

# Tasman Council Weed Management Plan

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2018 – 2023

# Document information

The original version of this weed management plan was prepared by Enviro-dynamics on behalf of the Tasman Council.

Subsequent revisions made by Council independently of Enviro-dynamics to reflect the latest information on weed distributions, changes in status of weed species, and weed priorities are detailed below.

## Version history

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Stakeholder feedback		
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## **1 Introduction**

This plan provides a practical framework for weed management across the Tasman municipal area over the next five years (2018 – 2023). It sets out strategic priorities for weed management within the municipality and provides specific actions for weed control within road reserves and other land managed by the Tasman Council. It also incorporates recommended actions for roadsides managed by the Department of State Growth within the municipal area.

This document supersedes the Tasman Council Weed Management Strategy (2011 – 2016) and aims to build upon past achievements by the Council. It sets out specific objectives for weed management that are both realistic and maintainable. It identifies 15 priority weeds for eradication based on their limited distribution with the municipality. Ten strategic management zones for on-ground action are also identified using an asset-based approach.

This plan also supports the implementation of individual Statutory Weed Management Plans and is consistent with the Southern Tasmanian Weed Management Strategy. It encourages a collaborative approach to weed management to ensure weeds along Council roads and adjacent land are effectively managed.

It is intended to be a working document and should be updated as additional information about weed distributions is recorded. For example, if a new declared weed is recorded in the Municipality within the next five years then it should be included in list of Priority 1 species for eradication. Similarly, if a declared priority weed is found to considerably more widespread than current survey data indicates then it should be assigned a different priority.

## 2 Background

### 2.1 The region

The Tasman municipal area encompasses approximately 670 km<sup>2</sup> and is located on the south east coast of Tasmania. It is comprised of the Forestier Peninsula, the Tasman Peninsula and several offshore islands. Its only border is with the Sorell municipality, at the northern end of the Forestier Peninsula. It is the second smallest municipality on mainland Tasmania, with fewer than 2500 permanent residents. The population is relatively dispersed, with many non-agricultural residences and shacks. During the summer months, the population increases nearly fourfold with an influx of tourists and shack owners.



Figure 1 Location of the Tasman LGA

Land use is varied and includes forestry (native production forest as well as plantation), grazing, orchards, urban and non-urban residential as well as large conservation areas, including the Tasman National Park.

### 2.2 Key stakeholders

There are several key stakeholders and land managers in the Tasman municipality. The Tasman Council is the principle manager of local community infrastructure including roads, waste collection, public recreation facilities and area planning. It is responsible for weed management across Council owned land and Council managed roads. 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 Tasmania Division 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 works in partnership with community and industry to manage invasive species, including declared weeds.

DPIPWE is also responsible for the management of National Parks which forms a large component of the Tasman municipality. This responsibility includes weed management across the protected area estate. Sustainable Timbers Tasmania (STT) also has significant land holdings in the municipality and is responsible for weed management across its estate.

Large areas of the Tasman municipality are under private ownership where agricultural production is the primary land use. Many agricultural land managers are active in weed management and have worked in partnership with Council to eradicate priority weeds.

NRM South are a regional Natural Resource Management body who partner with government, landowners, research organisations and community groups to help manage Tasmania's natural resources. Biosecurity and weed management is a core area of investment and a program activity for NRM South.

The local community is also actively engaged in weed management in the Tasman Council area. This includes the Tasman Landcare Group and several Coastcare groups (Eaglehawk Neck, Shelly Beach, Saltwater River, Sommers Bay and Parkers Beach) with members who volunteer in weed control projects.

### *2.3 Weed management in the Tasman*

The Tasman Council has made considerable progress towards managing weeds in the municipal area over the last decade. The Council's Weeds Officer has surveyed and conducted primary treatment of priority weeds across the municipality, including on private land. Priority weeds such as gorse, boneseed, pampas grass, and African boxthorn have been reduced to eradicable levels.

The Tasman Council Weed Management Strategy 2011 – 2016 has guided the weed management program over the last six years. This included employing a contractor to conduct follow up treatment of priority sites with funding sought through the Bushfire Recovery Fund. Actions implemented under the previous plan have been very successful and have resulted in a marked reduction in the extent of priority weeds to the point where eradication is very feasible for several species.

### *2.4 Legislation*

The *Weed Management Act 1999* (WMA) is the principal legislation concerned with the management of 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 to comply with the WMA.

Each Tasmanian municipality is classified into one of two management zones (Zone A or B) for the purposes of implementing Statutory Weed Management Plans. Zone A includes municipalities for which prevention or eradication are the principal management objectives. These municipalities are either free of the declared weed

or have small, isolated infestations. Zone B includes municipalities for which containment is the principal management objective. These municipalities contain large, widespread infestations that are not deemed eradicable. A municipality with larger infestations may also be classified as Zone A if a strategic management plan exists and the resources required to implement it have been or are likely to be secured.

Municipalities may change the management zone for a declared weed over time. For example, if a declared weed in a Zone B municipality has been reduced to a point where eradication is feasible then this municipality would qualify for inclusion in Zone A. Conversely, a Zone A municipality with widespread infestations may decide that eradication is no longer feasible, in which case it would be re-classified as Zone B. Reclassification of several declared weeds is recommended as part of this plan.

### **3 Principles of weed management**

Best practice weed management begins with the prevention of weed incursions, followed by early detection and prompt intervention. Preventing the introduction of weeds is the most effective form of weed management. Significant long-term cost saving can be achieved by implementing good hygiene practices to reduce the risk of weed spread.

Early detection of weed incursions followed by immediate control provides the best opportunity for successful long-term eradication. This is the key principle behind the actions outlined in this plan. This plan aims to achieve, as a minimum, the eradication of weeds with a limited distribution (Priority 1 & 2 weeds).

Management of weeds that are already widespread in the landscape should focus on containment and asset-based protection. It is important to work from areas of low infestation and to address individual outliers before moving to more dense infestations. In the case of eradication zones, this will generally involve working from the end of Council roads back towards main roads and townships. This approach will also prevent weeds from spreading along roads and into national parks and reserves. Topography should also be considered, for example working from upslope to downslope to reflect the movement of water in the landscape. There is often a temptation to control large or prominent infestations first, but this approach can be very resource intensive and is rarely successful.

Consideration should also be given to the potential risk of off-target damage on natural assets. This is particularly important when using herbicides near threatened species or sensitive environments such as waterways and coastal areas. Weed control should be undertaken by experienced operators with good plant identification skills, especially when working in native vegetation.

Weed management requires a continuous, long-term commitment. It is important to factor in monitoring and follow-up as part of budget allocations to successfully eradicate or contain weed infestations.

#### ***3.1 Causes of weed spread***

Weeds are typically spread by propagules which can be transported by wind, water, animals and people. Understanding the lifecycles 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.

### 3.1.1 Vehicles, machinery & equipment

Machinery and vehicles are 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. Spanish heath is a good example of a weed that has spread rapidly in recent years especially, along State Growth roads, due to inadequate hygiene practices.

### 3.1.2 Contaminated soil and gravel

Another major vector is contaminated soil and gravel. Road maintenance often involves the movement of materials around the Municipality. Sourcing materials from external quarries is a particular risk, especially in the case of State Growth roads. This is a widespread problem associated with road construction. Given the distribution pattern of weeds in the Municipality and the observed patterns of spread (such as fennel in stockpile sites) it would be review existing hygiene protocols for road construction projects.

### 3.1.3 Transported livestock feed

Occasionally, stock feed may need to be transported into the municipality. While necessary, contaminated feed is a significant weed introduction risk. There are commonly accepted strategies for landholders to manage this risk, including checking the origin of hay or grain stock feed, and monitoring storage and feed-out areas regularly for declared weeds.

### 3.1.4 Garden escapes

A considerable number of weeds were introduced to Tasmania as garden ornamentals. There are many such weeds in the Tasman Municipality that have become widespread. One notable example is Red Hot Poker (*Kniphofia uvaria*), which was surveyed across the Municipality and is invading intact native vegetation.

Dumping of garden waste was observed in numerous sites across the Municipality, some of which contained propagules of significant environmental weeds. Community education about the risk of garden escapes should be promoted. Providing more options for green waste disposal should also be considered.

## 4 Roadside survey

A survey of road easements managed by the Tasman Council and State Growth was conducted in January 2018 to reassess the distribution of priority weeds. The roadside survey covered approximately 250 km and included adjoining land visible from a vehicle. The survey focused on mapping declared weeds, especially Zone A, but also captured some non-declared and environmental weeds.

An attempt was made to relocate previous records of declared weeds using data extracted from the Natural Values Atlas (NVA) and the Tasman Weeds Database. Survey data was collected using a laptop with a GIS mapping program and a GPS receiver.

### 4.1 Survey limitations

Although a concerted effort was made to accurately map the location of all declared weeds, some isolated occurrences may have been overlooked due to the inherent limitations of the roadside survey method. The timing of the survey also meant that it was more difficult to detect spring flowering species such as boneseed and gorse. It was optimal timing for detecting summer flowering species such as ragwort and Paterson's curse.

Due to budget considerations, private roads, or roads managed by either Sustainable Timbers Tasmania (STT) or the Tasmanian Parks and Wildlife Service (PWS) were not surveyed. While this is a substantial proportion of the road network, the Tasman Council does not have responsibility for weed control outside their own land. STT and PWS have independent weed hygiene policies and procedures to limit weed spread across their road networks. The Council will continue to work with STT and PWS to ensure that weed management priorities are implemented across the Municipality.

## 5 Weeds of the Tasman municipal area

Twenty-two declared weeds have been recorded in the Tasman municipality, thirteen of which are classified as Zone A under the WMA. In addition, there are many non-declared weeds within the municipal area, some of which are in isolated occurrences and pose a high-risk to natural values.

Declared weeds recorded within the Tasman municipality are listed in Table 5.1, along with the zone and distribution as per the relevant Statutory Weed Management Plan. A list of non-declared weeds is provided in Table 4.2. This is not an exhaustive list of non-declared weeds, but rather a selection of weeds which may pose a considerable risk to environmental values.

**Table 5.1 - Declared weeds of the Tasman municipality**

Common name	Species name	<sup>1</sup> Zone	<sup>2</sup> Distribution
African boxthorn	<i>Lycium ferocissimum</i>	B	Li
Asparagus fern	<i>Asparagus scandens</i>	A	lo
Blackberry	<i>Rubus fruticosus</i>	B	Wi
Boneseed	<i>Chrysanthemoides monilifera</i>	A	Li
Bridal creeper	<i>Asparagus asparagoides</i>	A	Pr
Californian thistle	<i>Cirsium arvense</i>	B	Li
Datura	<i>Datura</i> species	A	lo
Elisha's tears	<i>Leycesteria formosa</i>	A	lo
English broom	<i>Cytisus scoparius</i>	B	Li
Fennel	<i>Foeniculum vulgare</i>	B	Li
Gorse	<i>Ulex europaeus</i>	A	Li
Holly	<i>Ilex aquifolium</i>	A	*
Horehound	<i>Marrubium vulgare</i>	A	lo
Horsetail	<i>Equisetum hyemale</i>	A	lo
Montpellier broom	<i>Genista monspessulana</i>	B	Wi
Pampas	<i>Cortaderia</i> species	A	Li
Paterson's curse	<i>Echium plantagineum</i>	A	Li
Ragwort	<i>Senecio jacobaea</i>	B	Wi
Serrated tussock	<i>Nassella trichotoma</i>	A	Li
Slender thistles	<i>Carduus pycnocephalus</i> & <i>C. tenuiflorus</i>	B	Wi
Spanish heath	<i>Erica lusitanica</i>	B	Wi
Willow	<i>Salix</i> species	A	lo

1: Zone as per Statutory Weed Management Plan.

2: Distribution as per Statutory Weed Management Plan. lo = Isolated occurrence; Li = Localised infestation; Wi = Widespread infestation; Pr = Previously recorded; \* = New record not listed in Draft Statutory Weed Management Plan.

Table 5.2 - Non-declared and environmental weeds

Common name	Species name
Agapanthus	<i>Agapanthus praecox ssp. orientalis</i>
Arum lily	<i>Zantedeschia aethiopica</i>
Banana passionfruit	<i>Passiflora mollissima</i>
Blue butterfly-bush	<i>Psoralea pinnata</i>
Blue periwinkle	<i>Vinca major</i>
Bluebell creeper	<i>Billardiera heterophylla</i>
Cape wattle	<i>Paraserianthes lophantha</i>
Cotoneaster	<i>Cotoneaster species</i>
Cumbungi	<i>Typha latifolia</i>
Foxglove	<i>Digitalis purpurea</i>
Fuchsia	<i>Fuchsia magellanica</i>
Hawthorn	<i>Crataegus monogyna</i>
Hemlock	<i>Conium maculatum</i>
Mallow	<i>Malva parvifolia</i>
Milkwort	<i>Polygala myrtifolia</i>
Mirrorbush	<i>Coprosma repens</i>
Montbretia	<i>Crocasmia x crocosmiiflora</i>
New Zealand Flax	<i>Phormium tenax</i>
Ox-eye	<i>Leucanthemum vulgare</i>
Radiata pine	<i>Pinus radiata</i>
Red hot poker	<i>Kniphofia uvaria</i>
Sweet briar	<i>Rosa rubiginosa</i>
Sweet pittosporum	<i>Pittosporum undulatum</i>
Tree lucerne	<i>Chamaecytisus palmensis</i>
Tufted gazania	<i>Gazania linearis</i>
Watsonia	<i>Watsonia meriana</i>

Three other declared weeds are listed as occurring in the Municipality in Statutory Weed Management Plans (whiteweed, nodding thistle and wide-edged nightshade) but there are no records of these species in the NVA or Council database. Consequently, these species have been excluded from the prioritisation process. If these species are recorded in the Municipality then the plan should be updated to include them.

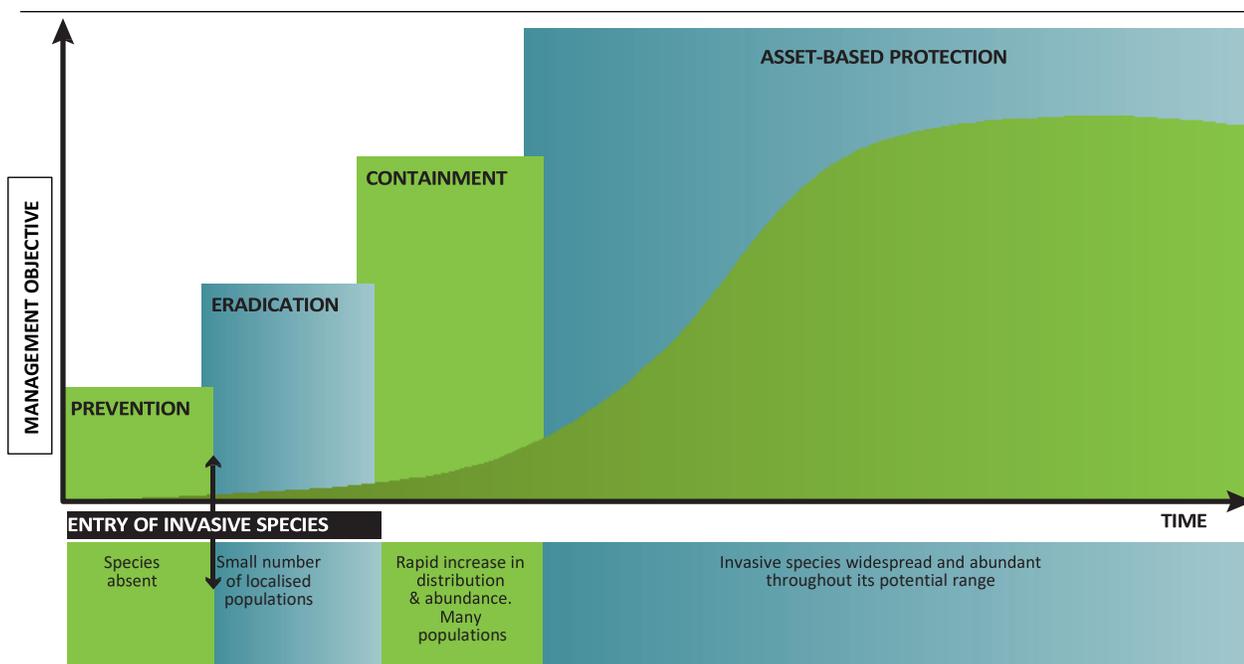
## 6 Strategic priorities

### 6.1 Prioritisation

Declared weeds have been prioritised based on their distribution and stage of invasion. The four stages of weed invasion and corresponding management objectives are shown in Figure 2. The highest priority is given to the prevention of new weed incursions and the eradication of weeds with small, isolated occurrences. It also promotes an asset-based approach for managing weeds with more widespread infestations.

**Figure 2 - Stages of weed invasion with corresponding management objectives.**

Source: Invasive Plants and Animals Committee (2016).



#### Prevention

It is recognised that prevention and early intervention are the most cost-effective measures in managing weeds. The Tasman municipality is well placed to control weed vectors and prevent the spread of weeds, as it has only a very narrow land connection with mainland Tasmania. Key principles of weed hygiene are outlined in Section 6.

#### Eradication

It is more cost-effective in the long-term to invest resources into the eradication of weeds before they become established and widespread. The Tasman Council is a Zone A municipality for several declared weeds that are widespread across other parts of Tasmania. Eradicating weeds such as boneseed, gorse and pampas grass should continue to be a very high priority.

Significant resources have been invested in the control of Zone A weeds in the Tasman municipality over the last decade. These measures have been very successful in controlling priority weeds to the point where a few species could be eradicated in the next five years. Monitoring and follow-up control are critical to ensure that these species are effectively eradicated.

### **Containment**

Containment boundaries have been identified for more widespread weeds, where there is an opportunity to contain their spread into un-infested areas or areas of low weed abundance. It is not feasible to eradicate these weeds from the Tasman, but with targeted action and strategic hygiene measures it should be possible to contain their spread. These weeds should also be managed using an asset-based approach where they have already become established.

### **Asset-based protection**

An asset-based approach has been developed to target the management of widespread weeds in the Tasman LGA. Both natural values and agricultural values were considered as part of this approach. Natural assets identified in this model include: threatened flora populations; threatened vegetation communities; and conservation reserves. Agricultural assets include intensive production land such as vineyards and orchards. Refer to Section 5.4 for priority sites for asset-based protection.

## *6.2 Priority weeds*

Declared weeds recorded in the Tasman municipality were classified according to their current distribution along Council and State Growth roadsides. Table 6.1 shows the different priorities, categories and management objectives assigned to each weed species. High-risk non-declared weeds with limited distributions were also included in this process.

Horehound was excluded from the prioritisation process because it has only been recorded on offshore Islands which are outside the scope of this plan (Sloping Island and Smooth Island). Three other declared weeds listed as occurring in the Municipality in Statutory Weed Management Plans (whiteweed, nodding thistle and wide-edged nightshade) were also excluded because there are no current records of these species in the Tasman. If any of these species are detected in the Municipality within the next five years, they should be treated as Priority 1 species. Similarly, if any new occurrences of other declared weeds are recorded then they should also be added to the list of Priority 1 species.

Table 6.1 – Summary of weed priorities

Priority	Category	Species		Management objective
1	Declared weeds with isolated occurrences - <b>12 species</b>	African boxthorn asparagus fern boneseed Elisha's tears fennel holly	horsetail gorse pampas grass Paterson's curse ragwort serrated tussock	Eradication
2	High risk non-declared with isolated occurrences – <b>3 species</b>	arum lily bluebell creeper foxglove		Eradication
3	Declared weeds with localised infestations – <b>2 species</b>	Spanish heath willows		Containment and asset-based protection
4	Declared weeds with widespread infestations – <b>6 species</b>	blackberry English broom Montpellier broom	Californian thistle slender thistles (2)	Containment and asset-based protection
5	Non-declared and environmental weeds with widespread infestations  - <b>23 species</b>	blue butterfly-bush briar rose cape wattle cotoneaster sweet pittosporum  (refer to Table 4.2 for full list)		Asset-based protection

### 6.2.1 Priority 1 weeds

The management objective for all Priority 1 weeds is eradication. Most of these weeds have previously been targeted by Council and some have been reduced to an extent where eradication is achievable within the next five years e.g. African boxthorn and pampas grass.

It is recognised that some weeds are more difficult to control than others, i.e. asparagus fern and Paterson's curse are more difficult to control than boneseed or pampas and may not be eradicable within the timeframe of this plan.

Priority weed eradication sites are listed in Appendix 1. The distribution of priority weeds is shown in Figures 3 to 10.

#### **African boxthorn**

African boxthorn previously had a wide distribution across the Tasman LGA (Figure 3). Concerted control efforts have succeeded in largely eradicating it from the roadsides. It was only detected in five sites during the roadside survey, mainly along Saltwater Rd, all of which were very small infestations. Eradication of African boxthorn from the Tasman LGA is feasible within the next five years.

#### **Asparagus fern**

Asparagus fern was recorded in one location during the survey, on Old Koonya Jetty Road (Figure 4). This site is part of a larger infestation at Koonya and has been the subject of significant control efforts. The infestation is both within the road reserve and on nearby private land and has previously been managed by the landholder. Asparagus fern is difficult to control and is likely to take many years to eradicate. However, it is still very localised and should continue to be a high priority.

#### **Fennel**

Fennel was recorded in 10 sites during the roadside survey (Figure 4) and was generally in small numbers. There are no previous records of fennel anywhere in the Tasman LGA, which suggests that it is starting to spread along the road network. It is most abundant along the Arthur Highway south-east of Dunalley and around Murdunna, with only isolated occurrences near Premaydena and in Eaglehawk Neck. Given the limited extent of fennel, it is an ideal target for eradication.

Figure 3 - Distribution of African Boxthorn

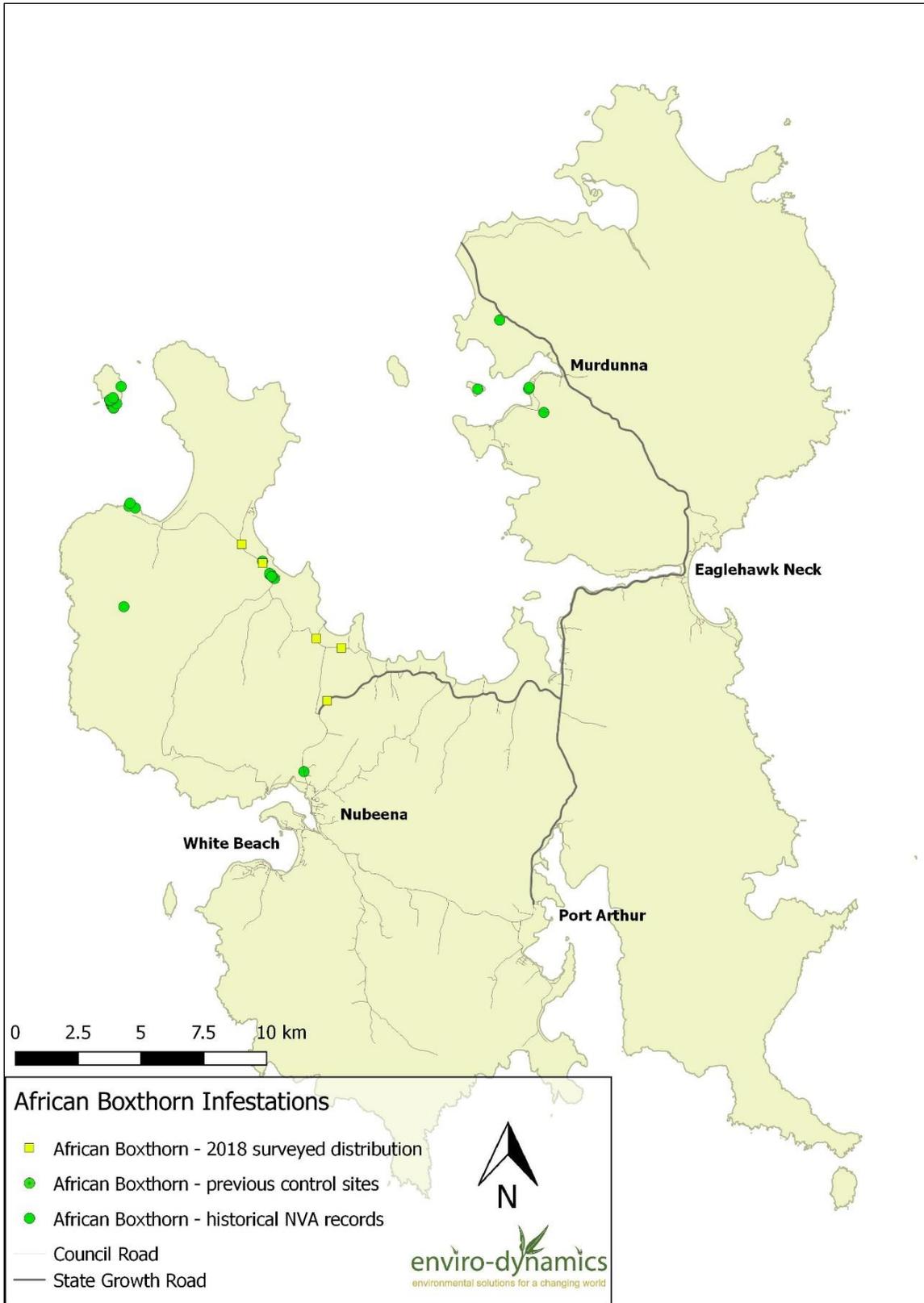


Figure 4 – Distribution of asparagus fern and fennel

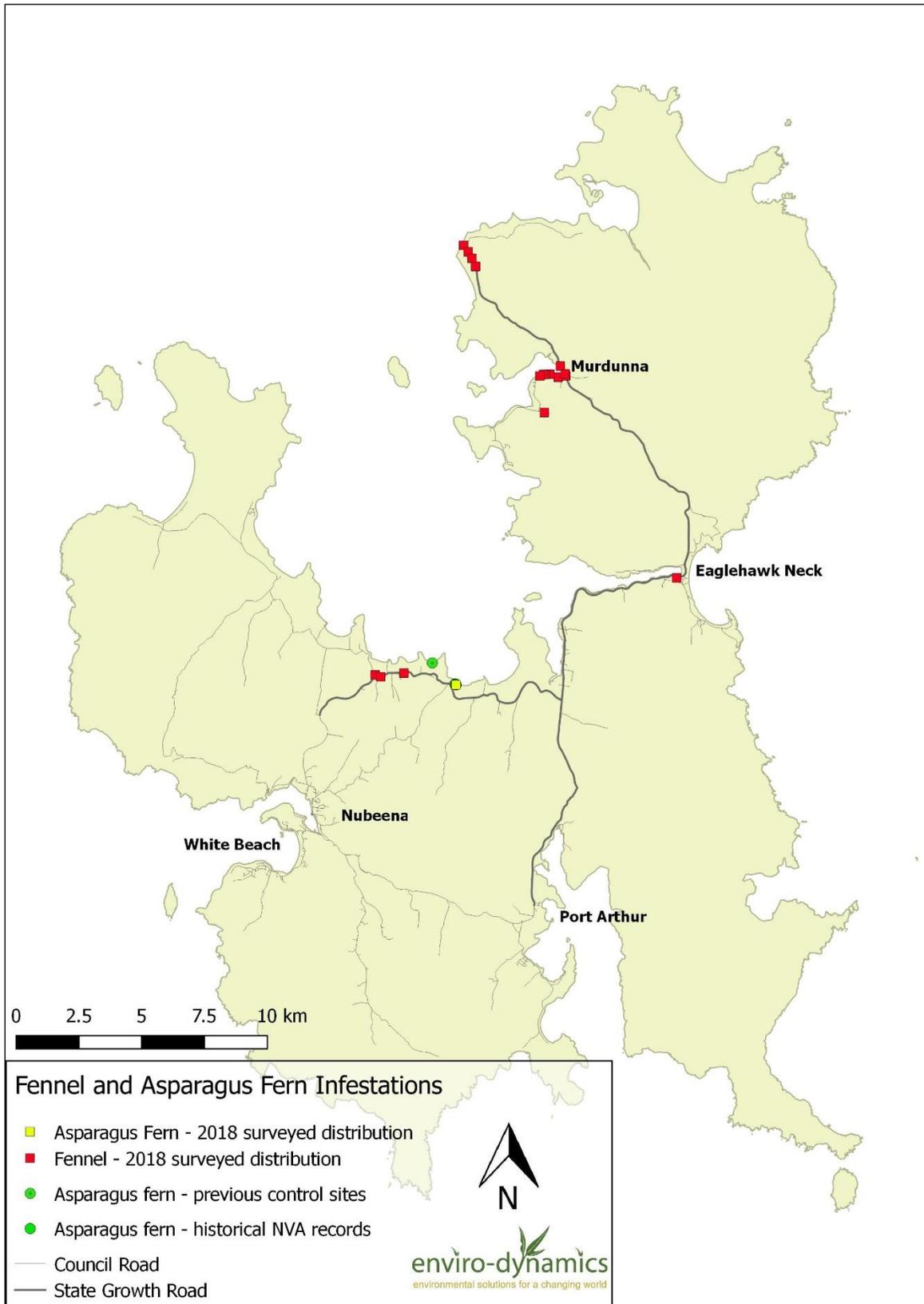
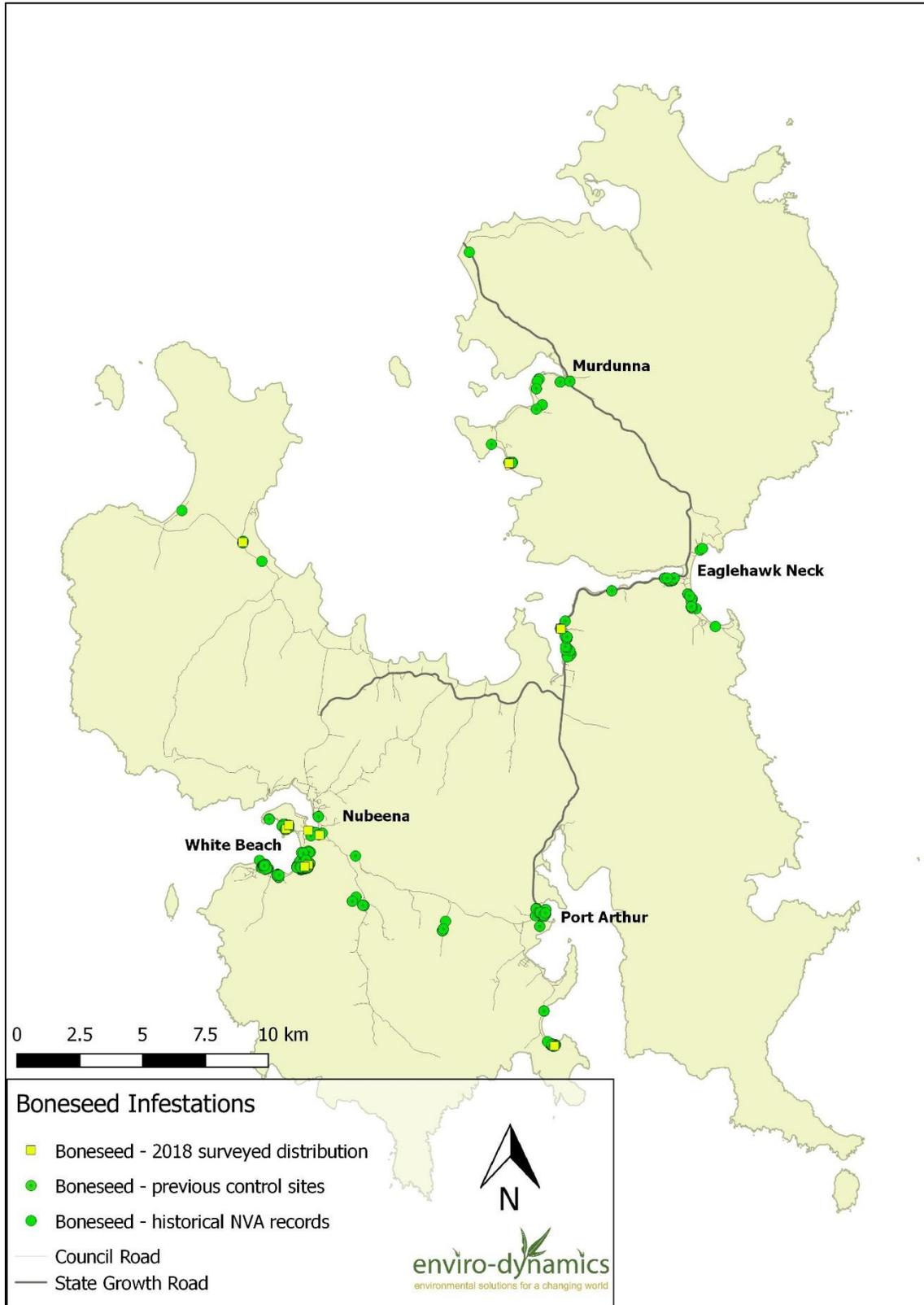


Figure 5 – Distribution of boneseed



### **Boneseed**

Boneseed previously had a wide distribution across the Tasman LGA (Figure 5) and has been a target of the Council's weed control program. It was only recorded in five general locations during the recent survey. It is most abundant in the White Beach area, with isolated occurrences near Safety Cove, Salem Bay, Norfolk Point and Sommers Bay. It is possible that isolated plants may have been overlooked during the roadside survey due to the timing, especially seedlings. Previously known locations should be monitored to ensure that boneseed does not re-establish.

### **Elisha's tears**

Elisha's tears is only known from the Port Arthur area in the Tasman LGA (Figure 9), including two new sites recorded during the roadside survey. Both of the new sites are within private gardens. Landholders should be notified of the declared status of the weed, and the plants removed to prevent the weed from naturalising.

### **Gorse**

Gorse previously had a widespread distribution across the Tasman LGA (Figure 6), especially around Murdunna, Eaglehawk Neck, Nubeena, White Beach and Port Arthur. It was only recorded in two sites along the Arthur Highway near Murdunna during the recent survey. No plants were observed at Palmers Lookout but this population is mainly on private land and has been the subject of intensive eradication efforts. It is possible that isolated plants may have been overlooked due to the timing of the survey, especially seedlings. Gorse has a long-lived soil seed bank and ongoing monitoring of previously recorded sites should continue to be a high priority.

### **Holly**

Holly was recorded in three small isolated occurrences along roadsides during the survey (Figure 7). There are no previous records of Holly in the Tasman municipality. Holly was recently listed as a declared weed under the WMA and should be a high priority for control in the Tasman. The draft Statutory Weed Management Plan should be amended to include Holly as Zone A with Isolated occurrences in the Tasman.

### **Horsetail**

Horsetail has previously been recorded on private property at Taranna (Figure 7). The status of this infestation is unknown and should be inspected as a priority. No populations were recorded along roadsides during the survey.

Figure 6 - Distribution of gorse

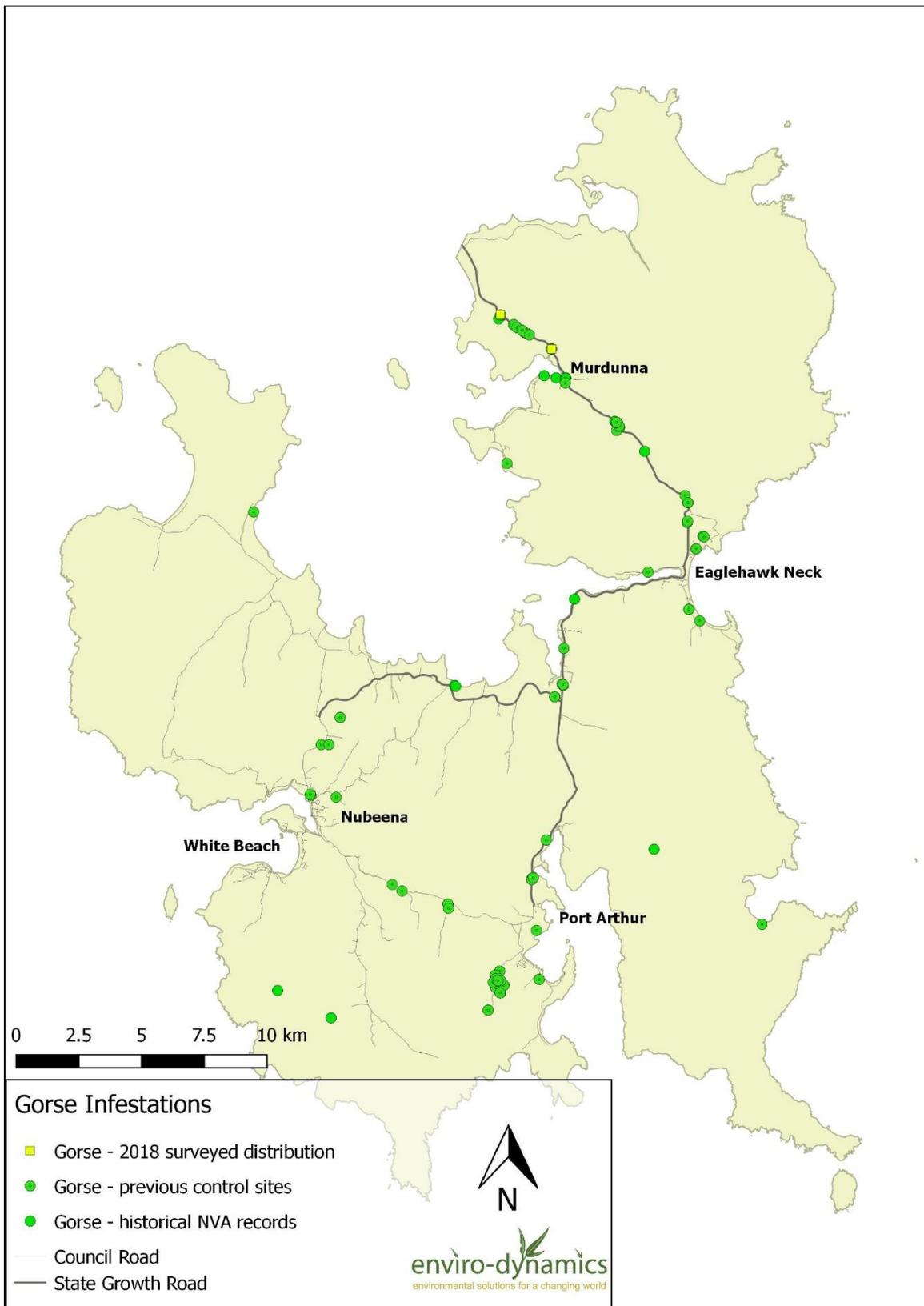


Figure 7 – Distribution of holly and horsetail

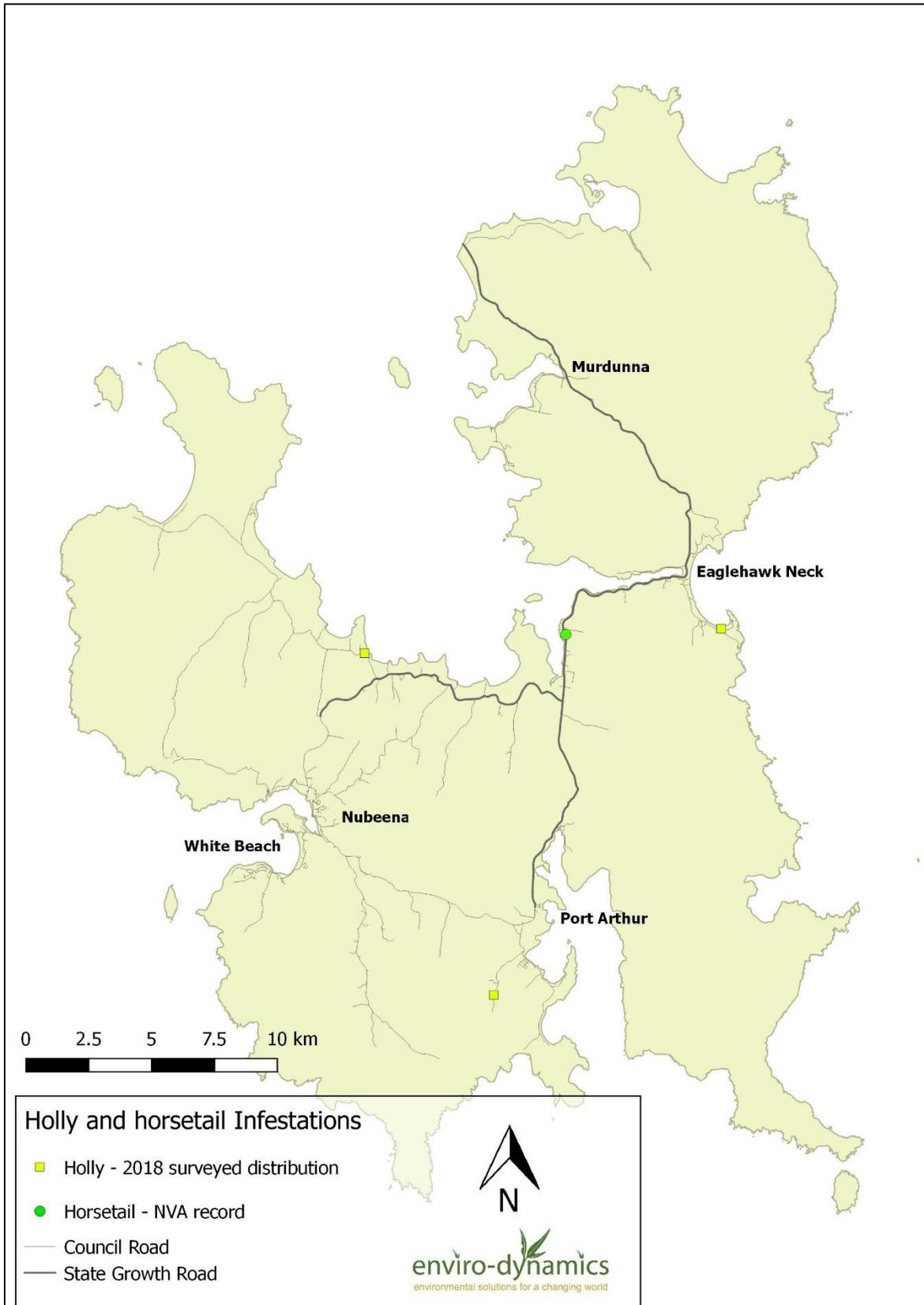
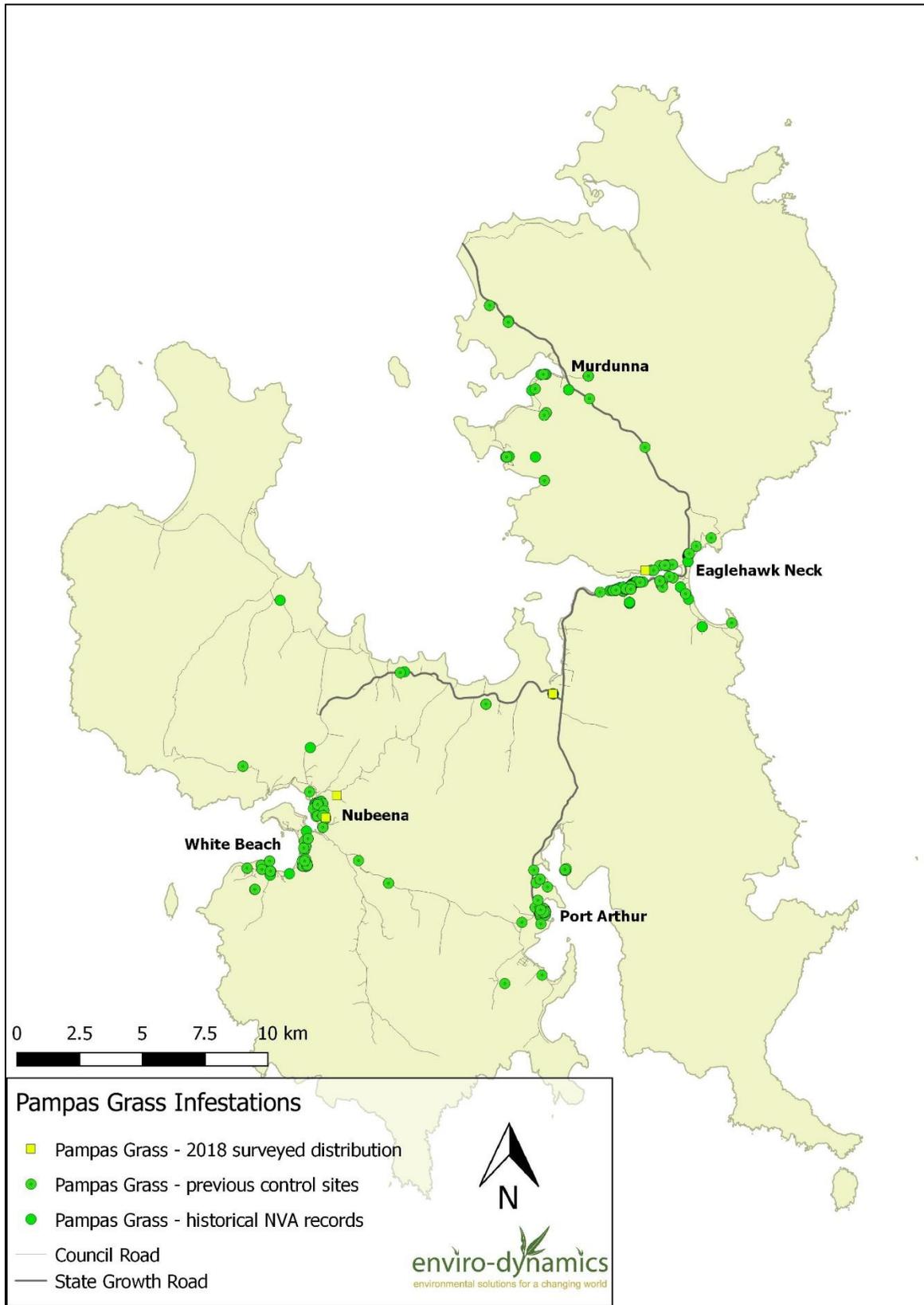


Figure 8 – Distribution of pampas grass



### **Pampas grass**

Pampas grass previously has a wide distribution across the Tasman LGA (Figure 7) and has been the target of an extensive control program. It appears to have been largely eradicated from roadsides and adjacent areas, with only four sites recorded during the recent survey. All of these were small populations, none of which were flowering. Eradication of pampas grass should be a very high priority and should be achievable within the next five years. Surveys should be extended to include private land, PWS reserves, and STT land with the aim of eradicating pampas from the Municipality.

### **Paterson's curse**

Localised infestations of Paterson's curse have previously been recorded on private land in the Murdunna area (Figure 9) and have been the subject of ongoing control works. No infestations were recorded during the 2018 roadside survey, but it is likely to persist on private land in this area. Ongoing monitoring and follow-up of known infestation should continue to be a high priority.

### **Ragwort**

Ragwort previously had a widespread distribution across the Tasman LGA (Figure 10) and is a Zone B weed for Municipality. It was only recorded in two locations during the 2018 survey (along Newmans Creek Rd and the Arthur Highway near McManus Hill). Most sites were in paddocks, with some large patches on private land along Newmans Creek Rd. All other previously recorded sites near roads were checked, but no plants were observed. Most of these sites have been subject to control measures and may have been eradicated. However, the seed bank is relatively long-lived, and populations may reestablish, especially following disturbance.

### **Serrated tussock**

Serrated tussock was not recorded during the roadside survey but has previously been recorded from three locations in the Tasman LGA (Figure 9). Two of these sites are on private land (Bangor, Saltwater River) and have been subject to control programs in conjunction with the Tasman Landcare group. The infestation on Sloping Island is managed by PWS service and was not surveyed as part of this planning process. These sites should continue to be the target of eradication efforts.

Serrated tussock is widespread in Clarence and Sorell municipalities, including infestations around Dunalley which borders Tasman LGA. There is a risk of incursion along the Arthur Highway, especially through road maintenance programs e.g. slashing. Implementing hygiene measures for roadwork operations will be crucial to preventing the spread of serrated tussock.

Figure 9 – Distribution of Elisha’s tears, serrated tussock and Paterson’s curse

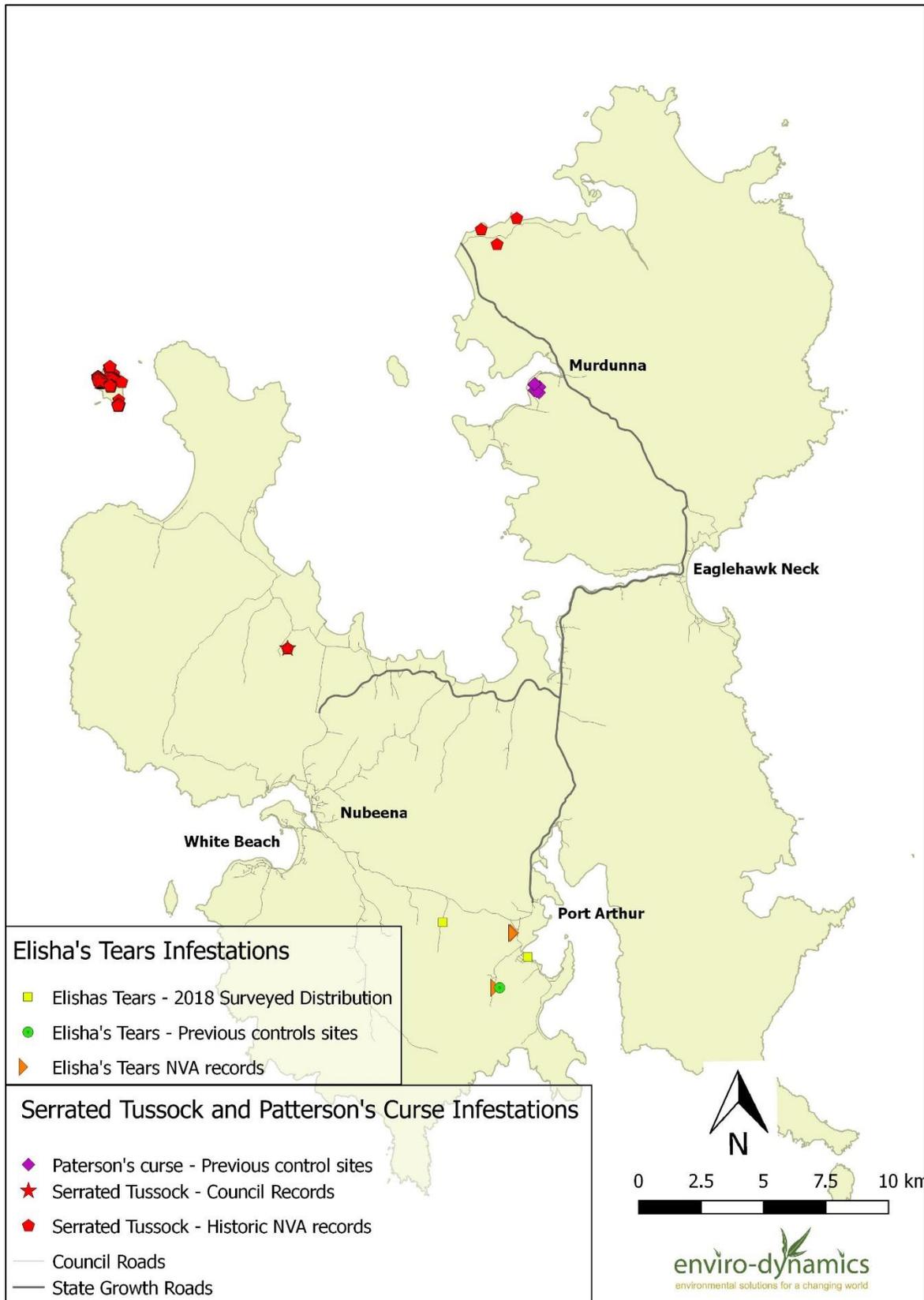
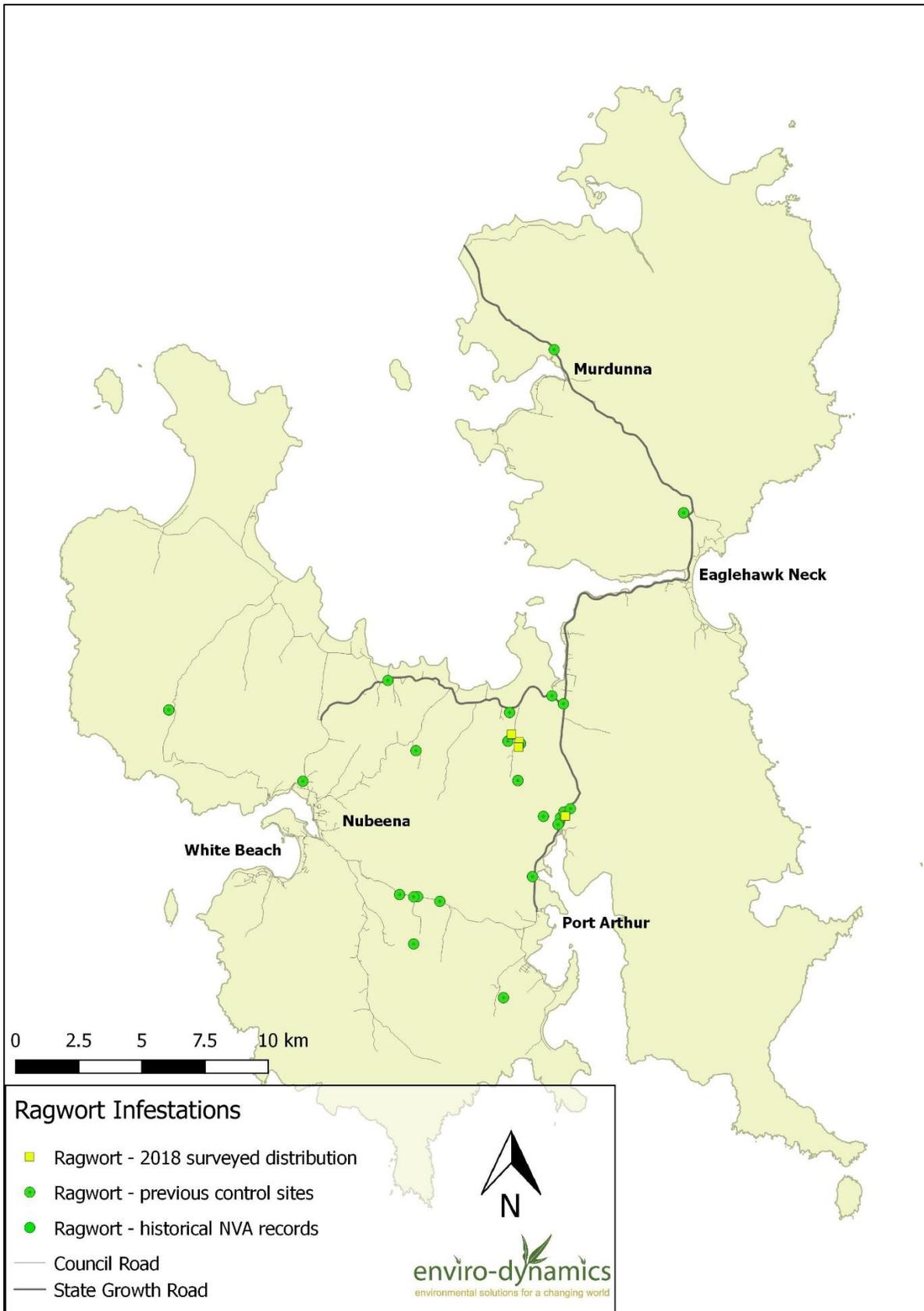


Figure 10 – Distribution of ragwort



### 6.2.2 Priority 2 weeds

The management objective for Priority 2 weeds is eradication. As non-declared weeds, there is no statutory obligation to control these weeds, but given their limited distribution in the Tasman LGA it is feasible to eradicate them before they become widespread. The distribution of Priority 2 weeds is shown in Figure 11.

#### **Arum lily**

Arum lily was recorded in two sites, both near Port Arthur (Figure 11). Arum Lily spreads rapidly through damp shaded areas and can exclude native vegetation. Given the high capacity for it to spread and its limited distribution, it is a good target for eradication.

#### **Bluebell creeper**

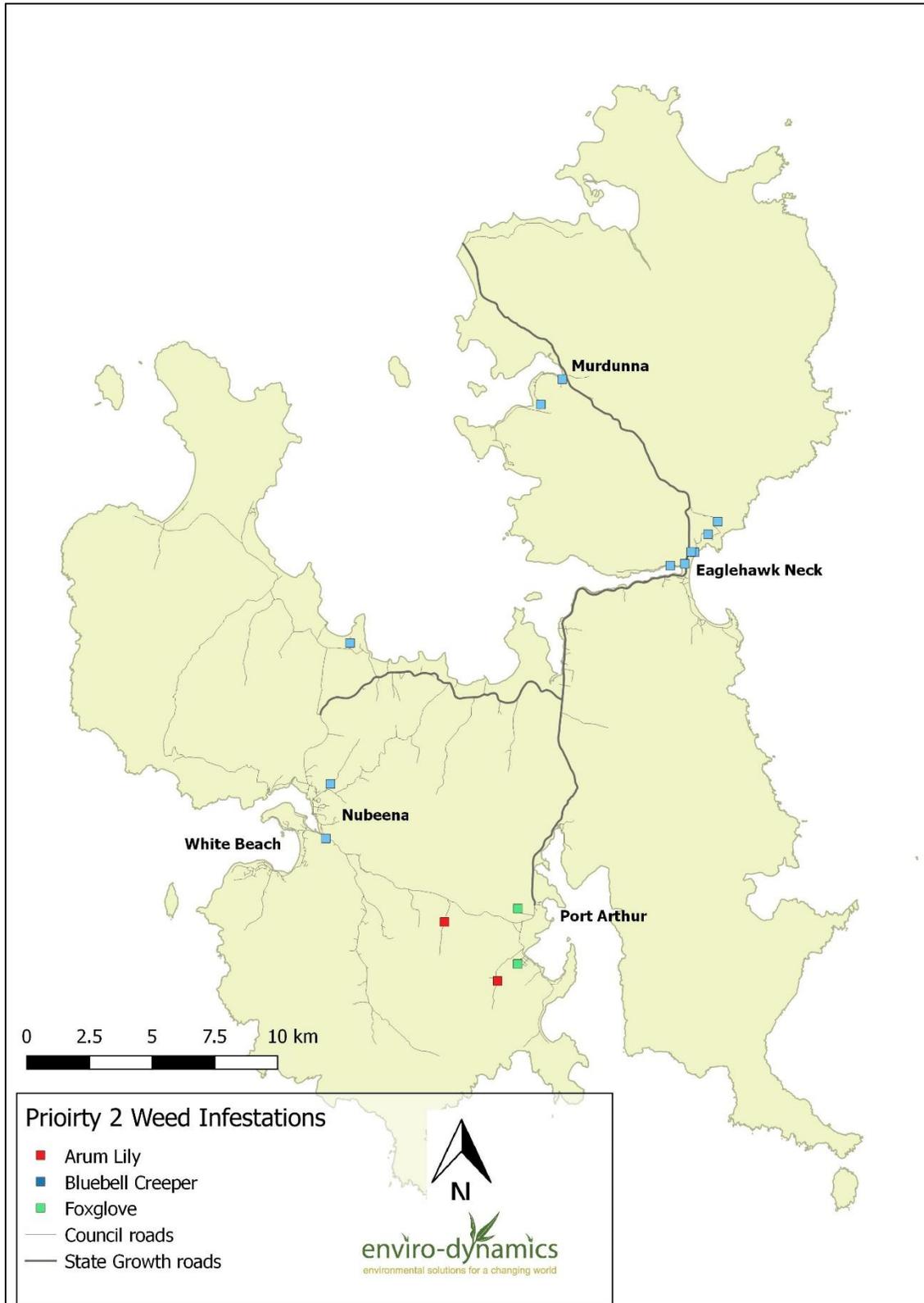
Bluebell creeper was recorded in five locations during the roadside survey (Nubeena, White Beach, Eaglehawk Neck and Saltwater Creek – refer to Figure 11). It has the potential to invade native vegetation, especially after fire. Efforts should be made to control bluebell creeper before it becomes established in coastal vegetation.

#### **Foxglove**

Foxglove was recorded in two locations near Port Arthur (Figure 11) during the roadside survey and has the potential to rapidly invade roadsides and disturbed sites in the region. Foxglove has invaded large areas of native forest across the State and should be controlled while it has a limited distribution.

Foxglove is a common weed in Forestry areas across the State, and it is possible that it has a wider distribution than current survey data suggests. It is recommended that additional surveys are conducted in Forestry areas to confirm the distribution of foxglove.

Figure 11 – Distribution of arum lily, bluebell creeper, and foxglove



### 6.2.3 Priority 3 weeds

The management objective for Priority 3 weeds is containment and asset-based protection.

#### **Spanish heath**

Spanish heath is widespread in the Tasman LGA and occurs along most roadsides. There are large infestations of Spanish heath around Nubeena, and extensive patches along the Arthur Highway. It is not feasible to eradicate Spanish heath from the Tasman, but opportunities exist to contain its spread, and eradicate it from some areas. Weed hygiene is key to achieving this goal, particularly for road maintenance programs e.g. slashing and grading, and during road upgrades (refer to Section 6).

Containment boundaries for Spanish heath should include all roads leading into the Tasman National Park as indicated in Figure 12. These include Safety Cove Road, Stormlea Road, Thornton Road, Noyes Road, Camp Road and McManus Road. A program to prevent the spread of Spanish heath along Fortescue Bay Road is also advisable. There is an extensive infestation of Spanish heath along the Arthur Highway between Taranna and the Fortescue Bay Road turnoff, which appears to have proliferated following recent road works. There is an opportunity to control this infestation before it spreads into adjacent areas, including Fortescue Bay.

#### **Willows**

Willows were recorded widely across the Tasman LGA during the survey. The identification of willows in Tasmania is complex due to hybridization, and it was difficult to differentiate between willow species due to the survey method. It is acknowledged that some of the crack willow records may be other taxa, including non-declared species.

Tasman is a Zone A municipality for crack willow, but the distribution is potentially too widespread to make eradication feasible. There are clear opportunities to reduce the extent of willows by targeting small outlying occurrences along roadsides and creeks. Community education will be key to preventing the ongoing introduction of willows in the Tasman.

### 6.2.4 Priority 4 weeds

The management objective for Priority 4 weeds is asset-based protection. These weeds have a widespread distribution in the municipality and occur intermittently along most roadsides. Several asset protection zones have been identified based on the presence of significant natural assets where the control of Priority 4 weeds is recommended. Priority 4 weeds should also be targeted within eradication zones. For example, several sections

of the road are free of blackberry and broom and an attempt should be made to prevent these weeds from establishing in these areas.

Priority 4 weeds should only be targeted outside of these zones if other significant assets are identified or there are other substantiated circumstances.

### **Blackberry**

Blackberry is widespread throughout the Tasman LGA, with extensive patches along most roadsides. Despite this, there are several roadsides which are relatively free of blackberry and other weeds. Containing the spread of blackberry into these eradication zones is the only feasible management objective, along with targeted control within asset-protection zones.

### **Broom**

English broom and Montpellier broom are both widespread across the Tasman LGA. Montpellier broom is more abundant, especially in wet forest areas and is often mixed with blackberry. English broom is less abundant but is nonetheless widespread. There are several roadsides which are relatively free of broom and other weeds. Preventing the spread of broom into these areas is the only feasible management objective, along with targeted control within asset-protection zones.

### **Thistles**

Californian thistle and slender thistles are widespread in the Tasman LGA, and generally occur in paddocks and disturbed sites. They are a low priority for control by the Council. Some targeted control works may be appropriate where they occur near a significant asset such as a threatened flora population.

#### **6.2.5 Other declared Zone A weeds**

There are previous records for two other declared Zone A weeds within the Tasman LGA. Bridal Creeper and Datura have been recorded in the Municipality but have been eradicated. The Council should remain vigilant to ensure that these Zone A weeds are not re-introduced into the Municipality.

Horehound has been recorded on offshore islands (Sloping Island and Smooth Island) which are managed by PWS and are outside the scope of this plan. Three other declared weeds are listed as occurring in the Municipality in Statutory Weed Management Plans (whiteweed, nodding thistle and wide-edged nightshade) but there are no current records of these species in the Tasman LGA.

### 6.3 Eradication zones

Seven strategic areas have been identified as eradication zones due to their lower levels of weed infestation. The location of eradication zones is shown in Figure 12. These areas may contain several priority weeds, but the density and/or area of infestation is such that eradication is feasible. These zones typically adjoin large areas of intact native vegetation, or sites that are relatively free of ubiquitous weeds such as blackberry and broom. Some of these areas also contain significant natural assets such as threatened vegetation communities and rare flora populations.

Seven eradication zones have been identified as follows:

- 1) **Bangor** – Blackman Bay Road and Arthur Highway
- 2) **Nubeena Back Road** – Nubeena Back Road and Burdens Road
- 3) **Saltwater River** – Saltwater River Road, Littles Rd, Dam Road, Wiggins Rd, Hurdle Road, Heathy Hill Drive, Coal Mine Road, Kelletts Road
- 4) **Roaring Beach** – Roaring Beach Road and Staceys Road
- 5) **Nubeena Rd, Port Arthur** – Nubeena Road, Radnor Road, Marsh Road
- 6) **Safety Cove** – end of Safety Cove Road and Dog Bark Road
- 7) **Stormlea** – end of Stormlea Road and Thorntons Road

Containment lines for Priority 3 and 4 weeds are also shown on Figure 12. The aim of these containment lines is to address the risk of spreading declared weeds into Tasman National Park and other areas of significant natural value. Implementing hygiene measures will be crucial to preventing spread of weeds across containment lines, especially in relation to roadside slashing. Maintenance programs should be structured to work in un-infested areas first before entering weed infested areas. Consideration should also be given to the timing of roadside slashing to avoid the flowering/seeding periods of weeds such Spanish heath and serrated tussock.

### 6.4 Asset protection zones

A GIS model was developed to identify areas for asset-based protection. The selection criteria for determining asset protection zones is described in Appendix 2. Three asset protection zones were selected based on the significance of values as follows:

- 1) **Murdunna** - Arthur Highway, Murdunna to McGregor Road

*Threatened flora* – *Prasophyllum apoxychilum*, *Prasophyllum pulchellum*, *Thelymitra jonesii*, *Epacris virgata*, *Pimelea flava* ssp. *flava*

*Threatened vegetation communities* – *Eucalyptus ovata* forest and woodland

*Priority weeds* - blackberry, bluebell creeper, Montpellier broom, willow, fennel, Spanish heath

*Environmental weeds* – blue butterfly bush, blue periwinkle, montbretia, radiata pine, willow

2) **Eaglehawk Neck** - Arthur Highway, Eaglehawk Neck to Taranna, incl. Pirates Road and Gourlay Road

*Threatened flora* – *Euphrasia semipicta*, *Prasophyllum apoxychilum*, *Thelymitra jonesii*, *Epacris virgata*

*Threatened vegetation communities* - *Eucalyptus ovata* forest and woodland, *Eucalyptus viminalis* wet forest

*Priority weeds* - blackberry, bluebell creeper, English broom, Montpellier broom, willow, Spanish heath

*Environmental weeds* – briar rose, cotoneaster, montbretia

3) **McManus Hill** - Arthur Highway, near Fortescue Bay Road junction

*Threatened flora* – *Euphrasia semipicta*

*Threatened vegetation communities* - *Eucalyptus ovata* forest and woodland

*Priority weeds* – blackberry, Montpellier broom, Spanish heath

The location of asset protection zones is shown in Figure 13. The map also shows two areas that contain a substantial proportion of threatened vegetation communities in the Tasman. An attempt should also be made to eradicate weeds, in conjunction with State Growth, from these zones where it fits with other priorities.

Figure 12 - Location of eradication zones

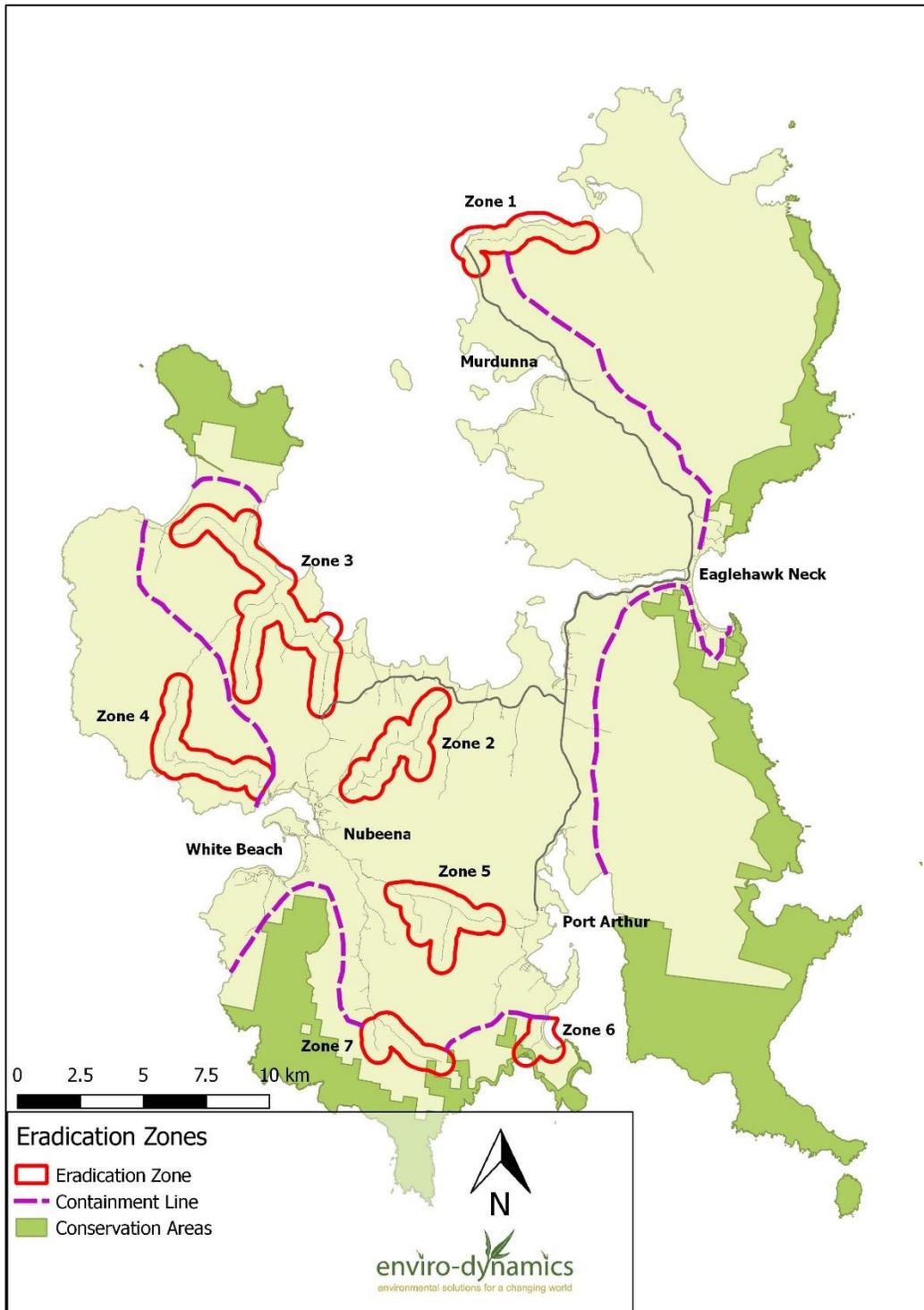
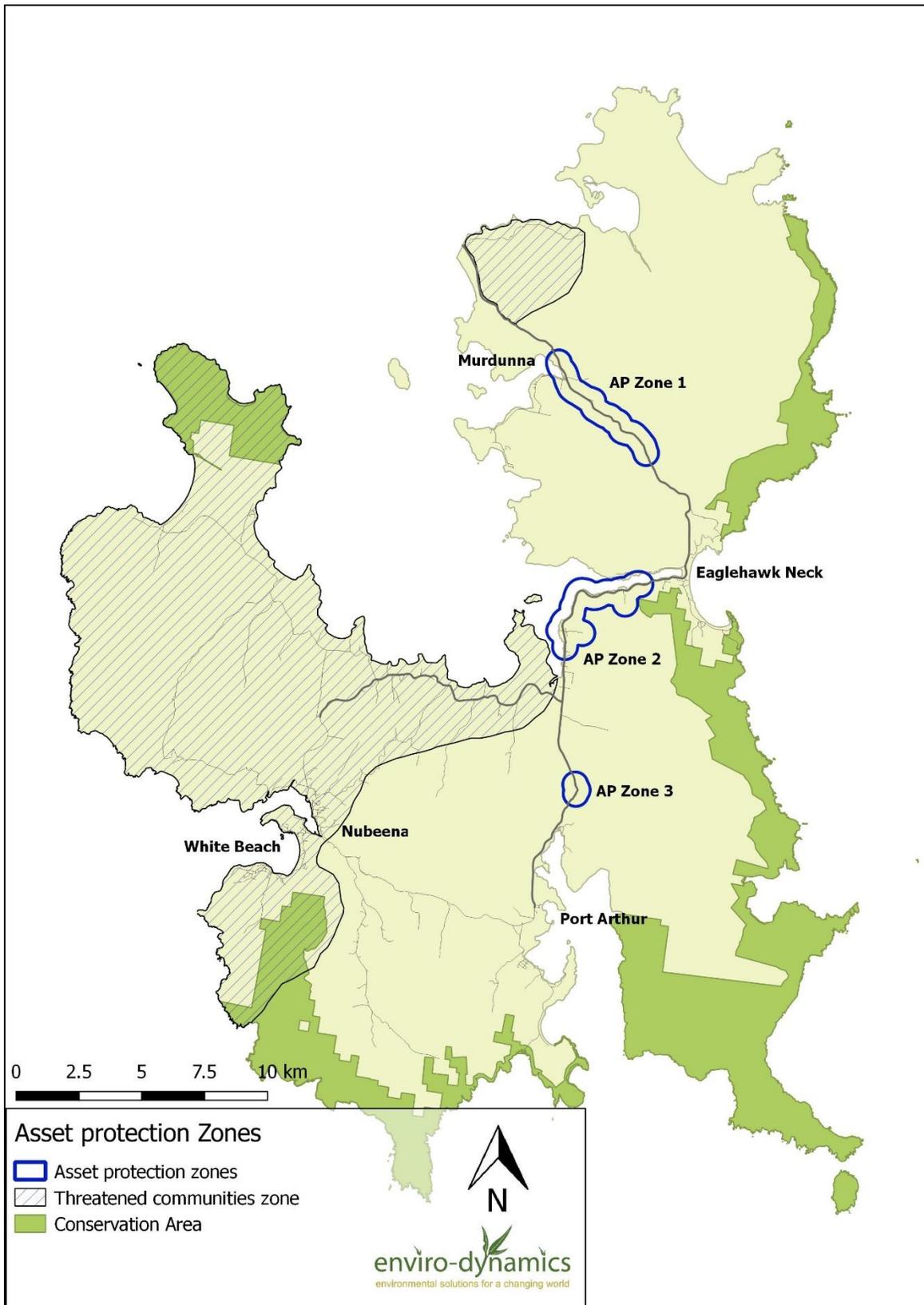


Figure 13 – Location of asset protection zones



## 7 Objectives & Actions

This section outlines the specific tasks required to achieve the goals identified in the Strategic Priorities (Section 5). All priority actions presume that weed management will be an ongoing part of asset maintenance and will be factored into annual budgets. It is acknowledged that external sources of funding will need to be sought to help achieve management outcomes due to the scale of weeds and the relative costs of management.

**Table 7.1 Objective 1. Eradicate Priority 1 & 2 weeds from the Municipality**

No.	Actions	Responsibility	Timeframe
1.1	Continue control programs for Priority 1 weeds along roadsides - African boxthorn, boneseed, gorse, holly, and pampas grass	Council, State Growth, landholders	Annually - with aim of eradication within 5 years
1.2	Continue control programs for Priority 1 weeds - asparagus fern, Paterson's curse, horsetail, and serrated tussock by assisting landholders with eradication	Council, landholders	Annually - with aim of eradication within 10 years
1.3	Implement immediate control program for fennel with the aim of eradication	Council, State Growth	Immediately - with aim of eradication within 5 years
1.4	Notify all landholders with Elisha's tears to remove weed from gardens	Council, landholders	Immediately - with aim of eradication within 1 year
1.5	Implement primary control programs for Priority 2 weeds – arum lily, bluebell creeper and foxglove with the aim of eradication	Council, landholders	Immediately - with aim of eradication within 5 years
1.6	Assist landholders with targeted weed control through incentive programs and the use of specialist contractors	Council	Annually for 5 years

No.	Actions	Responsibility	Timeframe
1.7	Notify landholders with Priority 1 and 2 weeds regarding control options	Council	Immediately
1.8	Monitor priority sites at one-year intervals to complete eradication	Council & private landowners	Annually for 5 years

**Table 7.2 Objective 2. Control priority weeds in eradication zones and establish containment boundaries**

No.	Actions	Responsibility	Timeframe
2.1	Develop weed control programs for the seven eradication zones and incorporate into routine maintenance programs where possible	Council, State Growth	2 years
2.2	Establish containment boundaries for Spanish heath along all roads leading into national parks and reserves	Council, State Growth, PWS, STT	2 years
2.3	Control Spanish heath along the Arthur Highway between Taranna and Port Arthur to prevent spread into the Tasman National Park	State Growth	Immediately
2.4	Identify opportunities to control willows, beginning with isolated occurrences in eradication zones and asset-protection zones	Council	2 years
2.5	Revisit eradication zones at one-year intervals to follow-up treatment	Council	Annually for 5 years

**Table 7.3 Objective 3. Control priority weeds in asset-protection zones**

No.	Actions	Responsibility	Timeframe
3.1	Develop weed control programs for asset-protection zones including the use of skilled weed control contractors	Council, State Growth	2 years
3.2	Undertake annual monitoring and follow-up in asset-protection zones	Council	5 years
3.3	Investigate options to support community groups in weed control within asset-protection zones	Council, Coast care groups	5 years

**Table 7.4 Objective 4. Implement effective weed hygiene measures to prevent spread throughout Municipality**

No.	Actions	Responsibility	Timeframe
4.1	Ensure machinery and materials used in road maintenance programs free of weed propagules prior to working in eradication zones, asset protection zones or across containment lines	Council, State Growth	Ongoing
4.2	Establish wash-down facilities near Dunalley or Eaglehawk Neck to limit the spread of weeds such as serrated tussock, or establish a suitable alternative method	Council, State Growth	5 years
4.3	Review maintenance program along Arthur Highway and Nubeena Rd to address spread of Spanish heath through verge slashing	Council, State Growth	2 years

4.4	Monitor stockpile sites for the emergence of Zone A weeds such as fennel	State Growth, Council	Ongoing
4.5	Review of Council wash-down facilities & hygiene practices	Council	5 years
4.6	Develop & implement a quarry hygiene program	Council, Relevant industry	2 years

**Table 7.5 Objective 5. Target other causes of weed spread in the region**

No.	Actions	Responsibility	Timeframe
5.1	Identify and promote appropriate garden waste and weed disposal sites – without prohibitive cost to the user	Council	5 years
5.2	Prepare and distribute livestock feed contamination detection & management pamphlet to relevant farm managers in association with drought and or fire events	Council	As required
5.3	Distribute environmental weeds pamphlet with other Council information	Council	As required

**Table 7.6 Objective 6. Active implementation of data collection and management**

No.	Actions	Responsibility	Timeframe
6.1	Update and maintain the Tasman Weeds Database	Council	Ongoing, annually
6.2	Report new incursions of declared Zone A weeds to DPIPWE	Council	As required

## 8 Monitoring & Evaluation

Monitoring & evaluation is an important part of effective weed management as it provides a measure for evaluating progress and determining which control methods are successful. It also allows accurate budgeting of annual works associated with weed management.

**Table 8.1 Objective 1. Monitor to understand the changing state of weed infestation in the Municipality**

No.	Actions	Responsibility	Timeframe
1.1	Update Tasman Weeds Database to a suitable new format and incorporate additional species from survey	Council	Immediately
1.2	Monitor all previous control sites in the Tasman Weeds Database to ensure eradication (excluding Spanish heath sites)	Council	Two years
1.3	Review weed management program to measure performance against plan objectives	Council	Annually
1.4	Adapt plan and actions to accommodate findings (such as new infestations) or catastrophic events (major bushfire)	Council	As required

## 9 Budget

An estimate of the budget required to undertake control at priority sites is provided in this section (Table 9.1). This budget is estimated for the 2018-19 financial year. Costs for follow up will be required to maintain control and the costs will be similar for at least 3 years due to the time taken to search and control small seedlings and regrowth. Costs are to be incurred by Council, State Growth, PWS and private landowners dependent on land tenure and any agreements reached between relevant parties.

**Table 9.1 Budget estimates for Priority weeds**

Priority Weed	Comments	Time (hours)	Cost (based on staff wages at \$50/hr or contractor at \$70/hr)
<b>Asparagus fern</b>	1 site – mostly on private land	8	\$400
<b>African Boxthorn</b>	5 sites – all small populations	8	\$400
<b>Boneseed</b>	11 sites – mostly small populations, follow-up	24	\$1,200
<b>Elisha's Tears</b>	2 sites - private gardens in Port Arthur. Requires landholder notification	2	\$100
<b>Fennel</b>	8 sites - mostly isolated plants along SG roads	8	\$560
<b>Gorse</b>	2 sites – isolated plants, follow-up	8	\$400
<b>Holly</b>	3 sites – isolated plants, control	4	\$200
<b>Horsetail</b>	1 site – inspection and control as required	2	\$100
<b>Paterson's curse</b>	5 sites in localised area in Murdunna - none on Council land	15	\$1050
<b>Pampas grass</b>	4 sites – mostly single plants	8	\$400
<b>Ragwort</b>	2 sites – State Growth & private land. None on Council land	15	\$1050
<b>Serrated tussock</b>	3 previous sites – none of Council land	15	\$1050
<b>Total</b>			<b>\$6,610</b>

Additional time/costs for traffic management have not been factored in to the budget due to the variability of site requirements.

Table 9.2 Budget estimates for Eradication zones

Eradication zone	Comments	Road distance (km)	Est. time (hours)	Cost (based on contractor services at \$70 p.hr)
<b>Bangor</b>	Isolated weeds, threatened vegetation communities	6.3	6	\$300
<b>Nubeena Back Rd</b>	Very few weeds	9.8	6	\$300
<b>Saltwater River</b>	Patchy weeds, threatened vegetation communities	22	16	\$800
<b>Roaring Beach</b>	Very few weeds, vector into reserves	9.3	8	\$400
<b>Nubeena Rd - Port Arthur</b>	Patchy weeds, intact native vegetation, tourist route	9.1	8	\$400
<b>Safety Cove</b>	Isolated weeds, threatened vegetation communities, coastal reserves, vector into Tasman NP	2.3	5	\$250
<b>Stormlea</b>	Isolated weeds, vector into Tasman NP	5	6	\$300
<b>Total costs</b>				<b>\$2,750</b>

Additional costs for traffic management have not been factored in to the budget due to the variability of site requirements. Some of these areas may require significant traffic management e.g. Saltwater Creek and Nubeena Rd which need to be considered.

Table 9.3 Budget estimates for Asset-protection zones

Asset protection zone	Comments	Road distance (km)	Est. time (hours)	Cost (based on contractor services at \$70 p.hr)
<b>Murdunna</b>	State Growth road Extensive blackberry, broom and Spanish heath	8.2	24	\$1680
<b>Eaglehawk Neck</b>	State Growth road and Council roads Patchy Spanish heath and blackberry	6.3	16	\$1120
<b>McManus Hill</b>	State Growth Road Extensive Spanish heath, patchy blackberry and broom	1.9	8	\$400
<b>Total costs</b>				<b>\$3,200</b>

All of these sites are on State Growth roads and will require significant traffic management. Additional costs for traffic management have not been factored in to the budget. Council will work collaboratively with State Growth to facilitate actions being completed.

Funding for asset protection zones to be requested by Council from State Growth.

## 10 References

Bishop (2000) *Community Weed Management in Tasmania: A guide to developing and implementing a community weed management strategy*, Tasmanian Weed Management Committee, Hobart

DPIPWE (2015) *Invasive Species, Information for landowners in fire affected areas, Stock feed on farms*, <http://dPIPWE.tas.gov.au/invasive-species/weeds/weed-publications-and-resources/weed-information-for-landowners>

DPIPWE Statutory Management Plans for: *Asparagus fern, African boxthorn,; blackberry, boneseed, Pampas grass, Willows, Montpellier Broom; Slender Thistle, Californian Thistle and English Broom* available from: <http://dPIPWE.tas.gov.au/invasive-species/weeds/weeds-index>.

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Temple-Smith, Ruth (2011) *Southern Tasmanian Weed Strategy 2011-2016*

[http://www.nrmsouth.org.au/uploaded/287/15131387\\_15southerntasmanianweedss.pdf](http://www.nrmsouth.org.au/uploaded/287/15131387_15southerntasmanianweedss.pdf)

## Appendix 1 – Priority weed control sites from 2018 survey

Weed	Location	No. plants	Area occupied	Easting	Northing	Council record/site number
<b>African boxthorn</b>	<b>Saltwater Road – 4 sites:</b>					
	850m east of Littles Road junction	1 large individual	5m <sup>2</sup>	561621	5233931	-
	750m west of Littles Road junction	1 plant	5m <sup>2</sup>	560624	5234318	-
	1.7km south-east of Coal Mine Rd junction	1 plant	5m <sup>2</sup>	558503	5237341	-
	120m south-east of Coal Mine Rd junction	1 plant	5m <sup>2</sup>	557670	5238100	-
	<b>Nubeena Road</b> , 860m north east of Littles Rd Junction	1 plant	5m <sup>2</sup>	561026	5231823	-
<b>Asparagus fern</b>	<b>Koonya Jetty Road</b> , 320m down rough road.	5-10 plants	25m <sup>2</sup>	566156	5232456	<b>Site AF1.</b> Extensive control history. Landowners have agreed to ongoing control
<b>Boneseed</b>	<b>White Beach area – 6 sites:</b>					-
	Beach St 90m north of Peppermint Drive	1 plant	5m <sup>2</sup>	559382	5226946	<b>Site BS04A</b> - initial treatment in '09

Weed	Location	No. plants	Area occupied	Easting	Northing	Council record/site number
	Apex Point Rd 120m west of Beach Rd	5-10 plants	5m <sup>2</sup>	559274	5226795	<b>Site BS04F</b>
	White Beach Rd – 120m east of Parsons Bay Rd	4 plants	5m <sup>2</sup>	560160	5226726	-
	Lagoon Road - 23m up dead cul de sac	3 plants	5m <sup>2</sup>	560003	5225297	-
	Lagoon Road - 500m up road from northern entrance	3 plants	5m <sup>2</sup>	560151	5225362	-
	White Beach Rd – 720m west of Nubeena Rd	2 plants	5m <sup>2</sup>	560609	5226542	-
	<b>Sommers Bay Road</b> 70m south of Paul Ct	2 plants	5m <sup>2</sup>	568318	5241267	-
	<b>Coal Mine Rd</b> – 10m north of Saltwater River Rd	2 plants	5m <sup>2</sup>	557643	5238221	Nearby <b>Site BS17</b>
	<b>Gourlay Rd</b> – 2 sites					
	End of road in beach reserve	2 plants	5m <sup>2</sup>	570301	5234666	<b>Site BS93</b>
	10m from end of road in road casement	2 plants	5m <sup>2</sup>	570322	5234653	-
	<b>Dog Bark Rd</b> – private land	2 plants	5m <sup>2</sup>	569886	5218075	Extensive records – <b>Sites BS12x</b> recently pulled plants
<b>Elisha's Tears</b>	<b>174 Safety Cove Rd</b> - planted in garden	1 plant	5m <sup>2</sup>	568979	5221462	-
	<b>124 Radnor Rd</b> - planted in garden	1 plant	5m <sup>2</sup>	565581	5222879	-

Weed	Location	No. plants	Area occupied	Easting	Northing	Council record/site number
<b>Fennel</b>	<b>Arthur Highway – 2 sites</b>					-
	1.5km corridor south of Blackman bay Rd		2000m <sup>2</sup>	From: 566632	From: 567104	-
				To: 5249992	To: 5249145	
	500m corridor north of Sommers Bay Rd		800m <sup>2</sup>	From: 570457	From: 5245131	-
				To: 570647	To: 5244818	
	<b>Sommers Bay Rd – 1km corridor 500m west of highway</b>			From: 570369	From: 5244687	-
				To: 569639	To: 5244748	
	<b>Duck Creek Rd – 350m from Sommers bay Rd</b>	1 plant	5m <sup>2</sup>	569799	5243282	-
<b>Lyne St – 380m from Blowhole Rd</b>	1 plant	5m <sup>2</sup>	575022	5236630	-	
<b>Coolstore Rd – 40m from eastern junction with Nubeena Rd</b>	2 plants	5m <sup>2</sup>	564083	5232946	-	
<b>Premaydena area – 2 sites</b>					-	

Weed	Location	No. plants	Area occupied	Easting	Northing	Council record/site number
	<b>Saltwater Rd</b> 100m north of shop	2 plants	5m <sup>2</sup>	562932	5232884	-
	<b>Nubeena Rd</b> 300 m east of shop	<10 plants	5m <sup>2</sup>	563151	5232808	-
<b>Gorse</b>	<b>Arthur Hwy</b> – 1.8km north of Sommers Bay Rd	3 plants	5m <sup>2</sup>	570139	5245886	<b>Site GR41</b>
	<b>Arthur Hwy</b> – 5.3km north of Sommers Bay Rd	4 plants	5m <sup>2</sup>	568095	5247273	<b>Site GR15</b>
<b>Holly</b>	<b>Blow Hole Road</b> – 1.3 km west of Tasmans Arch Road	2 plants	5m <sup>2</sup>	576728	5234631	-
	<b>Saltwater River Road</b> – 1.7km north west of Nubeena Road junction	3 plants	5m <sup>2</sup>	562496	5233800	-
	<b>Lookout Road</b> – 3.2 km south from Safety Cove Road junction	5-10 plants	5m <sup>2</sup>	567513	5220169	-
<b>Pampas grass</b>	<b>Old Jetty Rd</b> – 2.2 km down Old Jetty Rd	1 plant	5m <sup>2</sup>	573759	5236938	No - new record. In garden rubbish dump
	<b>Nubeena Rd</b> – 600m from Arthur Highway up bank	5-10 plants	5m <sup>2</sup>	570016	5232054	Known from NVA but not council records

Weed	Location	No. plants	Area occupied	Easting	Northing	Council record/site number
	<b>Smith St</b> – 700m from Main Rd – near gate	3 plants	5 – 10m <sup>2</sup>	560885	5227209	<b>Site P138</b>
	<b>Tip Rd</b> – 150m from Nubeena Back Rd	1 plant	5m <sup>2</sup>	561334	5228085	-
<b>Ragwort</b>	<b>Arthur Highway</b> - 1km north of Fortescue Road	1 plant	5m <sup>2</sup>	570364	5227401	-
	<b>Newmans Creek Road – large infestations on private land</b>		200m <sup>2</sup>	568536	5230149	<b>Site R05</b> , Jan '18 survey suggests an increase from historic council records
			200m <sup>2</sup>	568561	5230358	
			300m <sup>2</sup>	568265	5230665	

This table only includes priority weed sites recorded during the 2018 survey. Additional sites for priority weeds have previously been recorded in the Tasman Weeds Database, especially on private land. For example, Patterson’s curse and serrated tussock are known to occur on private land in the municipality and have previously been targeted by Council.

## Appendix 2 - Selection criteria for Asset protection zones

### *Threatened flora*

Threatened flora records within 500 m of roads were extracted from the Natural Values Atlas and ranked according to status (refer to Table1). Locations with Priority 1 or 2 species were used as the key driver for selecting asset-protection zones. Locations with Priority 3 species were excluded from the selection process due to the number of locations but could be considered in the future if resources allowed.

Table A2.1: Threatened flora prioritisation

Priority	Status	# species	Inclusion criteria
<b>1</b>	EPBCA – Critically endangered	1	Included if records reliable. <i>Limonium baudinii</i> was excluded due to low vulnerability to weed invasion.
	Endangered	3	
	Vulnerable	1	
<b>2</b>	TSPA - Endangered	2	Included if records reliable. <i>Epacris virgata</i> was treated as Priority 3 due to substantial number of records.
	Vulnerable	2	
<b>3</b>	TSPA Rare	12	Only included where occurring with Priority 1 or 2 species.

EPBCA = *Environmental Protection and Biodiversity Conservation Act 1999*

TSPA = *Threatened Species Protection Act 1995*

### *Threatened vegetation communities*

Current TASVEG 3.0 mapping was used to identify significant areas of native vegetation within 500 m of the road network. Threatened vegetation communities as listed under the *Nature Conservation Act 2002* (NCA) were ranked according to status and area occupied in the Tasman municipal area. There is also one nationally threatened ecological community as listed under the EPBC Act mapped within the municipality, lowland native grasslands of Tasmania. *Eucalyptus ovata* forest and woodland is also in the process of being listed under the EPBC Act and was ranked accordingly.

Table A2.2: Threatened vegetation prioritisation

Priority	Vegetation community	Status	Area (Ha) within Tasman municipality	Area (Ha) within 500 m buffer of roads
1	Lowland native grasslands of Tasmania	EPBCA - Critically Endangered	Insufficient data	Insufficient data
2	<i>Eucalyptus ovata</i> forest and woodland	<sup>1</sup> EPBCA - Critically Endangered	475	100
3	<i>Eucalyptus viminalis</i> wet forest	NCA	9	5
4	Wetlands	NCA	101	1
5	<i>Eucalyptus viminalis</i> - <i>Eucalyptus globulus</i> coastal forest and woodland	NCA	146	55
6	<i>Eucalyptus tenuiramis</i> forest and woodland on sediments	NCA	657	79
7	<i>Eucalyptus globulus</i> dry forest and woodland	NCA	1238	505
8	<i>Eucalyptus amygdalina</i> forest and woodland on sandstone	NCA	2591	756

### Agricultural assets

Agricultural assets were evaluated as part of the prioritisation process. Given the large amount of agricultural land within the municipality, only high value agricultural assets were included in the GIS model. Most of the agricultural land in the Tasman Peninsula is dryland grazing. The only high value land use is irrigated horticulture, typically fruit orchards and vineyards. Orchards are considerably less susceptible to weed invasion than cropping situations and were therefore excluded from the prioritisation process.

<sup>1</sup> *Eucalyptus ovata* Forest and Woodland in Tasmania is the process of being listed under the EPBC Act.