growth is very difficult to control, especially in bushland. Blue periwinkle is native to the Mediterranean region. It is widespread in Tasmania but does not extend into the alpine zones. Blue periwinkle expand spreads by means of creeping stems that take root at the nodes and tips. New infestations can establish from plant fragments when broken off and transported by dumping of garden waste, soil movement or floods. It spreads from gardens, roadsides, nature strips, firebreaks, fence lines and neglected rubbish dumps into the bush and along waterways.

Elisha's tears (*Leycesteria formosa*) occurs in wetter forests and woodlands in Tasmania's north-east, north-west, west and south. Elisha's tears invades cool moist forests, woodlands and riparian areas. Elisha's tears can invade both disturbed and undisturbed bush, and can form dense thickets that smother other vegetation and prevent regeneration. Elisha's tears is not killed by shading from other plants, so the establishment of competition is not an effective means of control. Mature plants can produce hundreds of fruit over summer and autumn, with each fruit containing up to 100 seeds. Seed is dispersed by birds and possibly by foxes and possums, in water, by slashing and during removal of the weed (DPIPWE 2016).

Stem layering occurs where stems contact moist soil and send down roots. Dislodged fragments of stem that fall on moist soil may also regenerate. Vegetative material can be spread by slashing and during removal of the weed (DPIPWE 2016)

Central Highlands is a Zone A municipality for Elisha's tears meaning that is a weed for eradication in the region.

Foxglove (*Digitalis purpurea*) is a biennial herb with a rosette of soft, blue-grey hairy leaves that produces a tall flower spike of white, pink or purple tubular flowers with dark mottling. It can be dispersed by wind, water, and soil because it has very small seeds. It invades wet forests, riparian and alpine areas, where it replaces native herbs. Extremely toxic to livestock and humans. It has a widespread distribution due to its popularity as a garden plant. It is typically mostly seen along

roadsides and rivers in the Highlands where disturbance is common but it can heavily invade and become dominant. It is also difficult to control due to its toxic nature and persistence.

Fennel (*Foeniculum vulgare*), Fennel is a significant weed of open, exposed sites like roadsides, railways, wastelands, channels and drains which receive abundant water or runoff. Fennel is also grown as a commercial crop in Tasmania. Fennel is a declared weed in Tasmania under the *Tasmanian Weed Management Act 1999*. The Central Highlands is a Zone B municipality and commercial crops are grown. However, the main distribution is around Hamilton to Ouse. The distribution of wild fennel is impacting on the industries capacity to grow Fennel as a seed crop and it is recommended that this weed be treated as a priority in the agricultural zones.

Holly (*Ilex quifolium*) is a much-branched shrub or small tree; leaves glossy and deep green, often with wavy edges and sharp spines. Flowers, small, pinkish-white in clusters of three. Bright red berries in Autumn. Its seed is dispersed by birds and animals; may also spread vegetatively. It invades cool, damp forest, replacing native plants and shrubs. It is particularly invasive on riversides. It is best controlled by cut and painting or drilling and filling. It can be difficult to control due its ability to re-sprout from root stock. This species has been identified as suitable for listing as a Weed of National Significance.

Horehound (*Marrubium vulgare*) was only located from a couple of surveyed sites, however it has been observed more widely and is likely that this species occurs across the agricultural zones. It is listed as a Zone B species according to the Statutory Weed Management Plan. Horehound is weed of pasture and crops and is particularly troublesome in the Midlands grazing areas. Due to the minimal infestation observed on roadsides and recorded in the NVA it is recommended as a priority for control.

Montbretia (*Crocsmia x crocosmiiflora*) originates from Africa. It is a stiff, leafy, clump-forming, evergreen perennial with underground rhizomes. It has light brown corms with a fibrous cover and which form clusters at the stem base. Orange flowerheads are tall and zig-zag shaped. It produces few seeds, but corms and rhizomes multiply rapidly and it also grows from fragments. Tolerates frost and heat, damage and grazing, damp, most soils, and moderate shade. It is spread by soil movement (road graders, fill), vegetation dumping and water movement spreads this weed from roadsides, slips, wasteland and exotic plantations. It competes with groundcovers and small shrubs, and inhibits the establishment of native plant seedlings. Specialised low-growing species may be displaced, especially in wet places and riparian margins. It is a serious threat to the Highlands Sedgeland and

Grassland communities, as it mostly invades low-growing habitats, riparian areas, fernland, short tussock, and wetlands.

Controlled best digging out very small sites and on larger sites by weed wiping or foliar spray (depending on the environmental constraints). It thrives on disturbance as corms and rhizomes readily re-sprout. It is also fire tolerant. Sites regenerating to canopy over 2 m can normally be left alone, and may benefit from thinning where the weed is dense. Follow up is required 6-monthly. Replanting with dense groundcover is a useful method to minimise re-sprouting.

Orange hawkweed (*Hieracium aurantiacum*) appears on the National Alert List for weeds. Orange hawkweed is a hairy herb with leaves in a basal rosette. When broken, its stems and leaves exude a milky sap. Individual plants spread via lateral leafy shoots (stolons) which take root and produce new leaf tufts. Its leaves are in basal tufts, about 150 mm long and 30 mm wide, broadest slightly above midway and lacking a conspicuous stalk. The margins entire or indistinctly toothed. Both leaf surfaces bearing fine, spreading hairs about 4 mm long. Its flower heads are quite densely clustered at the end of an erect leafless stem about 350 mm long which is covered with spreading hairs. Each flower head is about 15 to 30 mm in diameter, consisting of several rows of bright reddish-orange florets, all surrounded by one or two rows of narrow green bracts up to 8 mm long.

Orange hawkweed is established in Kosciuszko National Park in New South Wales. In Victoria it has also spread from Falls Creek Alpine Village to surrounding alpine and subalpine vegetation, at least as far as Basalt Hill, approximately 4 km southeast from the village, and has also been found at Mt Buller. In Tasmania, it has established in the Central Highlands and Southern Midlands, and around Hobart where the largest infestation occurs in the vicinity of the suburb of Fern Tree at the foot of Mt Wellington (Commonwealth of Australia 2016).

Orange hawkweed colonises spaces between tussock grasses, often in higher altitude areas, and can be extremely invasive (DPIPWE 2016). On the mainland of Australia, particularly in the Australian Alps, heavy infestations form large swards which prevent regeneration and survival of native species and reduce productivity in grazing areas. It is for this reason Orange hawkweed is seen as a high risk weed, particularly to the Central Highlands threatened highland *Poa* and sedgeland communities.

Pampus grasses (*Cortaderia* spp.) are aggressive environmental weeds. There are three species of pampas in Tasmania: *Cortaderia selloana* (common pampas grass) *C. jubata*, (pink pampas) and *C. richardii* (toe toe). They have been treated in this plan as a single species for simplicity. All are large, vigorous, dense, tussocky perennials. Pampas leaves grow up to 2 m long, are thin and tapered to a

fine tip. The large and showy, plume-like flower heads can reach 4 metres in height and vary in colour from white-yellow-pink. Pampas flowers and sets seed in autumn (DPIPWE 2016).

Pampas can rapidly colonise disturbed or burnt areas in a range of vegetation types where it readily out-competes native vegetation. Pampas is problematic for the forestry industry, and can impede access along roads and walking tracks. Pampas is also highly flammable and poses a significant fire hazard (DPIPWE 2016).

Central Highlands is a Zone A municipality for Pampas Grasses meaning that is a weed for eradication in the region.

Paterson's curse (*Echium plantagineum*) occurs across Tasmanian agricultural areas as small scattered infestations. It is a significant pasture weed. Paterson's curse is an erect plant around 60 to 90 cm high. Seedlings appear in autumn and develop into a rosette (a flat whorl of leaves close to the ground) in winter. One or several flowering stems are produced in late winter and flowering occurs in spring. Flowers are trumpet shaped and usually blue/purple, but may be pink or white (DPIPWE 2016)

Infestations of Paterson's curse are known from the roadside and properties adjacent to the Derwent River on Meadowbank Dam. The Statutory Weed Management Plan for Paterson's curse indicates that in the Central Highlands this species is classed as Zone B - 'localized infestations'. The spread of Paterson's curse from the municipality or neighboring clean properties must be prevented. It is toxic to stock where it becomes dominant in pasture and when it is in flower. It can heavily invade disturbed areas becoming pervasive in degraded pasture. It is difficult to control with herbicide and opportunistic grazing before flowering can be an important tool for control. It is typically spread by machinery, livestock and livestock feed.

Spanish Heath (*Erica lusitanica*) has significant infestations in many areas of Tasmania. It is most commonly found on degraded pastures, neglected areas and roadsides. Spanish heath will invade native vegetation, particularly where there has been soil disturbance. Spanish heath is a fire hazard as it is extremely combustible. The Statutory Weed Management Plan for Spanish heath indicates this species is classed as Zone B - 'widespread infestations'. The spread of Spanish heath from the municipality must be prevented. Priority infestations identified in this plan are currently manageable in eradication terms and would prevent this species from becoming a bigger problem.

Star of Bethlehem (*Ornithogalum umbellatum*) is a lesser known weed which has been recorded in the Bothwell area. The Star of Bethlehem is a perennial bulb, up to 30 cm tall, annual leaves with a

white stripe down the middle and clusters of white flowers with a green band down the back of the petals. The true stem is underground. The Star of Bethlehem grows from seeds, bulbils and bulbs. Flowers in spring and spreads by seed and bulbils which will travel in water flows and/or are transported by ants. The main spread is by intentional planting, the dumping of garden refuse, earthworks and tillage. It is a weed of disturbed areas, rotation crops, perennial crops and grass land. Bulbs contain alkaloids which are toxic to grazing animals.

Star of Bethlehem is typically found in no-till production but can also be found in reduced-tillage systems with germination of bulbs from 3 to 4 inches deep. The thick vegetation and bulb density impedes planting practices and can reduce crop establishment and vigor. Infestations impact on crop growth and mechanical operations due to the high bulb density and dense foliage. Bulb densities are estimated to be up to 15 million bulbs per hectare which reduces the total soil volume, seed to soil contact and root to soil contact of crop species. Star of Bethlehem is often misidentified because of a low level of awareness by landholders. Star of Bethlehem also acts as an alternative host for barley leaf rust.

Whiteweed (*Cardaria draba*) is closely related to crop plants such as cabbages and rapeseed. It is an erect, herbaceous (non-woody) plant growing to 90 cm high with white, umbrella shaped flower heads which appear in October and November. Individual flowers are 4 mm in diameter with 4 white petals (DPIPWE 2016). White weed appears to be spreading in the Highlands, especially along roadsides in the Bothwell area.

Whiteweed is a significant weed of crops in Tasmania, reducing yields through competition with crop plants for moisture and nutrients. It is very difficult to control once it has become established in cropping paddocks. Whiteweed is also thought to taint the meat and milk of grazing animals (DPIPWE 2016). Central Highlands is a Zone A municipality for White Weed meaning that is a weed for eradication in the region

7.2 *Sites of significance as seed sources*

Wayatinah

The Wayatinah township has had a long history of use and was established as part of Hydro development in 1950s. The town and surrounds impacted by weeds covers a range of tenures including Hydro, Council, Private, Forestry and State Growth. There are a broad range of weed species including those not recorded elsewhere in the vicinity and there is evidence of spread of these species down adjoining roads. English broom was particularly abundant and this area is acting as a seed source. A comprehensive survey was beyond the scope of this plan, however we identified a need for a clear strategy to reduce the spread of weeds from this area.

Dee Lagoon

The area around the Dee dam wall has a large infestation of English Broom and Gorse. The site stretches for approximately 1km on either side of the wall along Victoria Valley Road and along Lake Echo Road for several hundred meters. A comprehensive survey of the site was beyond the scope of this plan. It was observed that the surrounding areas are in the majority weed free. This site is acting as a major seed source. The land is owned by Forestry Tasmania. However, the transmission lines which have heavy infestations of Broom are acting as transport corridors for the weed. The transmission lines are managed by TasNetworks.

7.3 *Weed control recommendations for each stakeholder*

A selection of priority sites has been identified based on whether they are outliers in a weeds known distribution or occur within a high value conservation zone or a high value agricultural zone. These sites are part of a collaborative program which is supported by each stakeholder as well as action on private land. Due to privacy issues we have identified landholders in the table as the number involved in identified sites. The tables below provide this information separately for each stakeholder with an estimate of cost per control at each site. These costs are based on time required at each site for two staff at \$70/hour and do not include herbicide or travel times. The estimate per site is based on the type of weed and the size and density of the infestation. Please note that the ordering of the tables is not indicative of priorities, the tables detail the designated years for control recommended.

The program is designed to be collaborative with the combined efforts focusing on priority zones and weed outliers. There are two requests for collaborative investment into individual site weed management plans:

1. Revised weed management plan for Dago Point (joint investment from NRM South and Crownland Services) and
2. Combined investment for a weed management plan for Wayatinah where the township and surrounding area are heavily infested with a range of weeds including priority species.

Investment for this weed plan is requested from CHC, Hydro, Forestry Tasmania and Crownland Services.

You will notice that in most instances year 4 and 5 actions and investment are to be determined by monitoring unless the infestation is large and well established. There is a plan to undertake an evaluation in year 4, refer to Section 8 for more information.

7.4 Central Highlands Council recommendations for weed control

The Central Highlands Council has the largest recommended program due to the extensive road network that they are responsible for managing (see Tables 6.1 and 6.2). The Derwent Catchment NRM Committee will support their activities by contacting landholders with weed infestations adjacent to proposed works and also as one of Council's designated weed officers as and when required. DCNRMC will also support activities with monitoring and small infestation control efforts.

Please note there is a request to fund a detailed weed management plan for Wayatinah which has extensive weed infestations which are gradually expanding. The plan would cover a mixture of tenure Council, Crownland, Hydro and Forestry.

Table 7.1 Central Highlands Council – Weed control recommendations – Priority Zones

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
African boxthorn	Bothwell	Barrack Hill, Bothwell	1	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Blackberry	Bothwell	Croakers Lane, river through town	2	Follow up	4	560	Follow up	5	700	Follow up	5	700	Determined by monitoring			Determined by monitoring		
Blackberry	Hamilton/Ouse	Ellendale Rd, 500m from Dunrobin	-							Control	2	280	Follow up	2	280	Monitor	DCNRMC	
Blackberry	Hamilton/Ouse	Dawson Rd, several sites	1							Control	2	280	Follow up	2	280	Monitor	DCNRMC	
Blackberry	Hamilton/Ouse	Victoria Valley Rd, several sites through waterways	2				Monitor	DCNRMC		Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Blackberry	Marked Tree	Pelham Road, 2 sites before CHC boundary stops	2				*Control	8	1120	Follow up	8	1120	Follow up	8	1120	Determined by monitoring		
Blackberry	Osterley to Waddamana Rd	Osterley (Church Street, 2 sites - McGuires Marsh Rd, 2 sites - Victoria Valley Rd 1 site)	2				Control	8	1120	Follow up	8	1120	Follow up	8	1120	Determined by monitoring		
Blue periwinkle	Hamilton/Ouse	Victoria Valley Rd, 150 m north of Lanes Tier junction on roadside bank	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Brooms	Bothwell	Meadsfield Rd, 4 sites	2	*Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Brooms	Hamilton/Ouse	Lanes Tier Rd (close to Victoria Valley Rd intersection, 4 sites)	1				Control	8	1120	Follow up	8	1120	Follow up	8	1120	Determined by monitoring		
Brooms	Osterley to Waddamana Rd	Church Road, 2 sites	1															
Brooms	Osterley to Waddamana Rd	Victoria Valley Road/MacGuires Marsh Road, 2 sites	-															
Brooms	Osterley to Waddamana Rd	Waddamana Road, Hermitage, 4 sites	2	*Control	8	1120	Follow up	8	1120	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Brooms	Shannon to Lagoon of Islands	Interlaken Rd	-	*Control	8	1120	Follow up	8	1120	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Bothwell	Hollow Tree Rd 1.5 km from town	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Declared thistles	Bothwell	Meadsfield Rd - Dennistoun Rd (several sites)	5	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Bothwell	Nant Lane, 2 sites	2	*Control														
Declared thistles	Bothwell	Woodspring Road 5km from Dennistoun road turn-off	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Hamilton/Ouse	Ellendale Rd near Dunrobin Park	1	1 HR														
Declared thistles	Hamilton/Ouse	Ellendale Rd - 2 sites near John's Tier past Charlies Hill	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Hamilton/Ouse	Langhloh Rd, multiple sites	1															
Declared thistles	Hamilton/Ouse	Tor Hill Rd, several sites	1	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Hamilton/Ouse	Victoria Valley Rd near Kenmere Marsh	3	*Control														
Declared thistles	Interlaken Wetlands & Ramsar	Dago Point, 4 sites on roads	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Interlaken Wetlands & Ramsar	Interlaken Rd, 2 sites	3	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Interlaken Wetlands & Ramsar	Lake Crescent Rd near Lake	1	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Marked Tree	Several sites on Pelham Rd, Marked Tree Rd and Thousand Acre Lane	2	*Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Shannon to Lagoon of Islands	Interlaken Rd, 1 South past Steppes Conservation Area	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Waddamana to Lake Echo	Waddamana Rd, (upper loop) 1.5 km from centre	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Fennel	Bothwell	Dennistoun Rd - intersection of Woodspring Rd	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Fennel	Hamilton/Ouse	Victoria Valley Rd near Watson's Marsh	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Fennel	Hamilton/Ouse	Langhloh Rd - 3 sites	1	*Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Gorse	Bothwell	Meadsfield Rd - some dense areas	2							*Control	5	700	Follow up	5	700	Monitor	DCNRMC	
Gorse	Bothwell	Dennistoun Rd – 140 metres north of Woodspring Rd intersection	-							Control	1	140	Follow up	1	140	Monitor	DCNRMC	
Gorse	Hamilton to Ouse	Lanes Tier Road - 2 sites	-							Control	2	280	Follow up	2	280	Follow up	2	280
Gorse	Hamilton to Ouse	Victoria Valley Road	1	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring	DCNRMC	
Gorse	Interlaken wetlands and Ramsar	Multiple sites on Interlaken Road, part of on-going program	3	Follow up	3	420	Follow up	3	420	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring	DCNRMC	
Gorse	Interlaken wetlands and Ramsar	Multiple sites on Dennistoun Road (6 sites uncontrolled)	2							Control	16	2240	Follow up	16	2240	Follow up	16	2240
Gorse	Marked Tree	Marked Tree Road - Pelham West Nature Reserve	-							Control	2	280	Follow up	2	280	Monitor	DCNRMC	
Gorse	Marked Tree	Marked Tree Rd / Dickinson's Road, 2 sites	2							*Control	4	560	Follow up	4	560	Monitor	DCNRMC	
Gorse	Marked Tree	Pelham Road - Multiple sites	Norske Skog +3							Control	16	2240	Follow up	16	2240	Follow up	16	2240
Gorse	Osterley to Waddamana Rd	Victoria Valley Rd	-							Control	3	420	Follow up	3	420	Monitor	DCNRMC	
Gorse	Osterley to Waddamana Rd	Waddamana Rd, 2 sites	2							Control	1	140	Follow up	1	140	Monitor	DCNRMC	
Horehound	Bothwell	Wentworth Street in Bothwell	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Horehound	Bothwell	Woods Spring Road - 1 site	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Horehound	Bothwell	Meadsfield road - 2 sites near Horse Gully	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Horehound	Bothwell	1.4km from Nant lane intersection, Dennistoun Rd	-	Control	1													
Horehound	Hamilton to Ouse	Property adjacent to Upper Mill Road - near quarry - Large infestation	3	*Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Horehound	Hamilton to Ouse	Langloh Road - 3 sites North of Ellangowan Creek	-				Control	4	560	Follow up	4	560	Follow up	4	560	Monitor	DCNRMC	
Horehound	Osterley to Waddamana Rd	Waddamana Rd, Hermitage,	1	Control	1													

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Whiteweed	Bothwell	Dennistoun Rd, 1.8km from Woodspring road travelling north	1	Control	2													
Whiteweed	Interlaken wetlands and Ramsar	Road near Point of Chillon, Lake Sorell	-															
					Total	8960		Total	13020		Total	12180		Total	11480		Total	4760

* denotes Control should only occur if landholder has agreed to undertake control

Table 7.2 Central Highlands Council – Recommendations for weed control – Outlier sites

Weed	Outlier sites	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
African boxthorn	Tor Hill Road - Cawood fence line	1	Control	1	140	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
African boxthorn	Lower Marshes Road, on road, Glenmore	1	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Brooms	Flintstone , 3 sites	3	Control	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring		
Fennel	Tor Hill Road	2				*Control	5	700	Follow up	5	700	Follow up	5	700	Monitor	DCNRMC	
Foxglove	Ellendale Road - Near Risby's Road turnoff		Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Gorse	Arthurs Lake Road (has been controlled previously)		Follow up	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring	DCNRMC	
Horehound	Arthurs Lake Rd, 2 sites	-	Control	1	140	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Horehound	Bluff Rd, Gretna, before turnoff to Gray's Rd	-	Control	1	140	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Holly	14 Mile road	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Holly	Dry Poles Road	2	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Holly	The Avenue	1	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Holly	Rayner's Road	1				Control	8	1120	Follow up	8	1120	Follow up	8	1120	Monitor	DCNRMC	
Multiple weeds	Wayatinah - cost to be split by CHC, FT, CLS & Hydro	14	Survey and prepare plan	66	1155	Determined by plan											
Montbretia	Highland Lakes Road south of Lower Marshes Road junction	-	Control	8	1120	Follow up	8	1120	Follow up	8	1120	Monitor	DCNRMC		Determined by monitoring		
Montbretia	Ellendale, Monto's Creek bridge	-	Control	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring		

Weed	Outlier sites	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
OHW	Miena, Theissen Crescent	2	Follow up	8	1120	Follow up	8	1120	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Pampas Grass	Bluff Road	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Pampas Grass	Ellendale - Holmes Road	-	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Pampas Grass	Ellendale - The Avenue	-	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Paterson's curse	Meadowbank Rd, several sites	2	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Pittosporum sp.	14-mile road, 500 m before Laughing Jacks turnoff	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Caper spurge	Lyell Hwy, 2.5 km before Black Bobs turn off	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Whiteweed	Strickland Road, 300 m from Victoria Valley Rd turnoff	-	Control	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring		
Whiteweed	Dennistoun Rd, multiple locations	1	Follow up	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring		
Whiteweed	Ellendale Rd, 2 locations - Rockmount Rd, 1 location	-	Control	3	420	Follow up	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring		
				Total	10395		Total	12320		Total	4480		Total	1820			

7.5 Forestry Tasmanian recommendations for weed control

Forestry Tasmania has extensive lands adjoining the Tasmanian Wilderness WHA and management of weeds in these areas is critical for maintaining values. Please note that the Broom infestations at Dee and the Tarraleah are a major seed source for the surrounding areas which are largely free of broom. The broom infestation at Tarraleah stretches across multiple tenures and requires a collaborative effort for control.

There is a request to fund a detailed weed management plan for Wayatinah which has extensive weed infestations which are gradually expanding. The plan would cover a mixture of tenure Council, Crownland, Hydro and Forestry.

Table 7.4 Forestry Tasmania – Recommendations for weed control – Priority zones

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Declared thistles	Shannon to Lagoon of Islands	Road between Arthurs Lake and Lagoon of Islands	-	Control	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		To be determined by monitoring		
					Total	280		Total	280		Total	280						

Table 7.5 Forestry Tasmania – Recommendations for weed control – Outlier sites for control

Weed name	Outlier sites	Private land owners/managers	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Brooms	Dee	TasNetworks	Control**	120	8400	Control/follow up	120	8400	Control/follow up	120	8400	Control/follow up	120	8400	Control/follow up	120	8400
Brooms	Tarraleah	-	Control	24	1680	Follow up	24	1680	Follow up	24	1680	Monitor	DCNRMC		Determined by monitoring		
Multiple weeds	Wayatinah - cost to be split by CHC, FT, CLS & Hydro	14	Survey and prepare plan	66	1155	Determined by plan											
Spanish heath	Woods Lake Road	-	Follow up	2	280	Follow up	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring		
				Total	11515		Total	10360		Total	10360		Total	8400		Total	8400

** Costing based on control undertaken by 2 teams of 3 with metal blade brush-cutters, one to brush-cut, one to move weed debris whilst the third applies herbicide to stump with back pack spray unit.

7.6 Hydro Tasmania recommendations for weed control

Hydro has made significant investment into weed control in the past season supporting ragwort control in the Poatina fire affected area and around Great Lake. This program is slated to continue to ensure the control measures are effective, this program has been a collaborative effort between, Hydro, Parks, TasNetworks and State Growth.

Please note there is a request to fund a detailed weed management plan for Wayatinah which has extensive weed infestations which are gradually expanding. The plan would cover a mixture of tenure Council, Crownland, Hydro and Forestry.

Table 7.6 Hydro – Recommendations for weed control – Priority zones

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5
Blackberry	Hamilton/Ouse	Lake Repulse dam, 2 sites	-	DCNRMC to confirm	? Unsure of population size											
Brooms	Hamilton/Ouse	Lake Repulse dam, 2 sites	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Declared thistles	Hamilton/Ouse	Lake Repulse dam, several sites	-	Control	3	420	Follow up	3	420	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Declared thistles	Poatina Fire Area	West of Cowpaddock Bay & Allison Marshes	-	Follow up as part of ragwort control	18	2520	Follow up	18	2520	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Declared thistles	Shannon to Lagoon of Islands	Lagoon of Islands (Stockyard and Barn Shore)	-	Follow up	4	560	Follow up	4	560	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Fennel	Hamilton/Ouse	Lake Repulse dam, near bridge	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Ragwort	Lake Augusta	Along roadside <5% density	-	Follow up	4	560	Follow up	4	560	Monitor	DCNRMC		To be determined by monitoring			To be determined by monitoring
Ragwort	Poatina Fire Area	Multiple sites	-	Follow up	192	15680	Follow up	192	15680	DCNRMC helicopter survey	3000		To be determined by monitoring			To be determined by monitoring
					Total	20160		Total	20160	Total	3000					

Table 7.7 Hydro – Recommendations for weed control – Outlier sites

Weed	Outlier sites	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 4	Hrs
Blackberry	Miena, Brady's, Wayatinah, Catagunya	-	DCNRMC to confirm	? Not sure of population size												
Brooms	Miena (lake shore near Highland lakes Rd & Marlborough Rd intersection)	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring	Determined by monitoring		Determined by monitoring	Determined by monitoring
Brooms	Brady's Lake several sites	-	Follow up/control	? Unsure of population size												
Fennel	Catagunya	-	DCNRMC to confirm	? Unsure of population size												
Foxglove	Brandum Creek, Great Lake	-	DCNRMC to confirm	? Unsure of population size												
Foxglove	Butlers Gorge Road - Bakers Creek	-	DCNRMC to confirm	? Unsure of population size												
Gorse	Miena (near Marlborough Rd & Highlands Lakes Road intersection)	-	DCNRMC to confirm	? Unsure of population size												
Gorse	Brady's Lake	-	DCNRMC to confirm	? Unsure of population size												
Holly	Butlers canal	-	DCNRMC to confirm	? Unsure of population size												
Holly	Dee lagoon	-	DCNRMC to confirm	? Unsure of population size												
Multiple weeds	Wayatinah - cost to be split by CHC, FT, CLS & Hydro	14	Survey and prepare plan	66	1155	To be determined by plan										
OHW	Pumphouse Bay near Flume Road, Shannon, Butlers Gorge, Tarraleah	-	Follow up/control	40	5600	Follow up/control	40	5600	Monitor	DCNRMC		Determined by monitoring	Determined by monitoring		Determined by monitoring	Determined by monitoring
Spanish heath	Lake Echo canal	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring	Determined by monitoring		Determined by monitoring	Determined by monitoring
Spanish heath	Bronte Lagoon Spillway	-	Follow up/control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring	Determined by monitoring		Determined by monitoring	Determined by monitoring
				Total	7735		Total	6580								

7.8 Department of State Growth recommendations for weed control

State Growth has an ongoing program in the area and information on the size of some of the populations is unavailable and a cost estimate has not been provided in these instances. The estimates provided in Tables 6.9 and 6.10 do not cover on-going roadside maintenance programs but are instead specific locations for control based on priorities identified in this plan.

Please note there is a request to fund a detailed weed management plan for Wayatinah which has extensive weed infestations which are gradually expanding. The plan would cover a mixture of tenure Council, Crownland, Hydro and Forestry.

Table 7.103 State Growth – Recommendations for weed control – Priority zones

Weed	Priority zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
African boxthorn	Hamilton/Ouse	Lyell Hwy - roadside sites x 4 between Hamilton & Ouse	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
African lovegrass	Hamilton/Ouse	Several sites between Langloh Rd & Woodmoor Rd Lyell Hwy	2	Follow up	5	700	Follow up	5	700	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Blackberry	Hamilton/Ouse	Lyell Hwy, several sites between Hamilton & Ouse	-							Control	2	280	Follow up	2	280	Follow up	2	280
Brooms	Bothwell	Highland Lakes Rd, 4 sites	2				Control	8	1120	Follow up	8	1120	Follow up	8	1120	Monitor	DCNRMC	
Brooms	Hamilton/Ouse	Lyell Hwy, 4 sites between Woodmoor Rd & Norley Rd	-															
Brooms	Hamilton/Ouse	Lyell Hwy near Woodmoor Rd	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Declared thistles	Bothwell	Highland Lakes Rd, several sites	2															
Fennel	Hamilton/Ouse	Lyell Hwy, several sites between Hamilton & Ouse	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Fennel	Hamilton/Ouse	Lyell Hwy, between town and Thousand Acre Lane	-	Control	8	1120	Follow up	8	1120	Follow up	8	1120	Determined by monitoring			Determined by monitoring		
Fennel	Hamilton/Ouse	Lyell Hwy, several sites between Hamilton & Ouse	-	Control	4	560	Follow up	4	560	Follow up	4	560	Determined by monitoring			Determined by monitoring		
Gorse	Bothwell	Highlands Lakes Rd - East of Bothwell 2 sites	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Gorse	Shannon to Lagoon of Islands	Highlands Lake Rd near Ripple Creek - 2-5 plants	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Gorse	Shannon to Lagoon of Islands	Highland Lakes Rd isolated gorse near Steppes Conservation Area	-	Control	1	140	Follow up	1	140	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
Whiteweed	Bothwell	Highland Lakes Rd, 2.5 km from town	-	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring		
					Total	4480		Total	5600		Total	3080		Total	1400		Total	280

Table 7.11 State Growth – Recommendations for weed control – Outlier sites

Weed	Outlier sites	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5
African boxthorn	Lyell Hwy 3 km from Marked Tree Rd junction, Norton Mandeville	1	Control	3	420	Follow up	3	420	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring
African boxthorn	Lyell Hwy, 1km south of Thousand Acre Lane junction	1	Control	2	280	Follow up	2	280	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring
African lovegrass	Several sites around Gretna	2	Follow up	5	700	Follow up	5	700	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring
Fennel	Big Snake Hill, Lyell Highway	-	Control	4	560	Follow up	4	560	Monitor	DCNRMC		Determined by monitoring			Determined by monitoring
Foxglove	Lyell Hwy near King William Creek	-	Follow up	? Unsure of population size		Follow up						Determined by monitoring			Determined by monitoring
Foxglove	Butlers Gorge Road - near Mossy Marsh dam	-	Follow up	? Unsure of population size		Follow up						Determined by monitoring			Determined by monitoring
Multiple weeds	Wayatinah - cost to be split by CHC, FT, CLS & Hydro		Survey and prepare plan	66	1155	Determined by plan									
Spanish heath	Lyell Hwy -Black Bobs, Fourteen Mile Junction, three sites between Clarence River & Derwent Bridge, Navarre River Bridge.	-	Follow up	? Unsure of population size		Follow up						Determined by monitoring			Determined by monitoring
OHW	Pumphouse Bay near Flume Road, Miena Theissen Crescent, The Shannon, Derwent Bridge, Butlers Gorge, Lyell Hwy west of Griffiths Creek, Tarraleah	-	Follow up	? Unsure of population size		Follow up						Determined by monitoring			Determined by monitoring
				Total	3115		Total	1960							

7.9 TasNetworks recommendations for weed control

TasNetworks whilst not a land owner is responsible for preventing the spread of weeds under transmission lines. The sites identified in Table 6.11 and 6.12 are acting as major seed sources and are part of collaborative works programs.

Table 7.124 TasNetworks – Recommendations for weed control – Priority zones

Weed	Priority Zone	Sites in Priority Zones	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Hrs	\$
Gorse	Poatina Fire Area	Underneath transmission lines	-	Control	?Unsure of population size												
Ragwort	Poatina Fire Area	Underneath transmission lines	-	Follow up		10000	Follow up		10000	Monitor	DCNRM helicopter survey		Determined by monitoring			Determined by monitoring	
					Total	10000		Total	10000								

Table 7.13 TasNetworks – Recommendations for weed control - Outlier sites

Weed	Outlier sites	Comments	Private land owners	Year 1	Hrs	\$	Year 2	Hrs	\$	Year 3	Hrs	\$	Year 4	Hrs	\$	Year 5	Hrs	\$
Brooms/gorse	Dee	Underneath transmission lines	-	Control	60	4200	Control/follow up	60	4200	Control/follow up	60	4200	Control/follow up	60	4200	Control/follow up	60	4200
Brooms	Tarraleah	Underneath transmission lines	-	Control	12	840	Follow up	12	840	Follow up	12	840	Monitor	DCNRM		Monitor		Determined by monitoring
					Total	5040		Total	5040		Total	5040		Total	4200		Total	4200

7.10 Derwent Catchment NRM Committee recommendations for weed control

These recommendations match closely with the CHC weed control recommendations and support for Derwent Catchment NRM Committee's role in the region. There are also key activities linked to State Growth's plan. Other activities will be to complete a weed management plan for Wayatinah and Interlaken Ramsar providing funding can be secured to undertake this work. Derwent Catchment NRM Committee will also undertake an evaluation of the plan in Year 4 of the program.

Table 7.14 Derwent Catchment NRM Committee - Recommendations for weed control – Priority zones

Weed name	Priority Zone	Private land owners	Sites in Priority Zones	Year 1 Action	Cost	Year 3-4
African boxthorn	Hamilton/Ouse	1	Tor Hill Road - Cawood fence line	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	Evaluation of plan actions
Brooms	Bothwell	2	Highland Lakes Rd, 4 sites	State Growth to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	Evaluation of plan actions
Brooms	Bothwell	2	Schaw St & Barrack Hill	Large infestations on private land - CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	
Brooms	Bothwell	2	Meadsfield Rd, 4 sites	Control if landholder has agreed to undertake control	Part of DCNRMC weed officer position	Evaluation of plan actions
Brooms	Shannon to Lagoon of Islands	2	Interlaken Rd	Control if landholder has agreed to undertake control	Part of DCNRMC weed officer position	Evaluation of plan actions
Declared thistles	Hamilton/Ouse	3	Victoria Valley Rd near Kenmere Marsh	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	
Declared thistles	Marked Tree	2	Several sites on Pelham Rd, Marked Tree Rd and Thousand Acre Lane	Control if landholder has agreed to undertake control	Part of DCNRMC weed officer position	Evaluation of plan actions
Gorse	Hamilton/Ouse	2	Lyell Hwy, approach to town from East	Infestations on private land - DCNRMC to coordinate control with private landholder	Part of DCNRMC weed officer position	
Gorse	Shannon to Lagoon of Islands	1	Poatina Rd, 600m from Highland Lakes intersection	Infestation on private land - DCNRMC to coordinate control with private landholder	Part of DCNRMC weed officer position	
Horehound	Bothwell	1	Wentworth Street in Bothwell	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	Evaluation of plan actions
Horehound	Bothwell	1	Woods Spring Road - 1 site	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position	Evaluation of plan actions
Horehound	Hamilton to Ouse	1	Property adjacent to upper mill road - near quarry - Large infestation	Control if landholder has agreed to undertake control	Part of DCNRMC weed officer position	Evaluation of plan actions
Star of Bethlehem	Bothwell	1	1.5 km east of Bothwell	Organise working bee to assist private landowner	Part of DCNRMC weed officer position	Evaluation of plan actions

Table 7.15 Derwent Catchment NRM Committee - Recommendations for weed control – Outlier sites

Weed name	Outlier sites	Private land owners	Action	Cost
Pampas grass	Bluff Road	1	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position
Elisha's tears	Ellendale	1	Contact landowner to initiate control	Part of DCNRMC weed officer position
Paterson's curse	Meadowbank Rd, several sites	3	CHC to control on roads & DCNRMC to contact private landholder	Part of DCNRMC weed officer position
Willow	North of Bronte Park, near Serpentine Rivulet	1	Contact landowner to initiate control	Part of DCNRMC weed officer position

7.11 NRM South recommendations for weed control

NRM South are not land owners or managers but are key investors into the region. Their main focus is on maintaining and improving high conservation values. The following are two key recommendations: 1. focused on a priority weed in the WHA which is part of an ongoing program of control and 2. A plan and associated program of control at the Interlaken Ramsar site

Table 7.16 NRM South - Recommendations for weed control – Priority zones

Weed name	Priority Zone	Private land owners	Sites in Priority Zones	Year 1 Action	Cost	Year 2 Action
Gorse	Interlaken wetlands and Ramsar	-	Dago Point	Revise weed management plan	2240	To be determined by plan
				Total	2240	

Table 7.17 NRM South - Recommendations for weed control – Outlier sites

Weed name	Outlier sites	Private land owners	Year 1 Action	Estimated cost @ \$70 hour	Year 2 Action	Cost	Year 3 Action	Cost	Year 4 Action
Orange hawkweed	Butlers Gorge	-	Follow up	3360	Follow up	3360	Monitor	DCNRMC	Determined by monitoring
			Total	3360	Total	3360			

7.12 Crownland Services recommendations for weed control

Crownland services are responsible for a disparate range of land parcels across the region from large to very small areas. Two key areas are identified as part of the prioritization process undertaken. These areas are part of an ongoing program.

Table 7.5 Crownland Services - Recommendations for weed control – Priority zones

Weed name	Priority Zone	Sites in Priority Zones	Private land owners	Year 1 Action	Cost	Year 2 Action	Cost	Year 3 Action	Cost
Gorse	Interlaken wetlands and Ramsar	Dago Point - large infestation and multiple outliers	-	Develop weed plan for Dago Point	2240	Determined by plan		Determined by plan	
Orange hawkweed	Shannon to Lagoon of Islands	Shannon River Reserve	-	Part of ongoing program, follow up	2240	Follow up	2240	Monitor	DCNRMC
Whiteweed	Interlaken wetlands and Ramsar	Interlaken Rd, Dago Point Camping Ground	-	To be included in Dago Point plan					
				Total	4480		2240		

7.13 Inland Fisheries recommendations for weed control

Inland fisheries are responsible for the management of the inland waters and have an active program in the area working in the Interlaken wetlands & Ramsar priority zone and also on Great Lake to support volunteer efforts.

Table 7.19 Inland Fisheries - Recommendations for weed control – Priority zones

Weed name	Priority Zone	Sites in Priority Zones	Private land owners	Year 1 Actions	Cost	Year 2 Action	Cost	Year 3 Action	Cost	Year 4 Action
Gorse/Brooms	Interlaken wetlands & Ramsar	Crescent canal and overflow screen	-	Follow up	140	Follow up	140	Monitor	IFS	To be determined by monitoring
Cumbungi (& Plantago)	Interlaken wetlands & Ramsar	Andrews Bay, Lake Crescent & Point of Chillon	-	Control/monitor	280	Follow up	280	Monitor	IFS	To be determined by monitoring
				Total	420	Total	420			

Table 7.20 Inland Fisheries - Recommendations for weed control – Outlier sites

Name	Outlier sites	Comments	Private land owners	Year 1 Action	Cost	Year 2 Action	Cost	Year 3 Action	Cost	Year 4 Action	Cost	Year 5 Action	Cost
Ragwort	Great Lake Shore	IFS has offered to provide in-kind support ongoing Ragwort program with Anglers Alliance volunteers and use of IFS boat	-	Control	1750	Control	1750	Control	1750	Control	1750	Control	1750
				Total	1750	Total	1750	Total	1750	Total	1750	Total	1750

7.14 Norske Skog recommendations for weed control

Weed name	Priority Zone	Sites in Priority Zones	Private land owners	Total	Year 1 Actions	Cost	Year 2 Action	Cost	Year 3 Action	Cost	Year 4 Action
Gorse	Marked Tree	Pelham Road, 1 site on plantation	-	Total	Control	420	Follow up	420	Monitor	Norske Skog	Determined by monitoring
				Total	Total	420	Total	420			

Name	Outlier sites	Private land owners	Year 1 Action	Cost	Year 2 Action	Cost	Year 3 Action	Cost	Year 4 Action	Cost	Year 5 Action	Cost
Foxglove	Holmes Road in Ellendale, 2 sites	-	Control	240	Control	240	Monitor	240	Determined by monitoring	Norske Skog		
			Total	240	Total	240	Total	240				

7.15 Tasmanian Aboriginal Centre recommendations for weed control

trawtha makuminya (Gowan Brae) lies within the priority zone ‘Pine Tier to Derwent Bridge’. There is an active program of weed control for ragwort with an estimated cost \$4,000 per year. This program is slated to continue until ragwort is eradicated from the reserve.

7.16 Tasmanian Land Conservancy recommendations for weed control

The Tasmanian Land Conservancy has several permanent reserves in the region. They have active weed management programs working with volunteers. The table below identifies key weeds and sites for control which are part on ongoing programs and are presumed to be continuing until eradications within the reserves is achieved.

Table 7.6 TLC - Weed management locations

Weed name	Outlier sites
Ragwort	Bronte & Silver Plains Reserves - several sites
Californian thistle	Bronte & Silver Plains Reserves - several sites
Foxglove	Pine Tier Rd, Bronte
Gorse	Silver Plains, several sites

8 Monitoring & Evaluation

Monitoring & evaluation is an important part of effective weed management as it provides a measure for tracking progress and determining which control methods are successful. It also allows accurate budgeting of annual works associated with weed management. In the past, a criticism of the program has been an inability to report on effectiveness, to overcome this issue a monitoring program will be implemented and an evaluation of the successes and failures will be undertaken in Year 4. This evaluation will consider the level of implementation of planned actions and the effectiveness of control at each site. We now have a baseline in the form of the number of plans and whether the plants are mature and the area affected for the majority of sites. This will allow us to make comparisons over time.

We also request that information collected by agencies include the area controlled and an estimate of the number of plants in each season. This information is a basic version of what is required for NVA reporting and allows us to more consistently track control efforts each year. A re-survey of sites will be undertaken in Year 4 to ensure data quality and to collect information on additional weed spread.

9 References

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10 Appendix I

Program of Works for 2015-16

Contents

1. State Growth program works 2015-16	50
2. Crownland Services program works 2015-16	55
3. Hydro program works 2015-16	57
4. Parks and Wildlife Service Program works 2015-16	62
5. Norske Skog Program works 2015-16	64
6. Inland Fisheries Program Works 2015-16	65
7. Tasmanian Land Conservancy Program Works 2015-16.....	66
8. TasNetworks Program Works 2015-16	67
9. Forestry Tasmania Program Works 2015-16	68
10. Central Highlands Council Program Works 2015-16	69

1. State Growth program works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Gretna/Hamilton	African lovegrass	Survey and control		Yes	Extent of control unknown
Black Bobs, Fourteen Mile Junction, three sites between Clarence River & Derwent Bridge, Navarre River Bridge.	Spanish Heath	Follow up Required Pull & cut & paint juvenile plants in September, spray where possible. Water likely to be present in drains. Monitor and conduct spraying late February early March.	Spanish Heath seedlings, Derwent Bridge, Clarence Lagoon track, Clarence River, 14 Mile Rd junction & Black Bobs.	yes	Navarre Bridge?
	English Broom, Blackberry, Briar Rose, Gorse	Monitor for follow up of juvenile plants October or November		Not in report but presumed done	Was monitored in 2015-16 and follow up wasn't required. Will monitor again undertake follow up if required.
Lyell Highway Ouse to Derwent Bridge	Mullein	Boom spray as Stornoway maintenance contract details & monitor & control individual plants February.	Twiggy Mullein & Great Mullein present but very sparse	yes	This was monitored following boom spray work by Stornoway, recommended for further follow up in 2016-17.

Location	Species	Action 2015-16	Report	Completed	Comments
Lyell Highway Ouse to Derwent Bridge	Orange Hawkweed	Monitor and undertake follow up early January.	Orange Hawkweed reducing in plants at Griffiths Creek, Derwent Bridge, Tungatinah & Wayatinah. Plants no longer present at Brady's Shacks turnoff. Primary treatment on road reserve infestation Tarraleah.	yes	Completed by Whispering Landscapes. No plants present at Brady's Lake in 2015-16. Mt Arrowsmith - Griffiths Creek, Derwent Bridge, Tungatinah, Wayatinah, Tarraleah
Griffiths Creek, Derwent Bridge, Brady's Lake, Tungatinah, Wayatinah, Tarraleah					
	Fennel	To initiate a control program on Fennel before it flowers (October or November). Fennel is observed to be spreading its range due to ineffective control methods before and after seeding.		No	Recommendations provided to State Growth Maintenance area to improve roadside practices. Not a big priority for 2016-17 work.
Hamilton to Black Bobs	Foxglove	New work	Treatment	Yes	
King William Creek		Follow up urgently required from Lower Marshes Road to Bothwell, October or November.		Not in report but presumed done	Recommendations provided to State Growth Maintenance area to improve roadside practices.

Location	Species	Action 2015-16	Report	Completed	Comments
Lakes Secondary Road	English/Canary Broom, Gorse, Briar Rose, Yellow lupins	Monitor for seedling & juvenile plants, control as required along section from Bothwell to end of Marlborough Road junction.		Not in report but presumed done	Monitoring undertaken for juvenile plants, no follow up required for 2015-16. will be checked again for 2016-17.
Lake Secondary Road	Mullein	Boom spray as Stornoway maintenance contract details & monitor & control individual plants February.	Twiggy Mullein & Great Mullein sparsely dispersed	yes	Will be assessed for 2016-17. Monitoring completed by Whispering Landscapes. No work required for 2015-16
Lake Secondary Road	Ragwort, Mignonette & Thistle	Monitor & undertake follow up January. Volunteers still continued to pull and treat late (March, April) ragwort plants (as they came into flower)	Spear & Californian Thistle constant in some areas but otherwise sparsely dispersed - Ragwort regular plants predominately through TWWHA & CA	yes	
Lake Secondary Road	Foxglove	New work	Treatment at Brandum Creek	Yes	
Lake Secondary Road (WHA)	Spanish Heath	New work	Treatment at Project Bluff	Yes	Completed by Whispering Landscapes as part of costing which included Ragwort, Mignonette and Thistles. Follow-up to be included.

Location	Species	Action 2015-16	Report	Completed	Comments
Lake Secondary Road	Gorse	Monitor for follow up as required in December/ January. Knapsack 100's juvenile gorse plants present amongst slashed road verge vegetation near Pumphouse Bay Campground Rd junction.	Juvenile gorse	Yes	
Poatina Main Road	Ragwort, Thistle, Mullein, Cotoneaster, Orange Hawkweed	Monitor and undertake follow up January. Boom spraying of Mullein as Stornoway maintenance contract details is not recommended, as water may still be present in drains. Monitor & control	Orange Hawkweed reducing in plants at Flintstones Water treatment plant - Ragwort only two plants through Poatina Burn area - Twiggy Mullein & Great Mullein constant but are reducing in numbers - Spear & Californian Thistles sparse through Poatina Burn area	yes	
Poatina Main Road	Spanish Heath	Monitor in September & March and undertake control if required.		Not in report but presumed done	
Poatina Main Road	English Broom	Monitor and undertake follow up hand spraying in December if necessary.	Juvenile English Broom plants Bronte Park.	Yes	

Location	Species	Action 2015-16	Report	Completed	Comments
Poatina Main Road	Ragwort	Monitor and undertake follow up January as necessary, volunteers control late plants March & April.	Ragwort sparse Miena to Little Pine	Yes	
Marlborough Secondary Road	Mullein & Mignonette	Monitor and undertake follow up January.	Twiggy Mullein Oscarville, Ouse River Bridge area, Serpentine Rivulet	Yes	
Marlborough Secondary Road	Gorse	New work	Mature Gorse plants, Little Pine	Yes	

2. Crownland Services program works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Bronte Lagoon	English broom	Southern Highlands Progress Association members to monitor and control English Broom seedlings.		No	
Brady's Lake	English broom	Southern Highlands Progress Association members to monitor and control English Broom seedlings.		Yes	Volunteers look after fire trail behind shacks. Edges of hydro land. Control gorse and broom.
Dee Lagoon	English broom	Southern Highlands Progress Association members to monitor and control English Broom seedlings.		No	
Great Lake Crown Land at Dud Bay & Beaumont Memorial	Canary broom	Derwent Catchment NRM Committee to seek funds to control juvenile & seedling English Broom plants at Dud Bay. PWS to monitor & control new plants at Beaumont Memorial.		No	
Shannon River Reserve	Orange hawkweed	Derwent Catchment NRM Committee to seek funds to continue to survey & treatment of OHW within the Shannon River Reserve.	Re-surveyed and treated	Yes	Recommended that this site attracts continued investment until the infestation is eradicated.

Location	Species	Action 2015-16	Report	Completed	Comments
Interlaken Ramsar Site	Gorse	Derwent Catchment NRM Committee to seek funds to continue to undertake primary treatment of Gorse behind Lake Sorell Campground at Dago Point.		No	Put off because CLS upgrading Dago Point campground. Funds focused on Poatina Fire project
Interlaken Ramsar Site	Gorse	Derwent Catchment NRM Committee to lobby neighbouring land owners to participate in gorse control program.		No	Prioritised Poatina Fire Area instead. Interlaken Ramsar Site requires updated management plan
Interlaken Ramsar Site	Gorse	Derwent Catchment NRM Committee to provide opportunity for community to participate in weed control at Lake Sorell & Crescent.		No	Prioritised Poatina Fire Area instead. Interlaken Ramsar Site requires updated management plan

3. Hydro program works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Tungatinah dam	Mullein			Yes	
Lagoon of islands	Californian thistle			Yes	
Dee Lagoon	Gorse & English Broom	Continue implementing the Dee Lagoon Weed Plan across all land tenures.	Prioritised Poatina Fire Area instead.	No	
		Monitor for seedlings & juvenile plants, undertake treatment as required.	Prioritised Poatina Fire Area instead.	No	
		Continue to seek funding to assist the Southern Highlands Progress Association Weed Working Bees.	Prioritised Poatina Fire Area instead.	No	
		Derwent Catchment NRM Committee to facilitate a meeting between Hydro Tasmania, TasNetworks, Council and Forestry to ensure weed control continues to occur on the main infestation around the Dee Dam Wall.	Prioritised Poatina Fire Area instead.	No	
Brady's Lake	Gorse & English Broom	Monitor for seedlings & juvenile plants, undertake treatment as required.	Prioritised Poatina Fire Area instead.	No	
		Derwent Catchment NRM Committee to continue to support the Southern Highlands Progress Association Weed Working Bees.	Prioritised Poatina Fire Area instead.	No	

Location	Species	Action 2015-16	Report	Completed	Comments
Bronte Lagoon Woodwards Canal area	English Broom & Yellow lupins	Monitor for seedlings & juvenile plants, undertake treatment as required.			The lupins here are a sensitive issue with the local volunteers - they see them as cultural heritage.
Bronte Lagoon Spillway	Spanish Heath	Survey and control.		yes	
Great Lake, Dud Bay, Swan Bay	English Broom & Gorse	Derwent Catchment NRM Committee to lobby NRM South to ensure funds for the WHA buffer program continue		No	NRMS not priority
		Monitor for seedlings & juvenile plants, undertake treatment as required.		No	NRMS not priority
		Progress along shoreline of Swan Bay with primary weed control.		No	NRMS not priority
		Derwent Catchment NRM Committee to continue to liaise with the Miena community & encourage weed control on private land within Swan Bay and surrounds.	Prioritised Poatina Fire Area instead.	No	
Great Lake, Howells Neck, Elizabeth Bay, Burney's Island, Muddy Bay, Howells Creek	Ragwort	Seek advice from Hydro in regard to other emerging weed issues (Californian thistle etc.).	Extra funds from Hydro spent on control works.	Yes	Jarraah and Axel at Cramps Bay

Location	Species	Action 2015-16	Report	Completed	Comments
		Derwent Catchment NRM Committee to develop Adopt a shore program	Adopt-shore program ran as Naturally Inspired Grant 2015-16	Yes	Due to extremely low lake levels volunteer take up was limited.
		Undertake control of Ragwort rosettes in January, survey and control flowering plants early March.	Extra funds from Hydro spent control works Jarrah and Axel at Cramps Bay	Yes	
Great Lake, sections of shoreline from Brandum boat ramp to Halfmoon Creek entry to Great Lake	Ragwort	Encourage volunteers to participate in Adopt a shore program to ensure compliance with insurances etc.	Adopt-shore program ran as Naturally Inspired Grant 2015-16	Yes	
		Continue providing control of flowering plants & rosettes.	Adopt-shore program ran as Naturally Inspired Grant 2015-16	Yes	
Great Lake Reynolds Neck area	Gorse	Survey shore line between Reynolds Neck and Brandum bay for possibly sighted new infestations. Undertake control as required.	Prioritised Poatina Fire Area instead.	No	
Quarry behind back house Lake Augusta Road	Thistle & Mullein	Derwent Catchment NRM Committee to continue organising and providing volunteer assistance to control weeds at this site.	Prioritised Poatina Fire Area instead.	No	

Location	Species	Action 2015-16	Report	Completed	Comments
Lake Augusta Road	Ragwort, thistle & Mullein	Derwent Catchment NRM Committee to lobby PWS to ensure weed control works for WHA buffer program continues.	Prioritised Poatina Fire Area instead.	No	
Liawenee Canal	Thistle & Mullein	Derwent Catchment NRM Committee to lobby Hydro Tasmania to fund annually weed control along canal as part of the WHA buffer program.	Prioritised Poatina Fire Area instead.	No	
Arthurs Lake Pumphouse Bay Campground Area	Gorse & Spanish Heath	Gorse will not require follow up this season.	Prioritised Poatina Fire Area instead.	No	
		Monitor & control as required Spanish Heath in September & March.	Prioritised Poatina Fire Area instead.	No	
Arthurs Lake Gunns Marsh Road	Ragwort, Mullein & Thistle	Lobby Hydro with regard to thistle control as it is prohibiting the regeneration of native species post fire.	Prioritised Poatina Fire Area instead. Cal thistle control undertaken in this region.	No	
Poatina Fire Area	Ragwort	Derwent Catchment NRM Committee to provide quote and long term management recommendations to Hydro Tasmania, TasNetworks & the Parks & Wildlife Service on the 10,000-hectare infestation.	Undertaken primary control at 155 separate sites across 5067 ha of Hydro land	yes	
		Derwent Catchment NRM Committee to work with land management authorities and seek investment opportunities to support long term control.			

Location	Species	Action 2015-16	Report	Completed	Comments
Poatina Fire Area	Californian thistle		New work identified as part of Poatina Fire project	Yes	
Tarraleah	Orange Hawkweed	Undertake follow up control		Yes	
		Continue to remain vigilant for new infestations.			
Shannon Hydro Village	Orange Hawkweed	Research method of control of dense infestation		Yes	
		Change herbicide to ensure resistance does not occur			
		Undertake follow up control			
		Continue to remain vigilant for new infestations.			
Butlers Gorge	Orange Hawkweed	Research method of control of dense infestation		yes	\$9,000 OHW
		Change herbicide to ensure resistance does not occur			
		Undertake follow up control			
		Continue to remain vigilant for new infestations.			
Butlers Gorge Road	Gorse	????		Controlled?	

4. Parks and Wildlife Service Program works 2015-16

Location	Species	Action 2015-16	Completed	Report	Comments
Derwent Bridge and Griffiths Creek	Orange Hawkweed	PWS to continue to support WHA buffer program with survey work.	Yes	Vastly improved situation, 3 sites, Derwent Bridge vicinity of pub - a couple of spots around Mt Arrowsmith decent, another on 14-mile road - on-ground control by Kathy – Barry keeping an eye on it.	Not much for 2 years now. Only the occasional plant. Barry manages out as far as Squires Creek.
Taffy's creek 100-200 m Queenstown side southern side of road - road reserve land and PWS	Montbretia	Ongoing work by Barry Batchelor	Yes		Trim the leaves and then spray - not in CHC but important
Derwent bridge side of King William creek - northern side of road	Montbretia	ongoing work by Barry	Yes		
Between Griffiths creek and Surprise Valley lookout, multiple sites in drains	Montbretia	ongoing work by Barry	Yes		
Lyell Highway Wild Rivers National Park	Gorse, Fox Glove, Spanish Heath	PWS to continue to undertake survey and control	Yes		Area around Squires Creek - Barry monitors this
Steppes Conservation Area	Gorse	PWS to continue to undertake survey and control	Yes		This year has been difficult - fire & floods.
Steppes Historic Site	Thistle & Mullein	PWS to continue to undertake survey and control	Yes	thistle and willow work. Work to do re: pine wildlings	

Location	Species	Action 2015-16	Completed	Report	Comments
Investigate report of weeds, Wild Dog Tier	Heather		Yes	No heather seen year before	
Investigate report of weeds, 4-wheel drive track to Pillians	Cumbungi	Derwent Catchment NRM Committee to lobby Anglers Alliance volunteers to monitor	?		
Spray Lake Augusta Road	Thistles & Mullein	PWS to continue to undertake survey and control	Yes	thistles taken - mullein not visible	''
Undertake ragwort control Western Lakes	Ragwort	PWS to continue to undertake survey and control	Yes	Completed - required continued follow up	Western lakes?
Five Mile Pinnacle Conservation Area	Ragwort	PWS to continue to undertake survey and control	No	not done this year	peak of fire period, not done
Great Western Tiers Conservation Area (Poatina Fire)	Ragwort	PWS to continue to undertake survey and control	Yes		Part of project as follows
Poatina Fire Area	Ragwort, Scotch Thistle	Derwent Catchment NRM Committee to provide quote and long term management recommendations to Hydro Tasmania, TasNetworks & the Parks & Wildlife Service on the 10,000-hectare infestation.	Yes	Undertaken primary control at 147 separate sites across 4628 ha of Parks land.	

Location	Species	Action 2015-16	Completed	Report	Comments
		Derwent Catchment NRM Committee to work with land management authorities to seek investment opportunities to support long term control.	Yes		

5. Norske Skog Program works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
14 Mile Road coups	Ragwort, Great & Twiggy Mullein, Gorse, Canary & English Broom	Norske Skog to provide ongoing annual control of Mullein & Ragwort.	218 ha ragwort control Uxbridge	Yes	Gorse not mentioned in data
		Norske Skog to monitor for broom & gorse seedlings control as required.		Yes	
Ellendale Peter Murphy's private land	Spanish Heath	Derwent Catchment NRM Committee to seek additional external funds to provide ongoing control at site. Further Greening Australia findings on effective control of Spanish Heath by completing comprehensive trials at site. Share knowledge with land management/owners.	Naturally Inspired grant successful to continue work at the site.	Yes	work to be completed this season

6. Inland Fisheries Program Works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Interlaken, Lake Crescent & Sorell	Gorse, Plantago, Cumbungi, Canary Broom	Derwent Catchment NRM Committee to liaise with IFS to ascertain when accommodation is available for volunteers or weed spraying contractors.	Plantago sprayed in the vicinity of the Crescent Canal & follow up spray of English Broom (25mins) re-shoots behind the Crescent overflow screen	Partially	
Great Lake	Ragwort	Derwent Catchment NRM Committee to lobby IFS to ensure ongoing support of Ragwort control program Great Lake.		No	

7. Tasmanian Land Conservancy Program Works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Viormy, Serpentine, London Marshes, Cockatoo Hill, Skullbone Plains, Roscarborough, Pine Tier	Ragwort, Great & Twiggy Mullein, Mignonette, Horehound	TLC is committed to seeking external funding and providing volunteer programs on their land that contribute to the WHA weed buffer	Extensive. See documents.	Yes	
Silver Plains, Jinks Tier & Soldiers Marsh	Ragwort, Mullein, Gorse	TLC is committed to seeking external funding and providing volunteer programs on their land that contribute to the Interlaken Ramsar weed buffer	Extensive. See documents.	Yes	
Big Den State Forest, Connorville, Paradise Plains & Interlaken Estate.	Ragwort	TLC will continue to participate in a collaborative ragwort control program that includes the following neighbouring properties; Big Den State Forest, Connorville, Paradise Plains & Interlaken Estate. Continue to build relationships and encourage participation with the smaller land owners that are within the collaborative ragwort program range. Continue to encourage the shooting group on TLC Silver plains property to participate in ragwort control			

8. TasNetworks Program Works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Dee Lagoon	English Broom & Gorse	Derwent Catchment NRM Committee to continue to lobby to ensure primary & follow up work is carried out under the wooden & metal power pole lines		No	
Great Lake Miena	English Broom	Derwent Catchment NRM Committee to continue to lobby to ensure primary weed control is carried out under wooden power poles.		No	
Arthurs Lake, Gunns Marsh Road	Ragwort, Great & Twigg Mullein	Derwent Catchment NRM Committee to lobby to ensure weed control occurs under high voltage power lines Arthurs Lake area.		Yes	Part of Poatina fire project
Waddamana	Gorse	Derwent Catchment NRM Committee to lobby to ensure control occurs on a small clump of mature gorse plants under powerlines between the Top Village and Waddamana Power Station		No	
Tarraleah	English & Canary Broom	Derwent Catchment NRM Committee to lobby Tas-networks & Aurora to provide resources to control weeds under powerlines at Tarraleah Estate.			

9. Forestry Tasmania Program Works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Dee Lagoon	English Broom & Gorse	Derwent Catchment NRM Committee to continue to lobby to ensure primary & follow up work is carried out under the wooden & metal power pole lines		No	
Woods Lake Road	Spanish Heath	Derwent Catchment NRM Committee to lobby FT to ensure staff are available to provide effective control of juvenile plants.		No	
Big Den, Eastern Den, Scrubby Den, Inches Gully, Wild Hop Hill, Lawrence Plain & Snowy Knob	Ragwort, Great & Twiggy Mullein	Re-establish networks with Forestry Tasmania (Peter Bird) to ensure weed control patrols continue to occur in the Big Den State Forest area. Derwent Catchment NRM Committee to continue to facilitate planning, networking and share outcomes between TLC, Roderic O'Conner, Interlaken Estate (Downie), Paradise Plains (Hastrap) and Forestry Tasmania.		No	
Butlers Gorge	Orange Hawkweed	In-kind 8 hours' support provided by revision of SFAA.		?	
Tarraleah	Broom	None		No	
Wayatinah	Broom	None		No	

10. Central Highlands Council Program Works 2015-16

Location	Species	Action 2015-16	Report	Completed	Comments
Interlaken Road	Gorse	Continue with survey & control of juvenile gorse plants in areas that have received primary treatment.		Yes	Follow up
14 Mile Road, Theissan Crescent, Shannon River bridge on the Waddamana Road	Orange Hawkweed	Ongoing survey & control of juvenile OHW plants		Yes	Follow up
Hollow Tree Road	Briar Rose	Council to provide follow up of weeds on these roads		No	
Dry Poles Road	Blackberries	Council to provide follow up of weeds on these roads		Partially	Follow up
Lower Marshes Road	Gorse	Council to provide follow up of weeds on these roads		Yes	Follow up
Dennistoun Road	White weed, Gorse	Bothwell Council staff to provide ongoing control of White Weed at bud stage September, October or November		Gorse Yes	
Mt Adelaide	English Broom	Continue on with survey & control of juvenile & seedling plants		Yes	
Hamilton Quarry	Radiata Pine	Council to remove large mature pine trees	Under management plan		

Location	Species	Action 2015-16	Report	Completed	Comments
	Horehound, Thistle, African Box Thorn, Radiata Pine seedlings, Mignonette	Contractor to provide control on other weeds	Under management plan		
Victoria Valley Road	English Broom & Gorse	Ongoing control of seedling plants specifically section from dam wall to Spillway Bay shacks on Dee Lagoon	Done	Yes	
Arthurs Lake Road & waste transfer site	Thistle, Ragwort & Mullein	Primary treatment urgently required on disturbed ground associated with road works	Done	Yes	
Arthurs Lake Road	Gorse	No	??	???	
Hermitage Road	Gorse & English Broom	Follow up treatment urgently required		No	Follow up treatment urgently required

11 Appendix II

Threatened Flora of the Central Highlands

Family	Species name	Common Name	State	EPBC	Biogeography
Adiantaceae	<i>Anogramma leptophylla</i>	annual fern	vulnerable		Native
	<i>Pellaea calidirupium</i>	hotrock fern	rare		Native
Asteraceae	<i>Argyrotegium fordianum</i>	soft cottonleaf	rare		Native
	<i>Argyrotegium poliochlorum</i>	greygreen cottonleaf	rare		Native Within Australia, occurs only in Tasmania
	<i>Brachyscome radicata</i>	spreading daisy	rare		Native
	<i>Brachyscome rigidula</i>	cutleaf daisy	vulnerable		Native
	<i>Calocephalus lacteus</i>	milky beautyheads	rare		Native
	<i>Hyalosperma demissum</i>	moss sunray	endangered		Native
	<i>Leptorhynchos elongatus</i>	lanky buttons	endangered		Native
	<i>Leucochrysum albicans</i> var. <i>tricolor</i>	grassland paperdaisy	endangered	Endangered	Native
	<i>Rhodanthe anthemoides</i>	chamomile sunray	rare		Native
	<i>Senecio squarrosus</i>	leafy fireweed	rare		Native
	<i>Taraxacum aristum</i>	mountain dandelion	rare		Native
	<i>Vittadinia cuneata</i> var. <i>cuneata</i>	fuzzy new-holland-daisy woolly new-holland- daisy	rare		Native
	<i>Vittadinia gracilis</i>	narrowleaf new-holland- daisy	rare		Native
	<i>Vittadinia muelleri</i>	eastcoast everlasting	rare		Native
	<i>Xerochrysum bicolor</i>	swamp everlasting	Vulnerable	Vulnerable	Native
	Brassicaceae	<i>Barbarea australis</i>	riverbed wintercress	endangered	Endangered
<i>Lepidium hyssopifolium</i>		soft peppercress	endangered	Endangered	Native
Callitrichaceae	<i>Callitriche umbonata</i>	winged waterstarwort	rare		Native
Campanulaceae	<i>Lobelia pratioides</i>	poison lobelia	vulnerable		Native

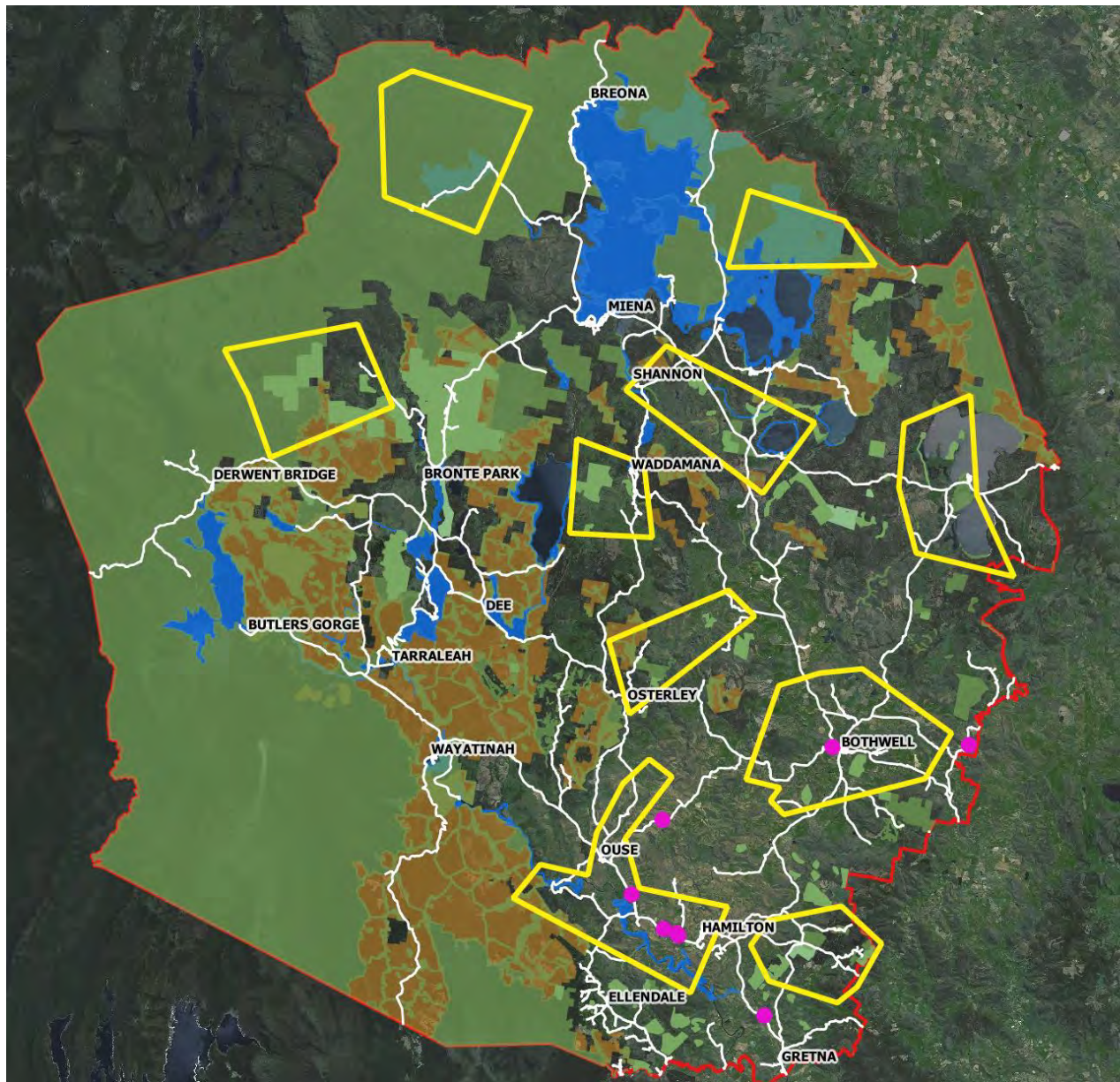
Caryophyllaceae	Colobanthus curtisiae	grassland cupflower	rare	Vulnerable	Native
	Colobanthus pulvinatus	cushion cupflower	rare		Native
	Scleranthus brockiei	mountain knawel	rare		Native
	Scleranthus fasciculatus	spreading knawel	vulnerable		Native
Centrolepidaceae	Aphelia pumilio	dwarf fanwort	rare		Native
Cyperaceae	Baumea gunnii	slender twigsedge	rare		Native
	Carex capillacea	yellowleaf sedge	rare		Native
	Carex gunniana	mountain sedge	rare		Native
	Carex longebrachiata	drooping sedge	rare		Native
	Carex tasmanica	curly sedge		Vulnerable	Native Within Australia, occurs only in Tasmania
	Uncinia elegans	handsome hooksedge	rare		
Epacridaceae	Monotoca submutica var. autumnalis	roundleaf broomheath	rare		Endemic in Tas
	Pentachondra ericifolia	fine frillyheath	rare		Endemic in Tas
	Planocarpa nitida	black cheeseberry	rare		Endemic in Tas
	Planocarpa sulcata	grooved cheeseberry	rare		Endemic in Tas
Fabaceae	Glycine latrobeana	clover glycine	vulnerable	Vulnerable	Native
	Hovea montana	mountain purplepea	rare		Native
	Hovea tasmanica	rockfield purplepea	rare		Endemic in Tas
	Pultenaea humilis	dwarf bushpea	vulnerable		Native
	Pultenaea prostrata	silky bushpea	vulnerable		Native
Goodeniaceae	Velleia paradoxa	spur velleia	vulnerable		Native
Haloragaceae	Haloragis heterophylla	variable raspwort	rare		Native
	Myriophyllum integrifolium	tiny watermilfoil	vulnerable		Native
Hydatellaceae	Trithuria submersa	submerged watertuft	rare		Native
Isoetaceae	Isoetes drummondii subsp. drummondii	plain quillwort	rare		Native
Isoetaceae	Isoetes humilior	veiled quillwort	rare		Endemic in Tas
Juncaceae	Juncus amabilis	gentle rush	rare		Native
	Juncus prismatocarpus	branching rush	rare		Native

	<i>Luzula atrata</i>	slender woodrush	rare		Native
Lamiaceae	<i>Westringia angustifolia</i>	narrowleaf westringia	rare		Endemic in Tas
Lepidoziaceae	<i>Pseudocephalozia paludicola</i>			Vulnerable	
Liliaceae	<i>Caesia calliantha</i>	blue grasslily	rare		Native
	<i>Dianella amoena</i>	grassland flaxlily	rare	Endangered	Native
Loganiaceae	<i>Phyllangium divergens</i>	wiry mitrewort	vulnerable		Native
Lythraceae	<i>Lythrum salicaria</i>	purple loosestrife	vulnerable		Native
Marsileaceae	<i>Pilularia novae-hollandiae</i>	austral pillwort	rare		Native
Mimosaceae	<i>Acacia axillaris</i>	midlands wattle	vulnerable	Vulnerable	Endemic in Tas
	<i>Acacia siculiformis</i>	dagger wattle	rare		Native
Myrtaceae	<i>Eucalyptus gunnii</i> subsp. <i>divaricata</i>	miena cider gum	endangered	Endangered	Endemic in Tas
	<i>Eucalyptus perriniana</i>	spinning gum	rare		Native
Onagraceae	<i>Epilobium willisii</i>	carpet willowherb	rare		Native
Orchidaceae	<i>Corunastylis nuda</i>	tiny midge-orchid	rare		Native
	<i>Prasophyllum crebriflorum</i>	crowded leek-orchid	endangered	Endangered	Endemic in Tas
	<i>Prasophyllum</i> sp. <i>Arthurs Lake</i>	mountain leek-orchid	endangered		Endemic in Tas
	<i>Prasophyllum tadgellianum</i>	tadgells leek-orchid	rare		Native
	<i>Pterostylis pratensis</i>	liawenee greenhood	vulnerable	Vulnerable	Endemic in Tas
	<i>Pterostylis wapstrarum</i>	fleshy greenhood	endangered	Endangered	Endemic in Tas
Parmeliaceae	<i>Xanthoparmelia amphixantha</i>		endangered		
	<i>Xanthoparmelia willisii</i>		endangered		
Pittosporaceae	<i>Rhytidosporum inconspicuum</i>	alpine appleberry	endangered		Native
Plantaginaceae	<i>Plantago glacialis</i>	small star plantain	rare		Native
Poaceae	<i>Agrostis australiensis</i>	southern bent	rare		Native
	<i>Agrostis diemenica</i>	flatleaf southern bent	rare		Endemic in Tas
	<i>Amphibromus neesii</i>	southern swampgrass	rare		Native
	<i>Australopyrum velutinum</i>	velvet wheatgrass	rare		Native
		doublejointed			
	<i>Austrostipa bigeniculata</i>	speargrass	rare		Native
	<i>Austrostipa scabra</i>	rough speargrass	rare		Native
	<i>Deyeuxia brachyathera</i>	short bentgrass	rare		Native

	<i>Deyeuxia minor</i>	small bentgrass	rare	Native
	<i>Poa mollis</i>	soft tussockgrass	rare	Endemic in Tas
	<i>Rytidosperma indutum</i>	tall wallabygrass	rare	Native
Podocarpaceae	<i>Pherosphaera hookeriana</i>	Mount Mawson pine	vulnerable	Endemic in Tas
Polygonaceae	<i>Muehlenbeckia axillaris</i>	matted lignum	rare	Native
	<i>Rumex bidens</i>	mud dock	rare, uplisting to vulnerable pending	Native
Proteaceae	<i>Orites milliganii</i>	toothed orites	rare	Endemic in Tas
	<i>Persoonia muelleri</i> subsp. <i>angustifolia</i>	narrowleaf geebung	rare	Endemic in Tas
Ranunculaceae	<i>Myosurus australis</i>	southern mousetail	endangered	Native
	<i>Ranunculus collicola</i>	lake augusta buttercup	rare	Endemic in Tas
	<i>Ranunculus jugosus</i>	twinned buttercup	rare	Endemic in Tas
	<i>Ranunculus pumilio</i> var. <i>pumilio</i>	ferny buttercup	rare	Native
Rhamnaceae	<i>Cryptandra amara</i>	pretty pearlflower	endangered	Native
	<i>Discaria pubescens</i>	spiky anchorplant	endangered	Native
	<i>Pomaderris elachophylla</i>	small-leaf dogwood	vulnerable	Native
	<i>Spyridium vexilliferum</i> var. <i>vexilliferum</i>	helicopter bush	rare	Native
Rubiaceae	<i>Asperula minima</i>	mossy woodruff	rare	Native
	<i>Asperula scoparia</i> subsp. <i>scoparia</i>	prickly woodruff	rare	Native
	<i>Asperula subsimplex</i>	water woodruff	rare	Native
Scrophulariaceae	<i>Euphrasia scabra</i>	yellow eyebright	endangered	Native
	<i>Glossostigma elatinoides</i>	small mudmat	rare	Native
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>gracilis</i>	slender curved riceflower	rare	Native
				Within Australia, occurs only in Tasmania
Violaceae	<i>Viola cunninghamii</i>	alpine violet	rare	

12 Appendix III

WEED DISTRIBUTION MAPS

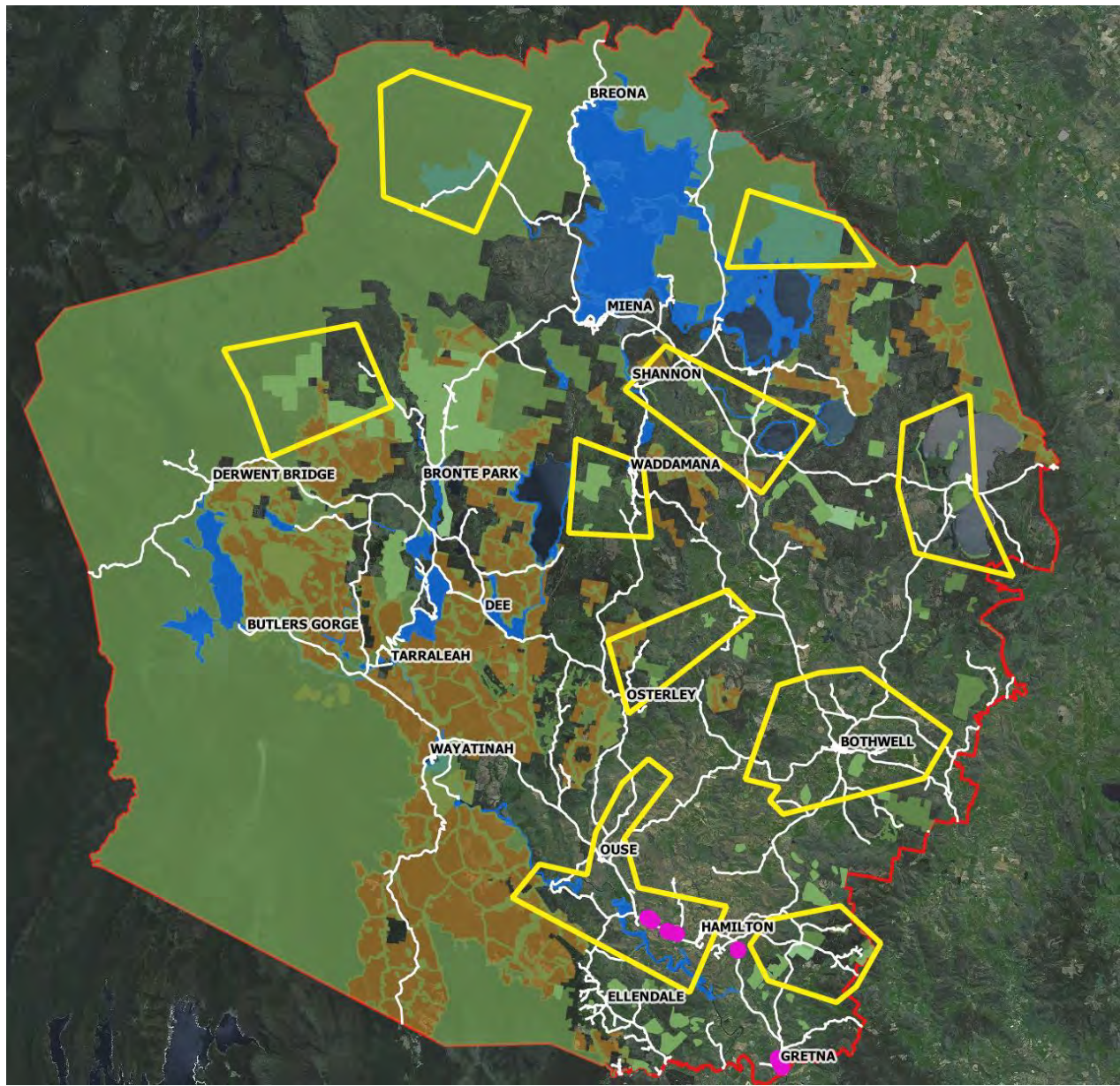


DISTRIBUTION OF AFRICAN BOXTHORN IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- African Boxthorn
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

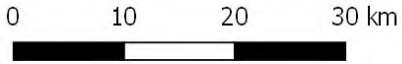


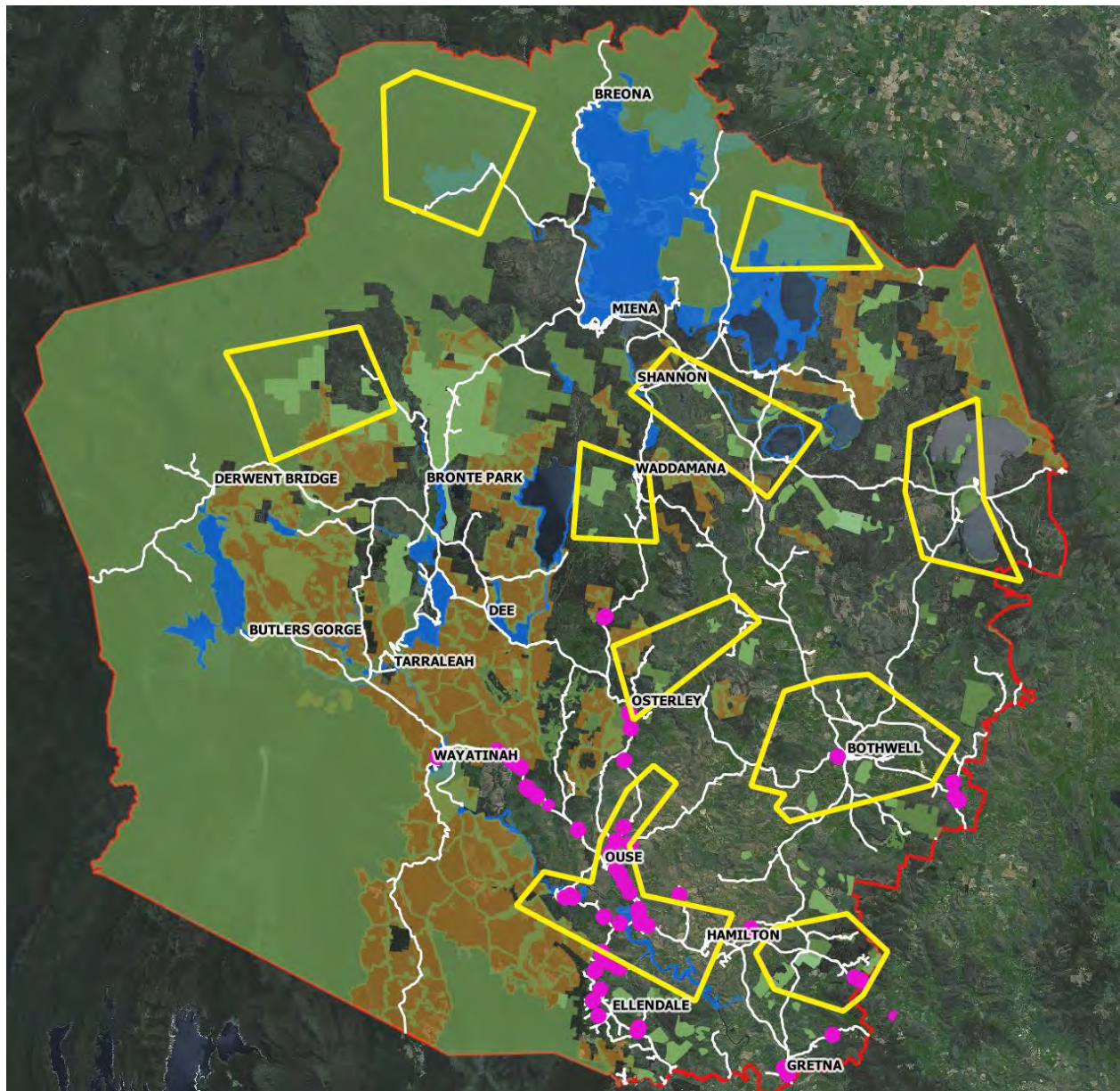


DISTRIBUTION OF AFRICAN LOVEGRASS IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- African lovegrass
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

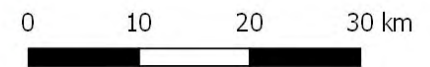


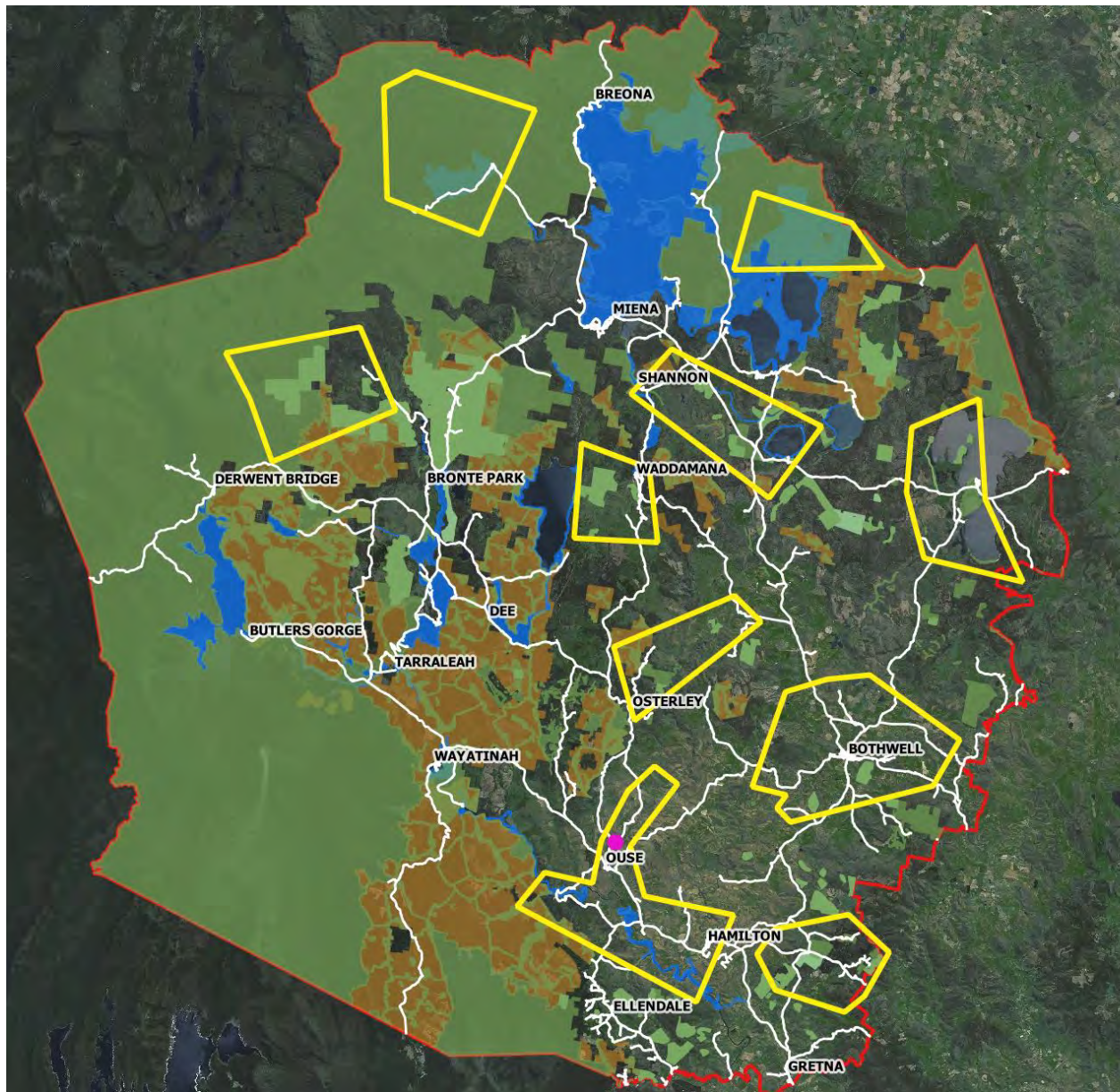


DISTRIBUTION OF BLACKBERRY IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Blackberry
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

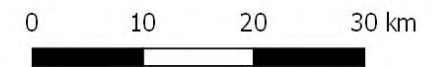


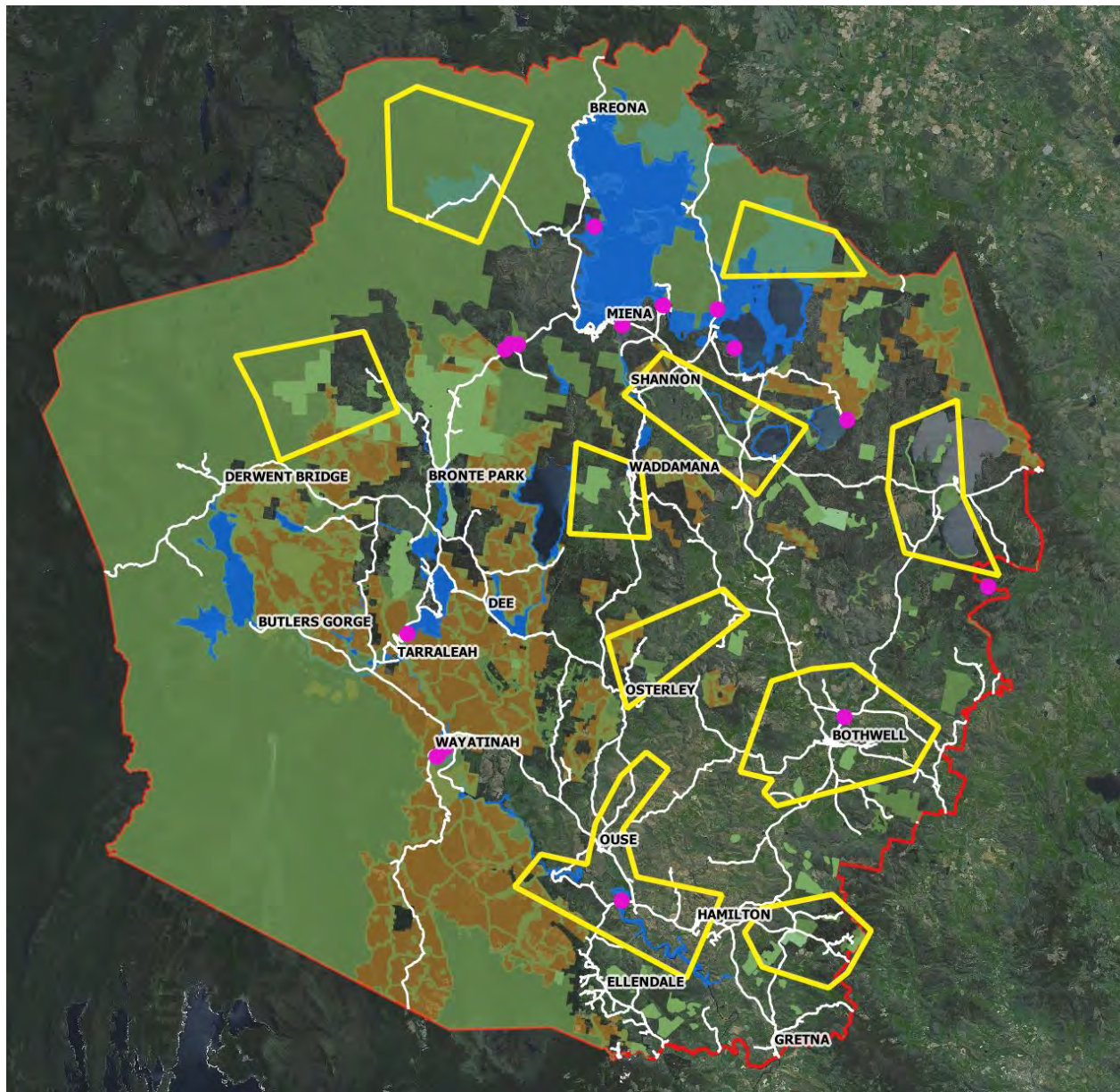


DISTRIBUTION OF BLUE PERIWINKLE IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Blue Periwinkle
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

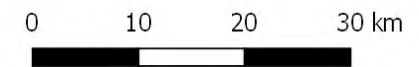


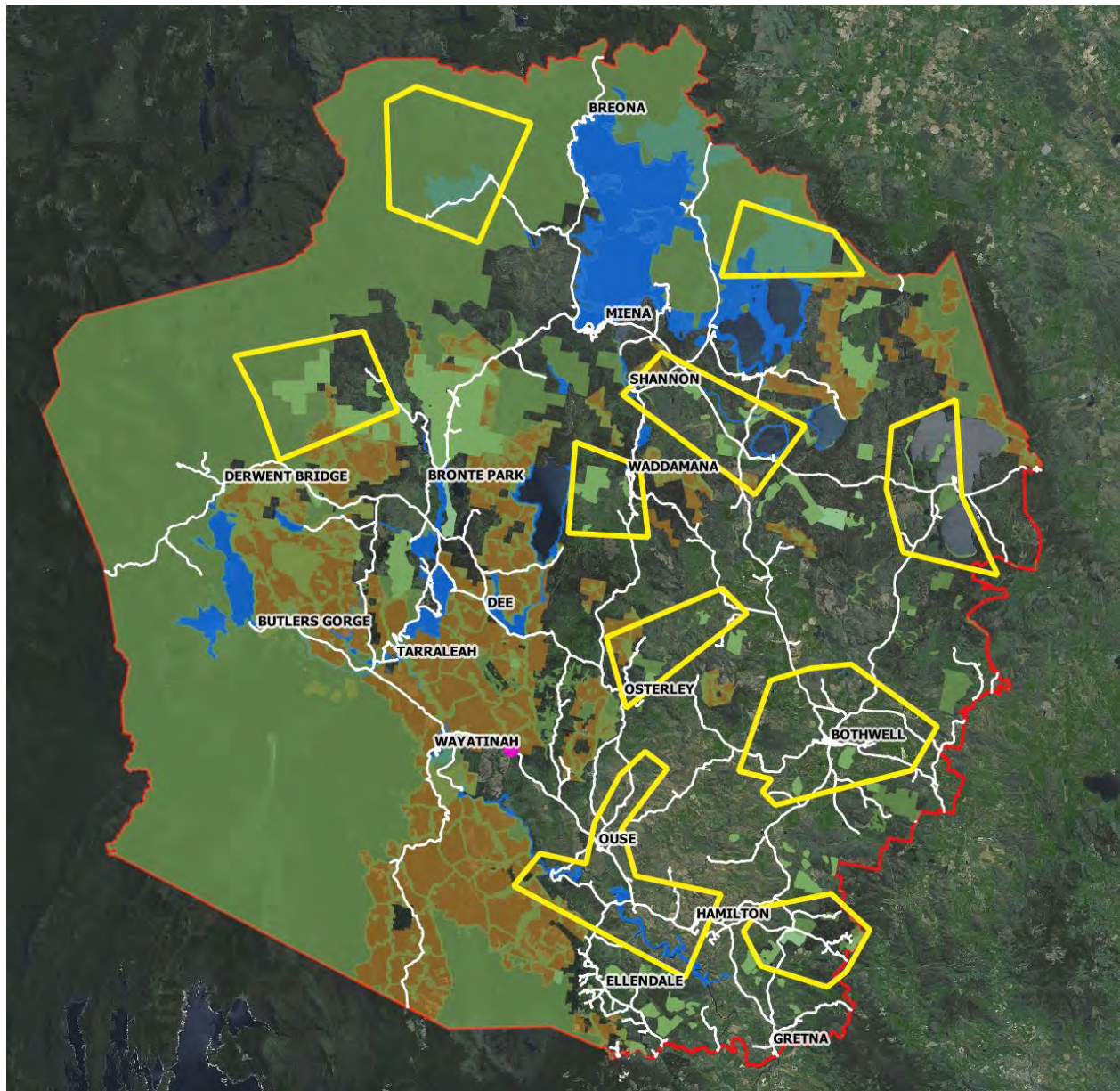


DISTRIBUTION OF CANADIAN PONDWEED IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Canadian pondweed
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

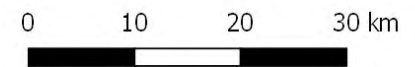


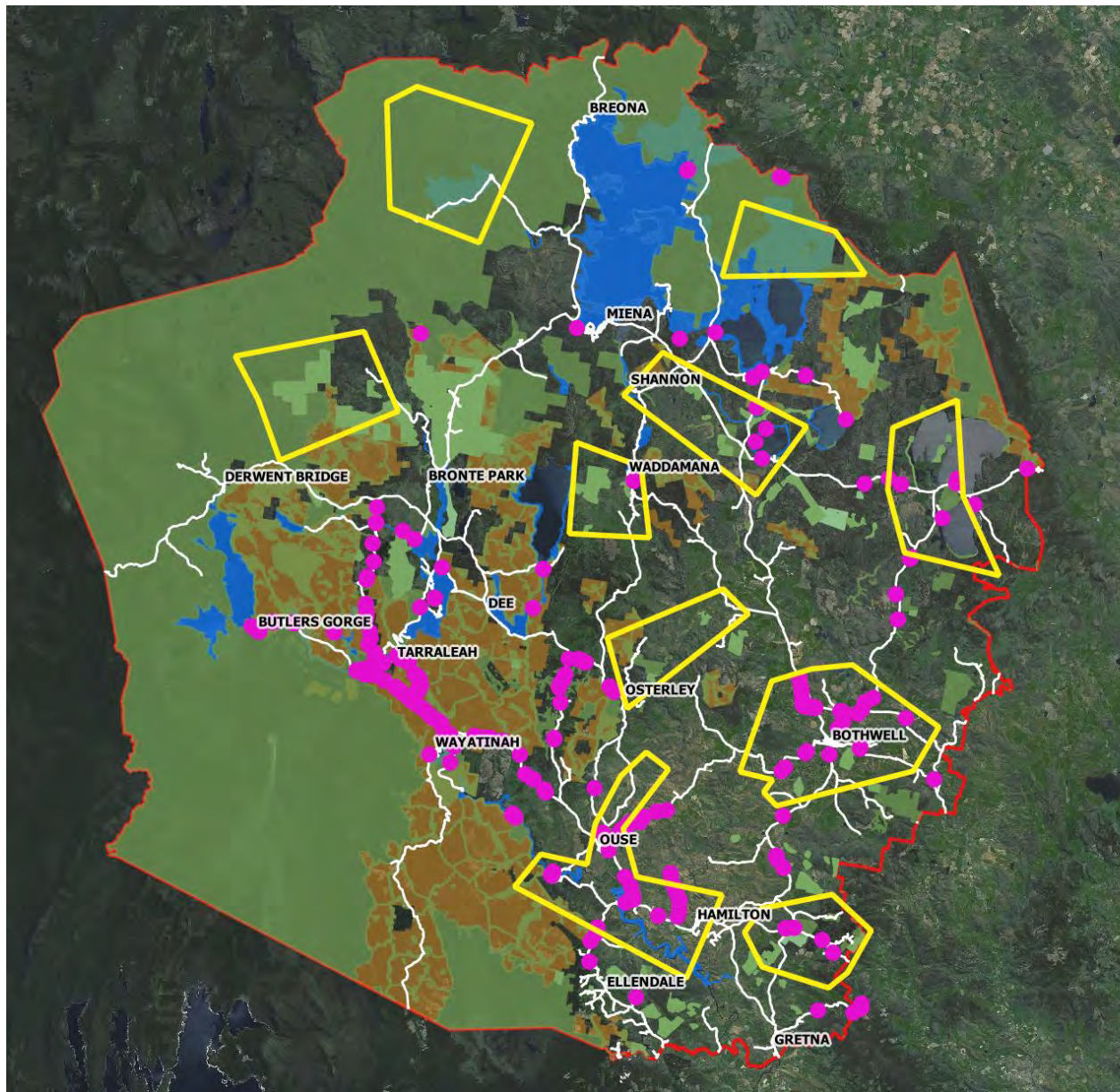


DISTRIBUTION OF CAPER SPURGE IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Caper spurge
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

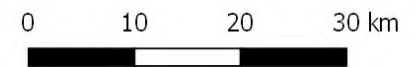


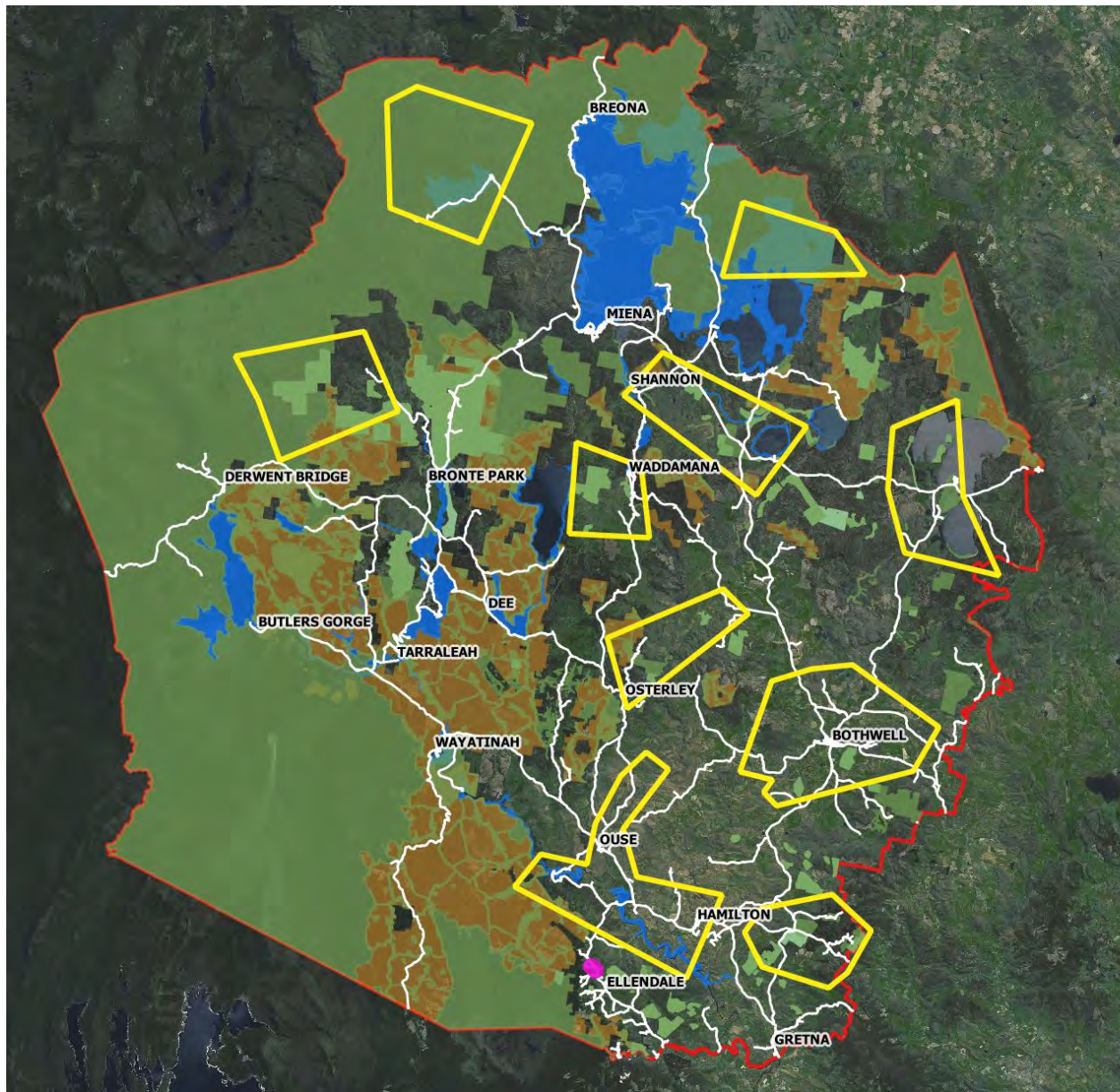


DISTRIBUTION OF DECLARED THISTLES IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Declared thistles
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

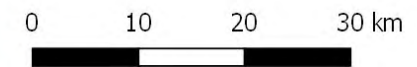


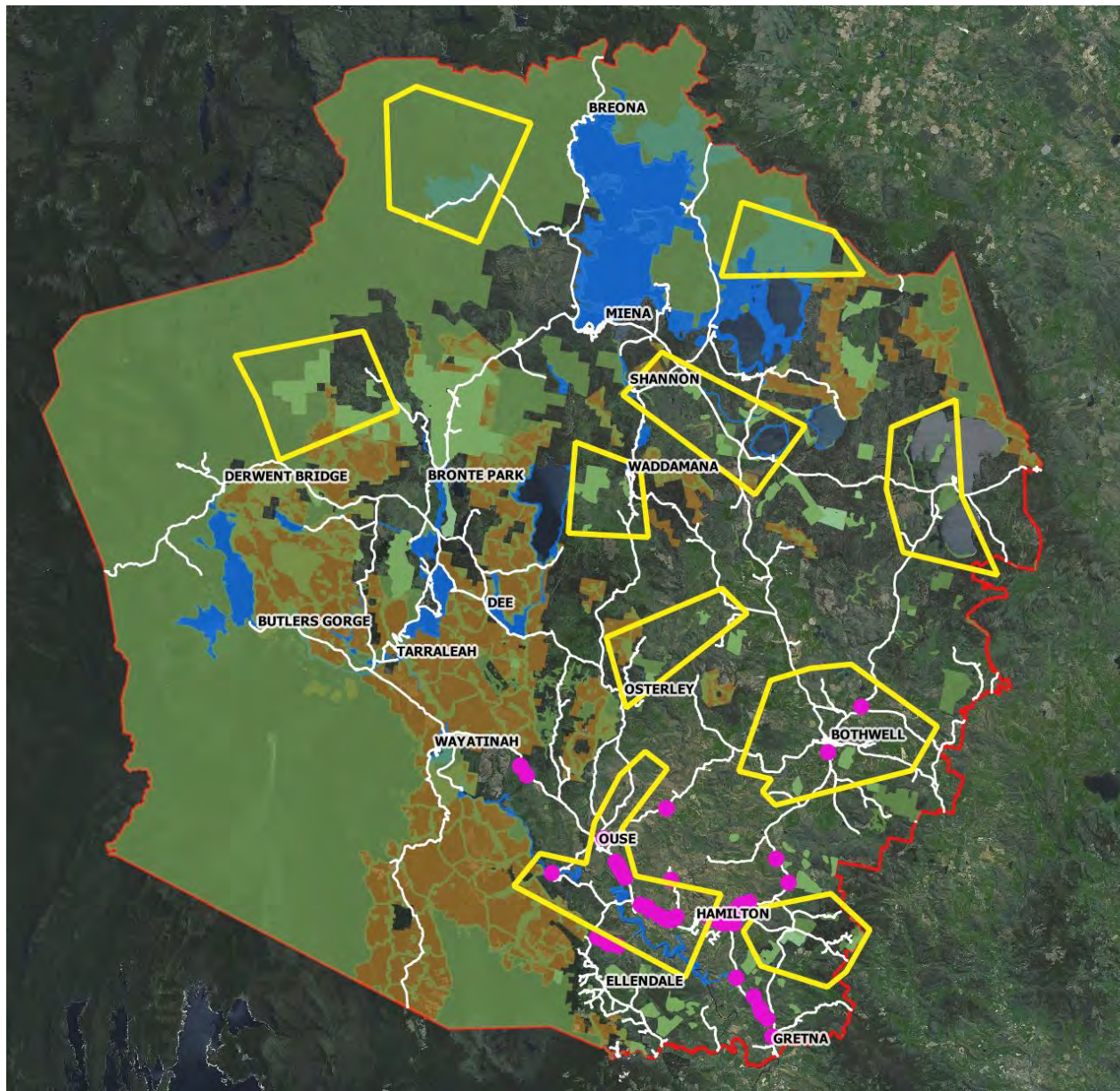


DISTRIBUTION OF ELISHA'S TEARS IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Elisha's tears
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

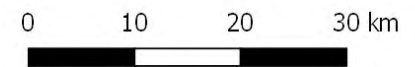


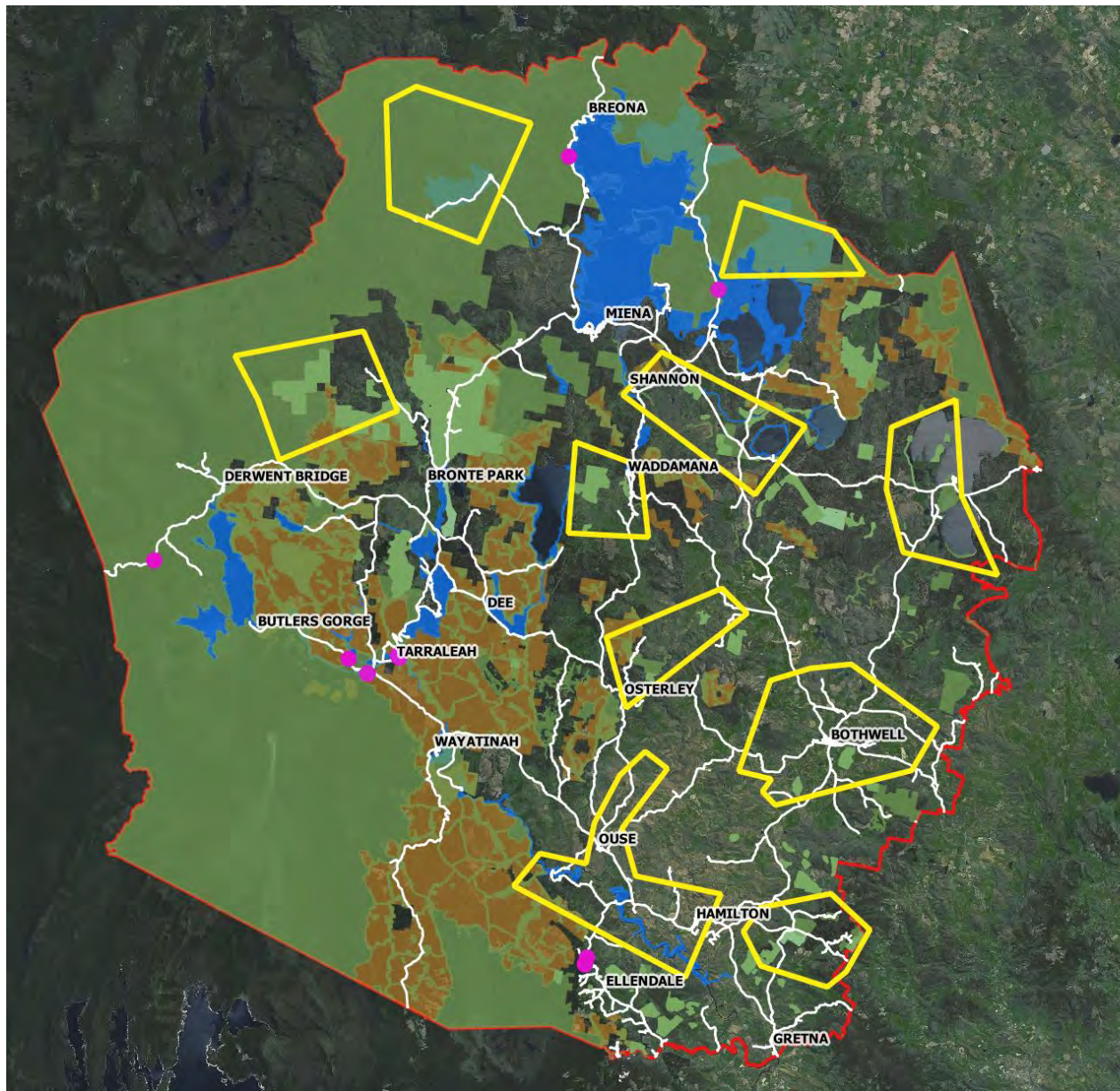


**DISTRIBUTION OF FENNEL
IN THE CENTRAL HIGHLANDS
MUNICIPALITY**

Legend

- Fennel
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

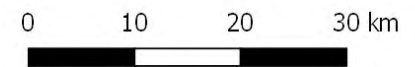


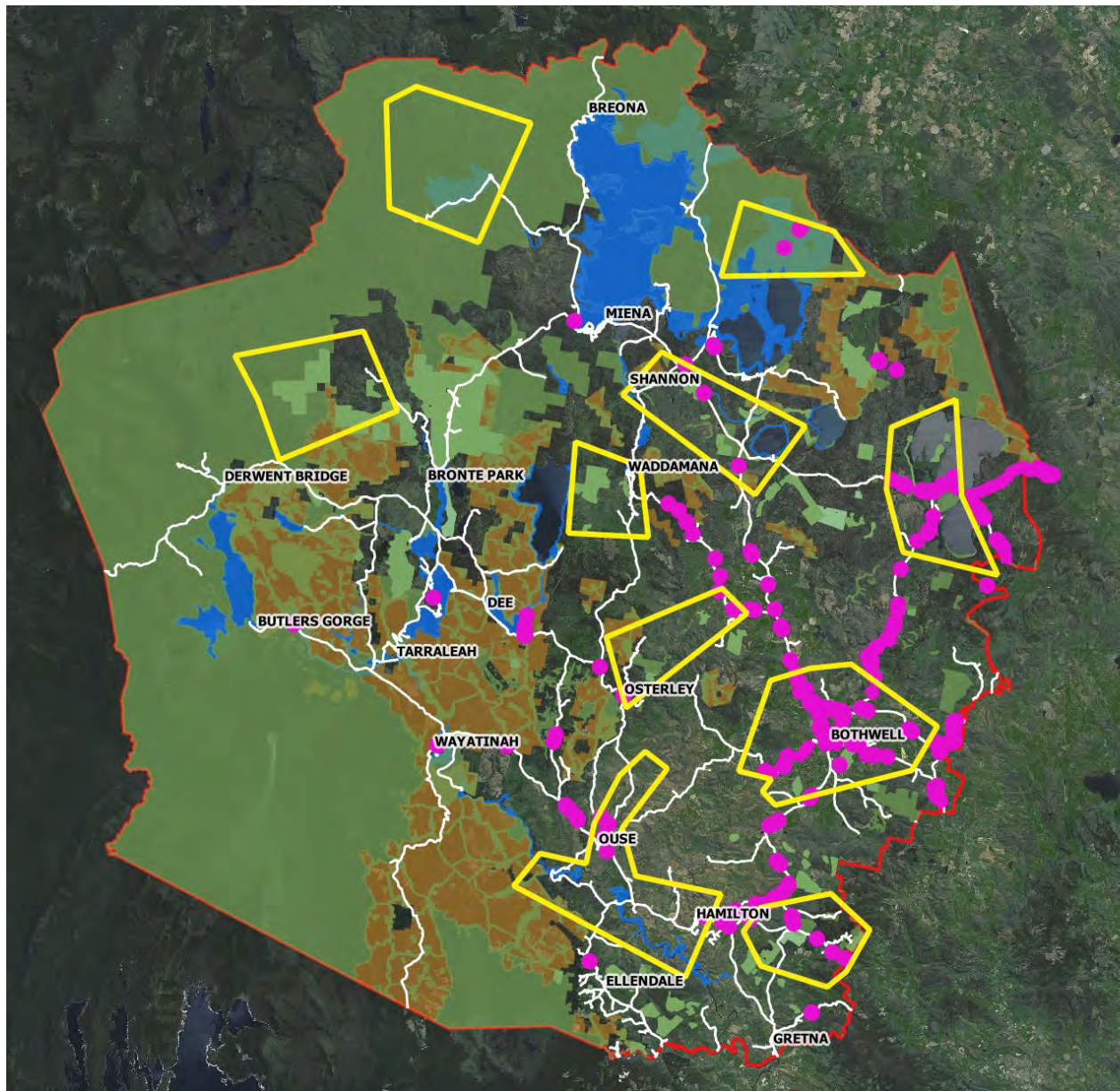


DISTRIBUTION OF FOXGLOVE IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Foxglove
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

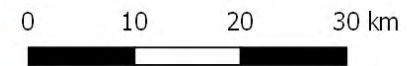


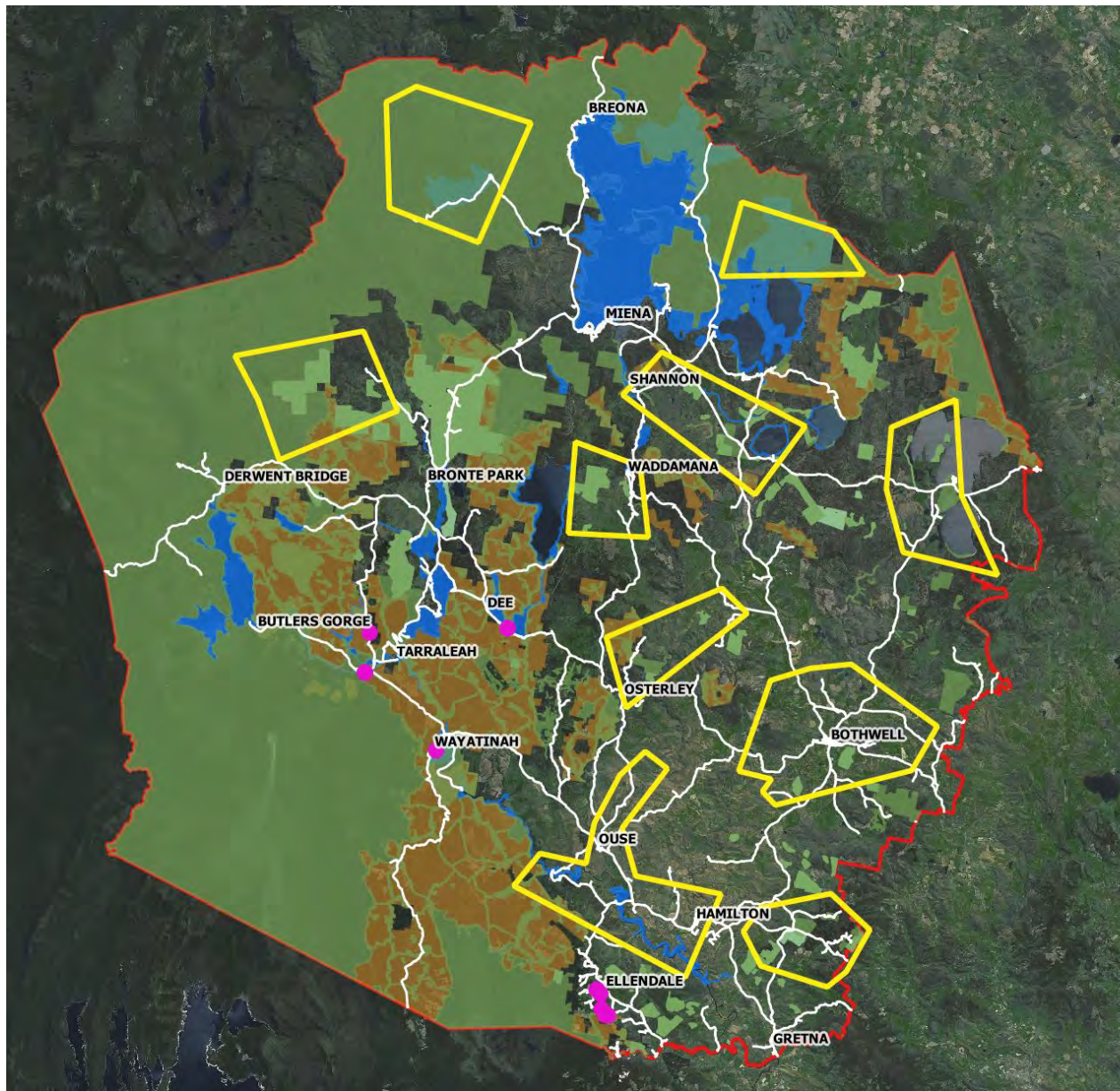


**DISTRIBUTION OF GORSE
IN THE CENTRAL HIGHLANDS
MUNICIPALITY**

Legend

- Gorse
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

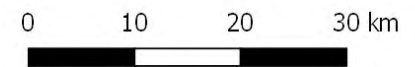


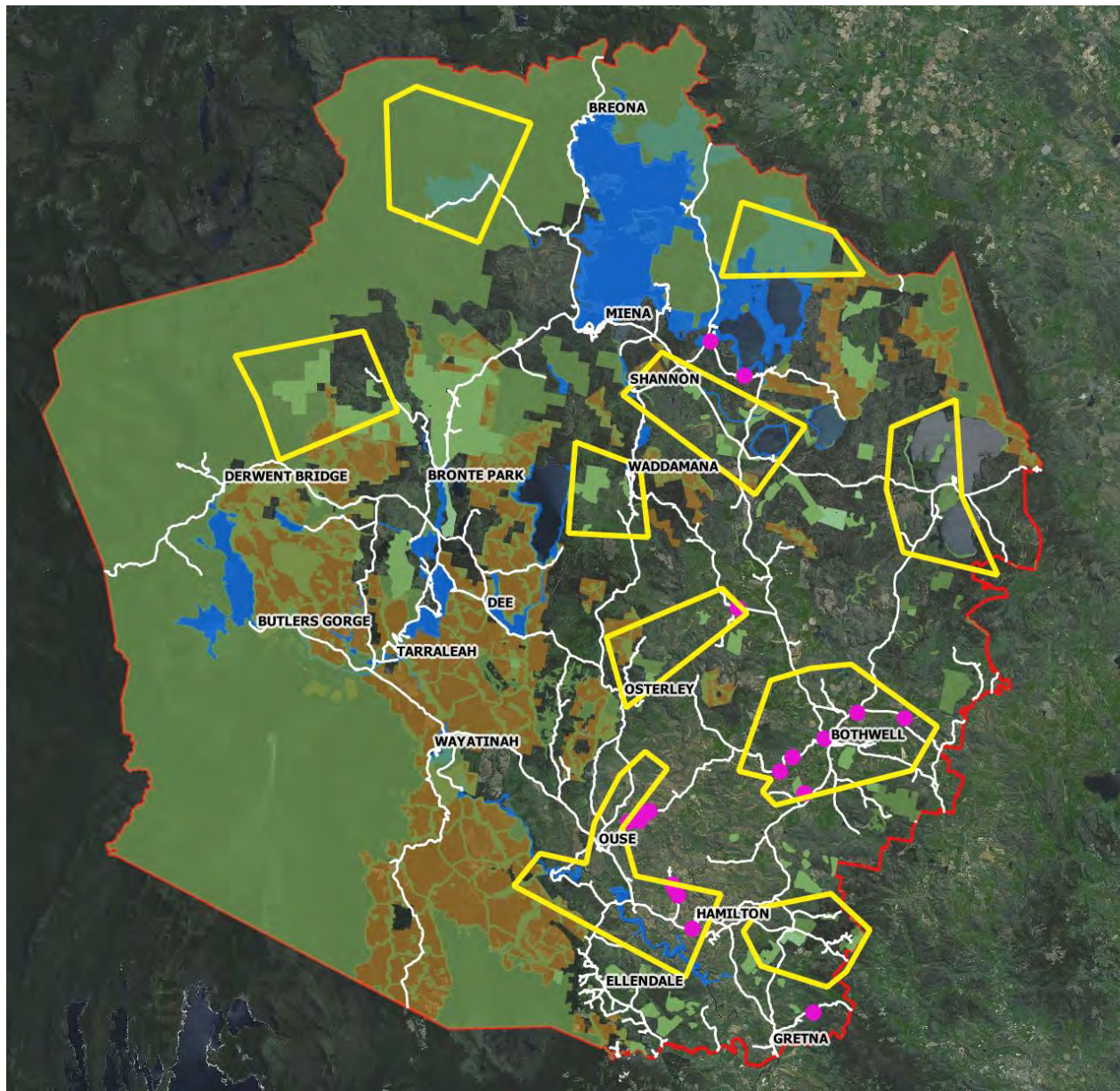


DISTRIBUTION OF HOLLY IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Holly
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

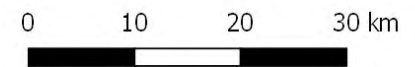


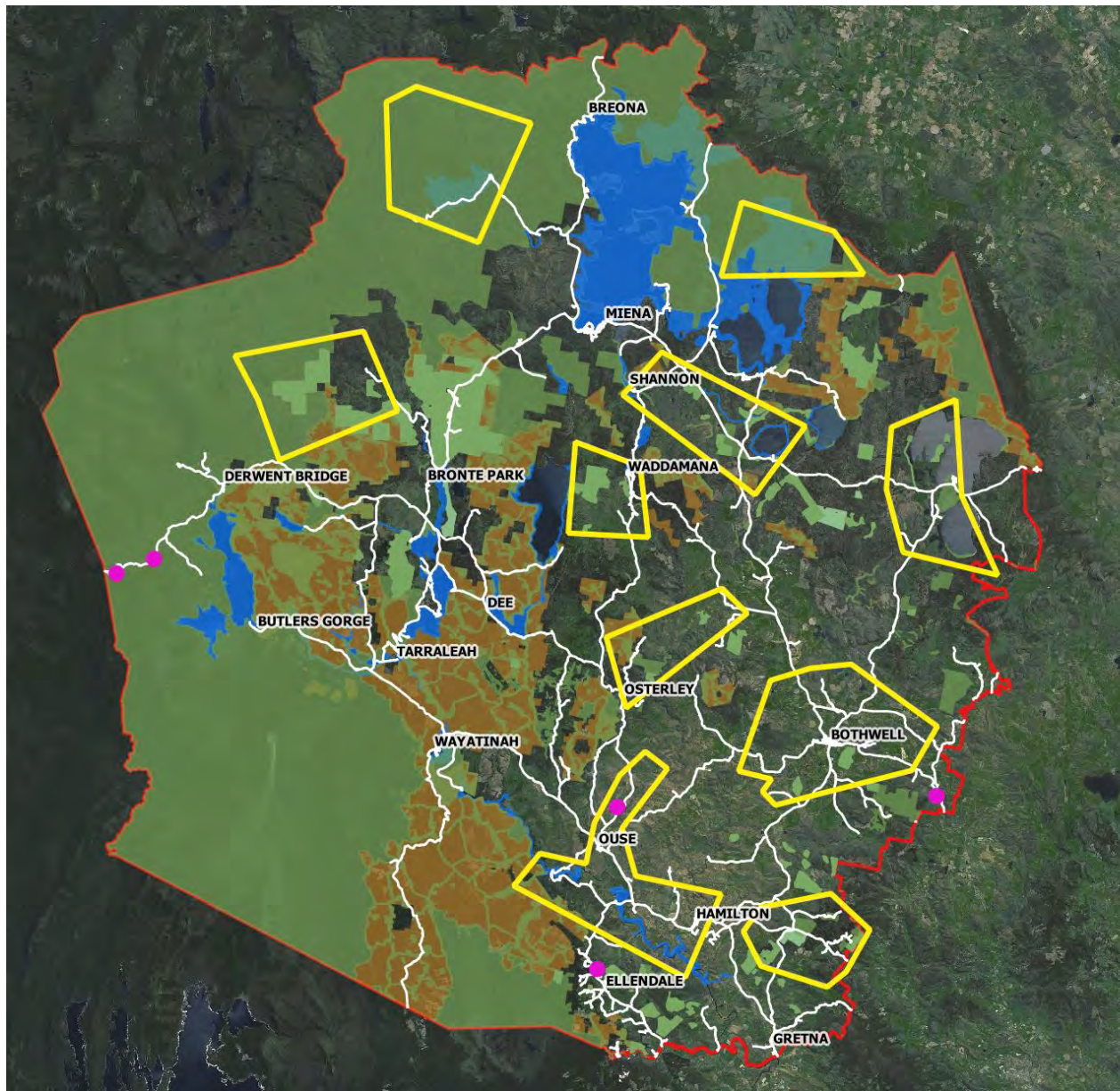


**DISTRIBUTION OF HOREHOUND
IN THE CENTRAL HIGHLANDS
MUNICIPALITY**

Legend

- Horehound
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

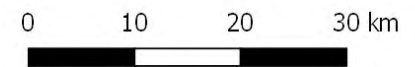


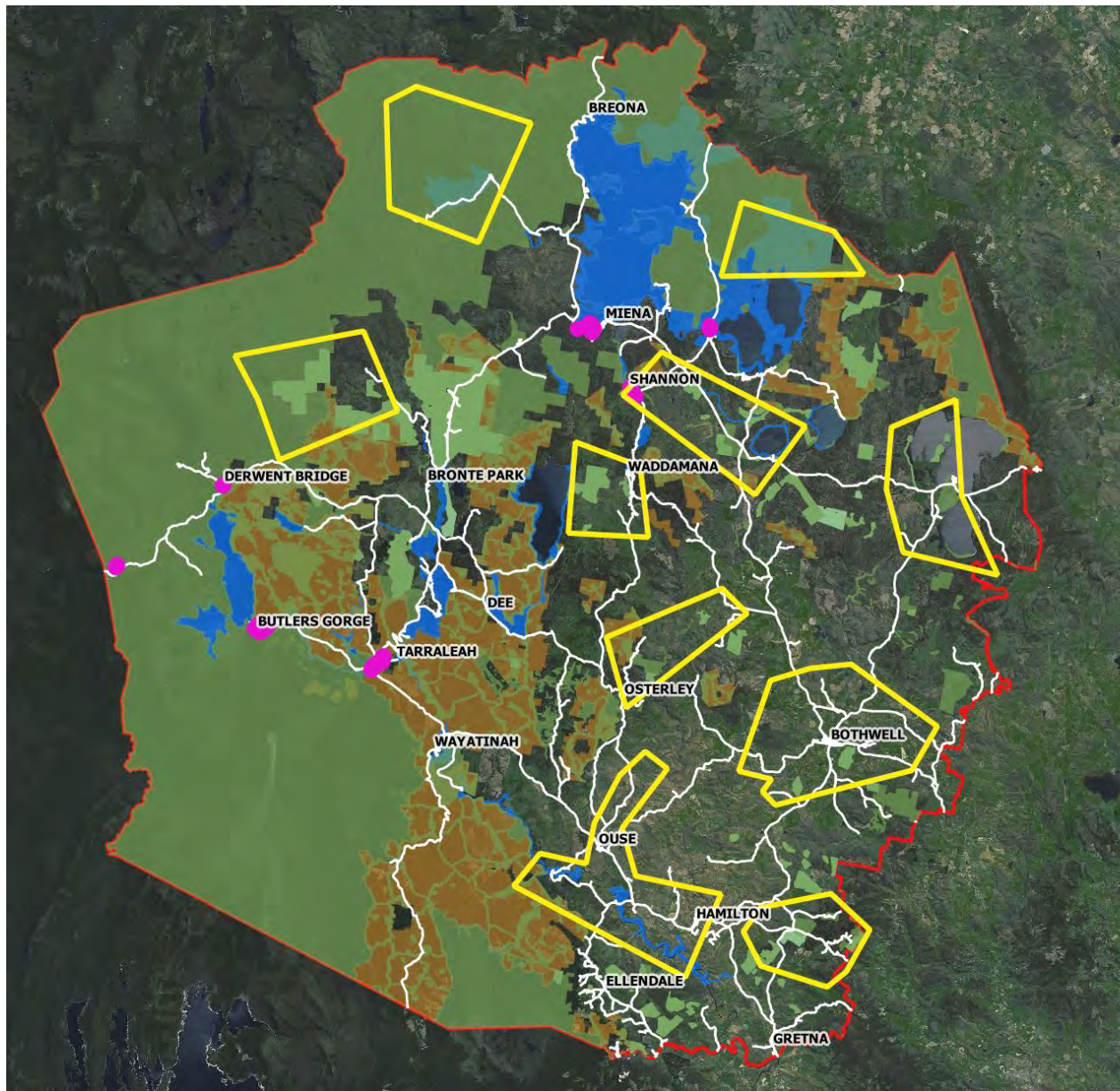


**DISTRIBUTION OF MONTBRETIA
IN THE CENTRAL HIGHLANDS
MUNICIPALITY**

Legend

- Montbretia
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

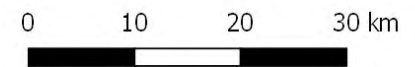


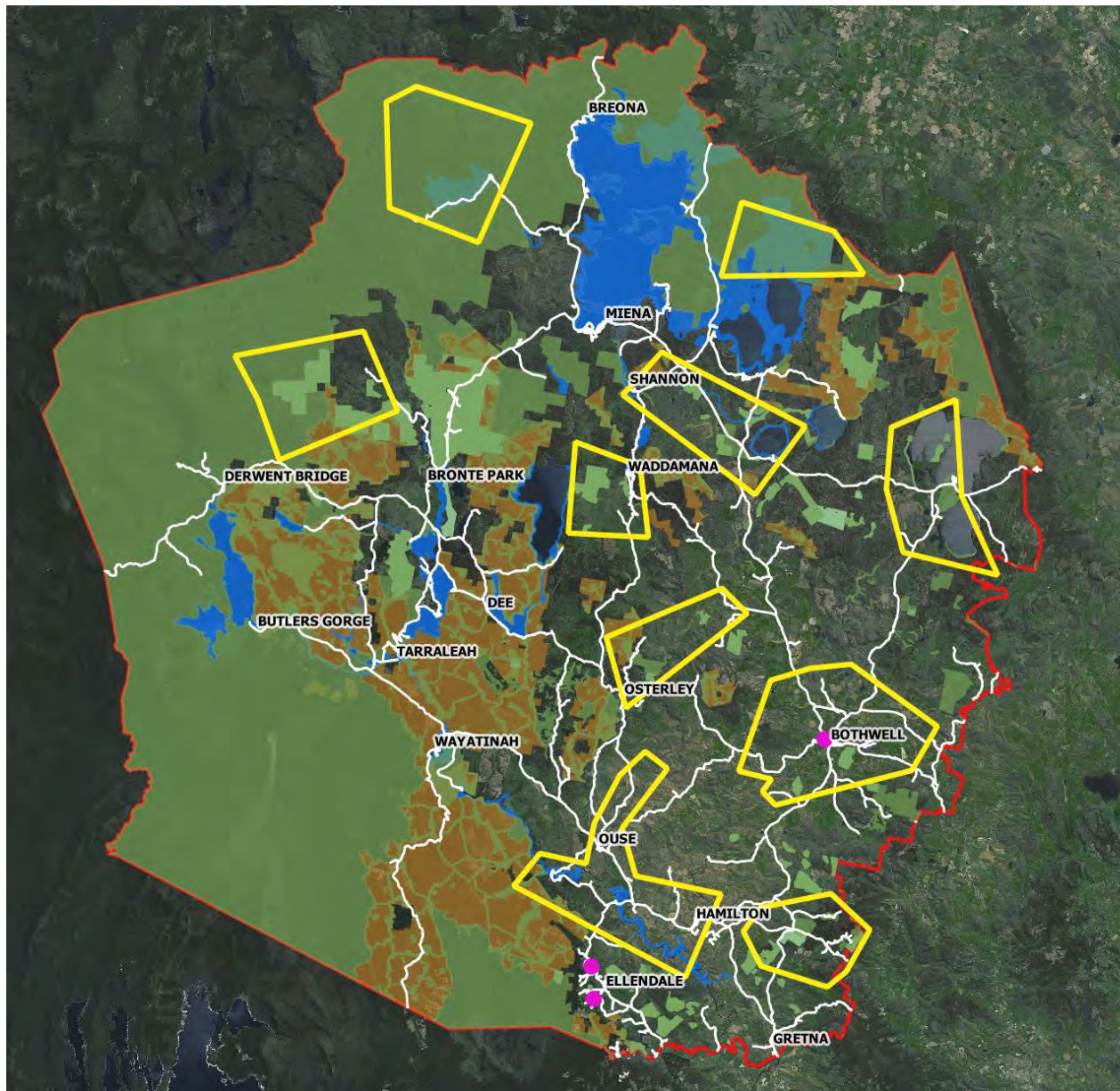


DISTRIBUTION OF ORANGE HAWKWEED IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Orange hawkweed
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

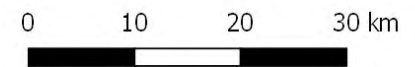


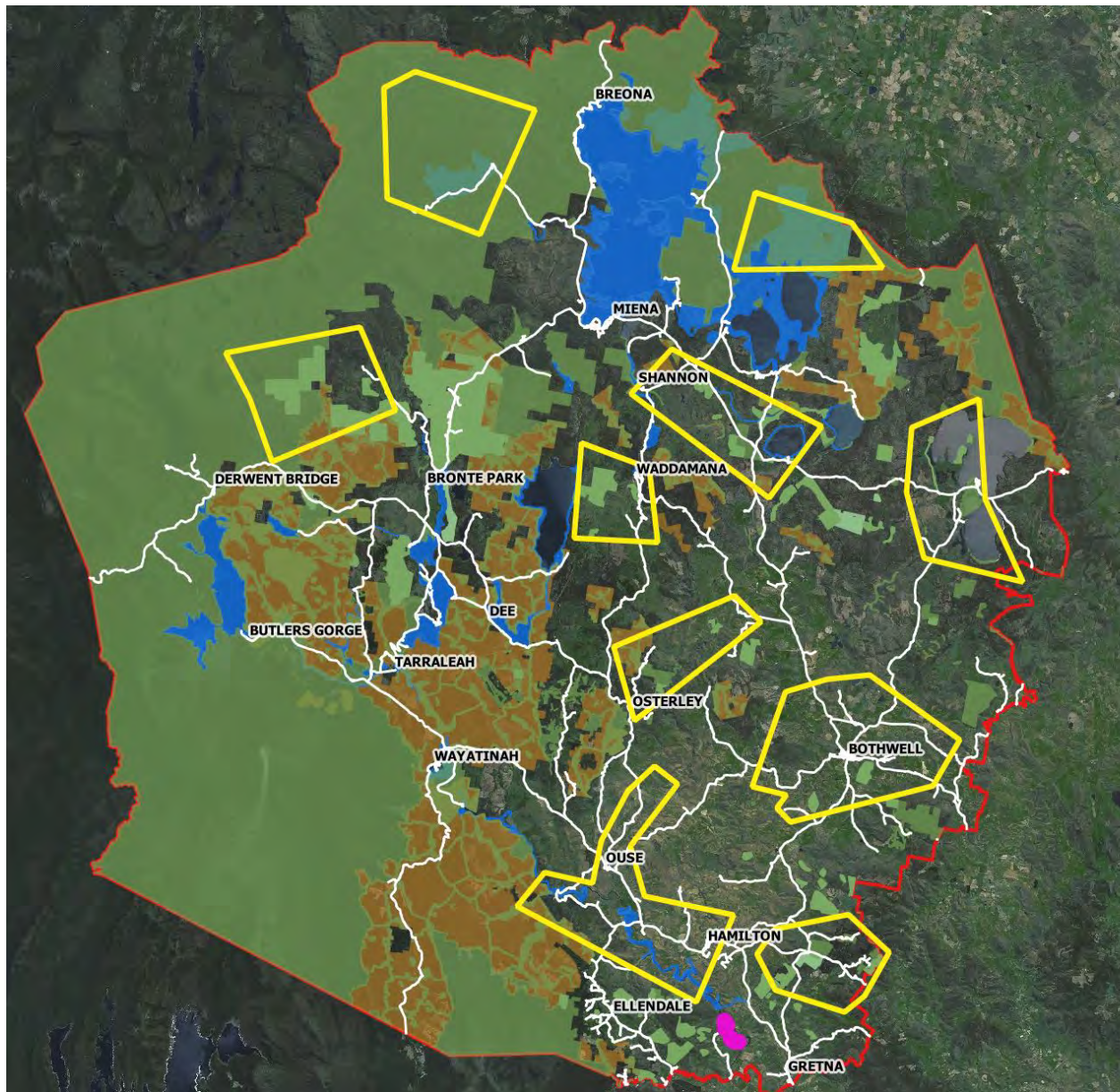


DISTRIBUTION OF PAMPAS GRASS IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Pampas grass
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

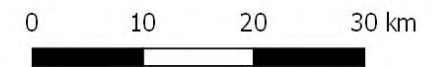


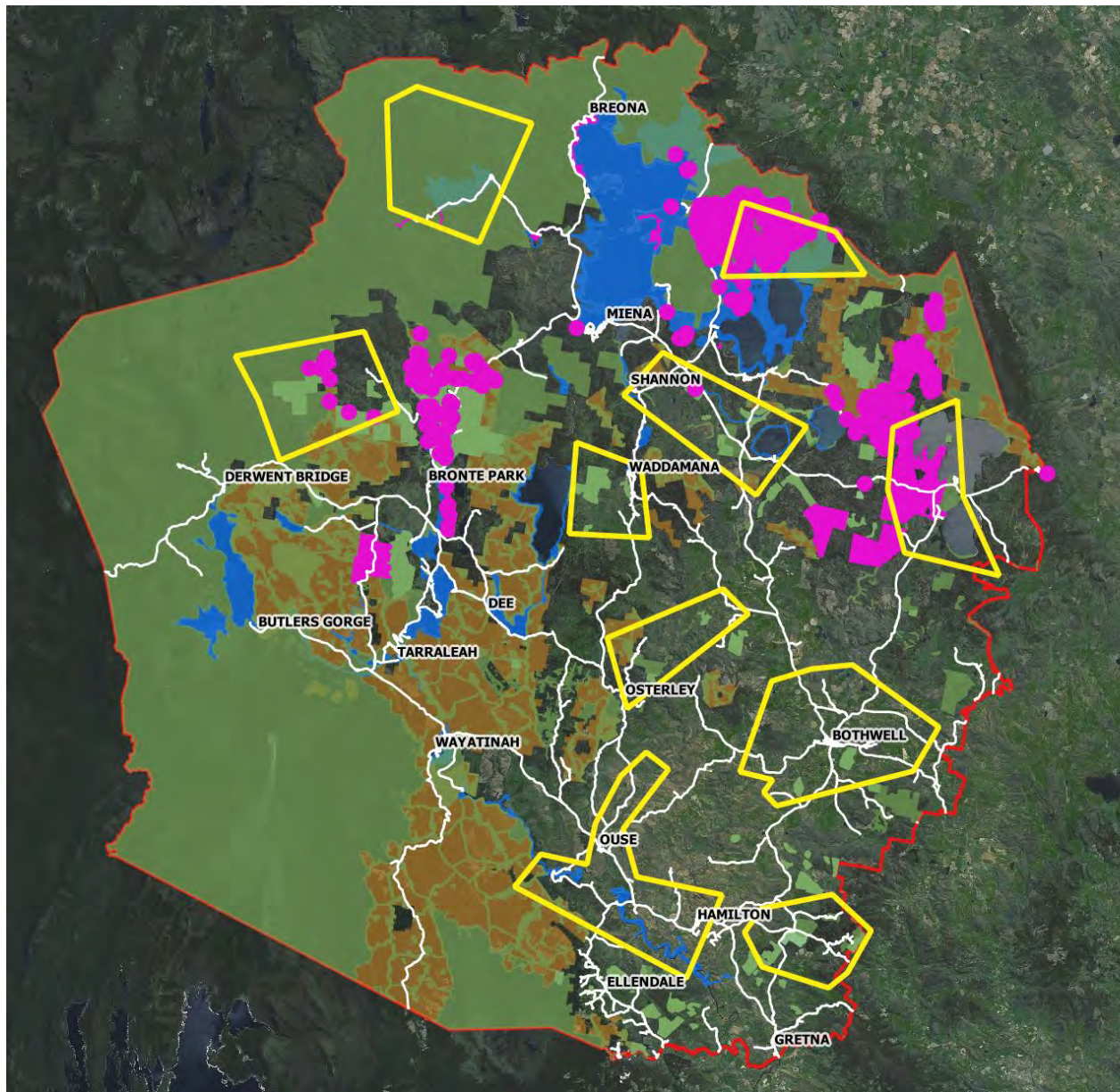


DISTRIBUTION OF PATTERSONS CURSE IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Patersons curse
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

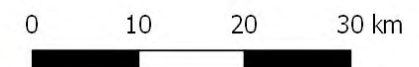


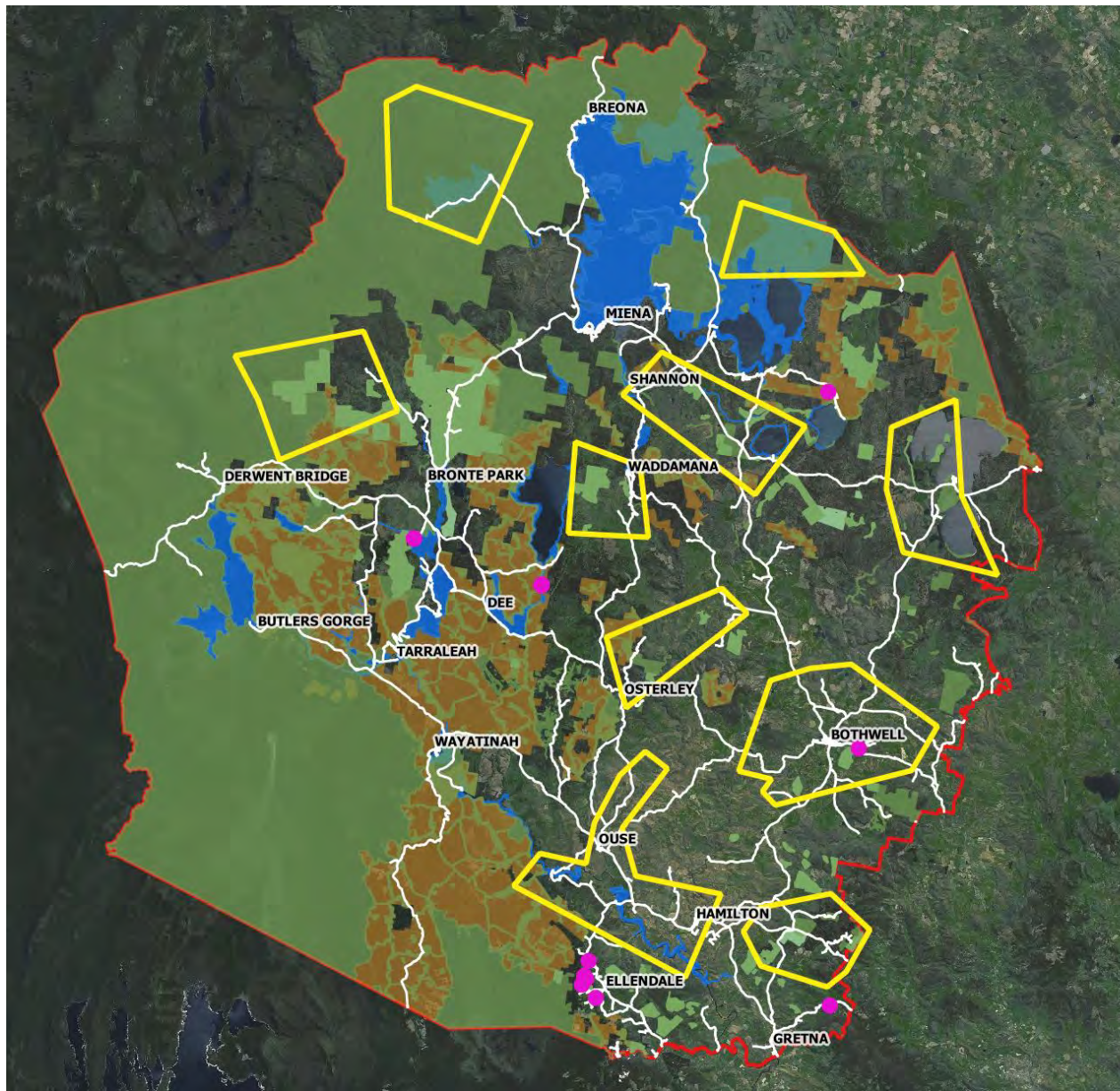


DISTRIBUTION OF RAGWORT IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Ragwort
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

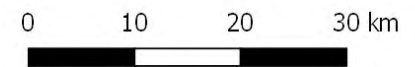


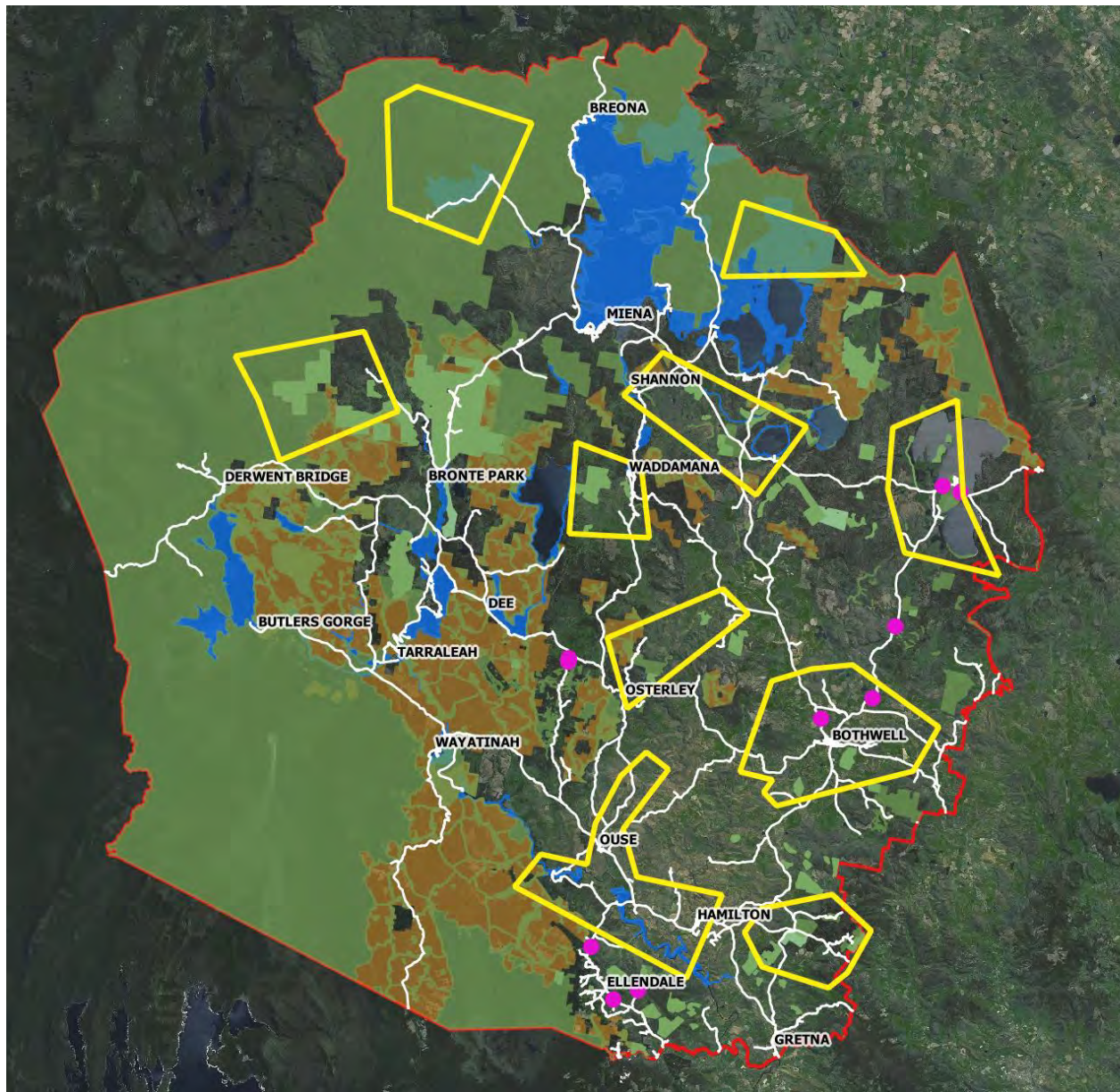


DISTRIBUTION OF SPANISH HEATH IN THE CENTRAL HIGHLANDS MUNICIPALITY

Legend

- Spanish heath
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands





**DISTRIBUTION OF WHITEWEED
IN THE CENTRAL HIGHLANDS
MUNICIPALITY**

Legend

- Whiteweed
- Tas Reserve Estate 2016
- Private reserves
- Hydro land
- Forestry land
- Priority Zones
- Central Highlands

