Strategic Weed Management Plan for the West Coast Region

Prepared by Matt Rose of Natural State for the Tasmania Parks and Wildlife Service.
March 2018.

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1. Introduction

Natural State was approached by Tasmania Parks and Wildlife Service (PWS) to provide a strategic weed management plan to assist staff based in the Queenstown and Strahan PWS offices in Tasmania.

The PWS Northwest Region Queenstown and Strahan staff are responsible for managing over 1,000,000 hectares of land owned by the State Government of Tasmania. The extent of land to be managed with limited resources combined with the abundance and density of weeds on the West Coast reinforces the importance of prioritising future weed management work.

These weed infestations are threatening the condition and integrity of native vegetation communities, diminishing the aesthetic values and tourism experience for visitors, and in the case of Gorse, increasing the risk of wildfire.

This plan seeks to set realistic expectations for what can be achieved in the short term based on over 20 years of field experience. The weed management recommendations in this plan cover a 5 year period.

The recommendations combine previous PWS weed control sites and actions suggested from a range of plans and documents most notably the Tasmanian Wilderness World Heritage Area Management Plan (DPIPWE, 2016) and the Weed Control Plan for Queenstown Strahan 2015/16 (Murphy, 2015).

In summary the recommended priority weed management areas include:

1. the Lyell Highway between Queenstown and Derwent Bridge within the TWWHA,
2. the Andrew, Franklin & Gordon Rivers catchments within the TWWHA,
3. a Sea Spurge exclusion zone in the Southwest Conservation Area,
4. sites which buffer and enhance Threatened Native Vegetation Communities,
5. sites which enhance aesthetic and natural values amongst iconic regional tourism assets.

Many of these priority areas require immediate follow up work to consolidate on previous investments. Ongoing monitoring will be required to assess and evaluate the success of the control works and to plan follow up treatments for regrowth or recruitment.

A long term commitment of resources will be required to manage the many threats facing the natural areas of the West Coast Region, including the Tasmanian Wilderness World Heritage Area[1].

It is hoped that this plan clearly states the weed management objectives and strategic direction for the Parks and Wildlife Service – West Coast Region for the next 5 years, can support further collaboration with local stakeholders, and can assist with obtaining ongoing funding to implement these works.

[1] State of the Tasmanian Wilderness World Heritage Area 2004, Conclusions and Proposed Actions (p.232)

2. Methodologies

2.1 Site surveys

Field survey work was conducted by Matt Rose of Natural State and PWS Rangers James Mundy and Matt James during 14th & 15th September 2017. The only sites not actually surveyed were the Andrew, Franklin and Gordon Rivers sites, Sarah Island, Pieman Head, Howard's Road & Yolande River.

2.2 Mapping

Field data was collected by Natural State recording weed observations, site conditions & coordinates using a handheld GPS unit (Garmin GPSMAP64) in the UTM UPS position format and WGS84 map datum. The GPS accuracy for the field survey work was between 3 metres and 8 metres.

The waypoints were converted from Garmin express files (.gpx) into vector data in the ESRI point shapefile format (.shp).

Further data was sourced from:

1. Cradle Coast Natural Resource Management (CCNRM) - records of their weed mapping databases in the ESRI shapefile (.shp) format, highlighting CCNRM weed management projects delivered on the West Coast through federal government funding between 2009 and 2016.

2. Natural Values Atlas Database (NVA) and The Land Information System Tasmania (LISTmap) - targeting Blackberry, Elisha's Tears, English Broom, Gorse, Montpellier Broom, Pampas Grass and Spanish Heath observations throughout Tasmania extracted as individual ESRI shapefile's.

3. The Land Information System Tasmania (LISTmap) - threatened vegetation communities extracted as ESRI shapefile's.

4. Mr John Marsden-Smedley – weed mapping along the Franklin / Gordon Rivers, along parts of the Lyell Highway and on behalf of the Sea Spurge Remote Area Teams (SPRATS).

5. Parks and Wildlife Service (PWS) - internal weed mapping records.

Data was then presented as vector files in ArcGIS to enable further analysis and map production. The PWS staff prefer using the TASMAP raster file so all Management Area maps in this document use the TASMAP format rather than satellite imagery.

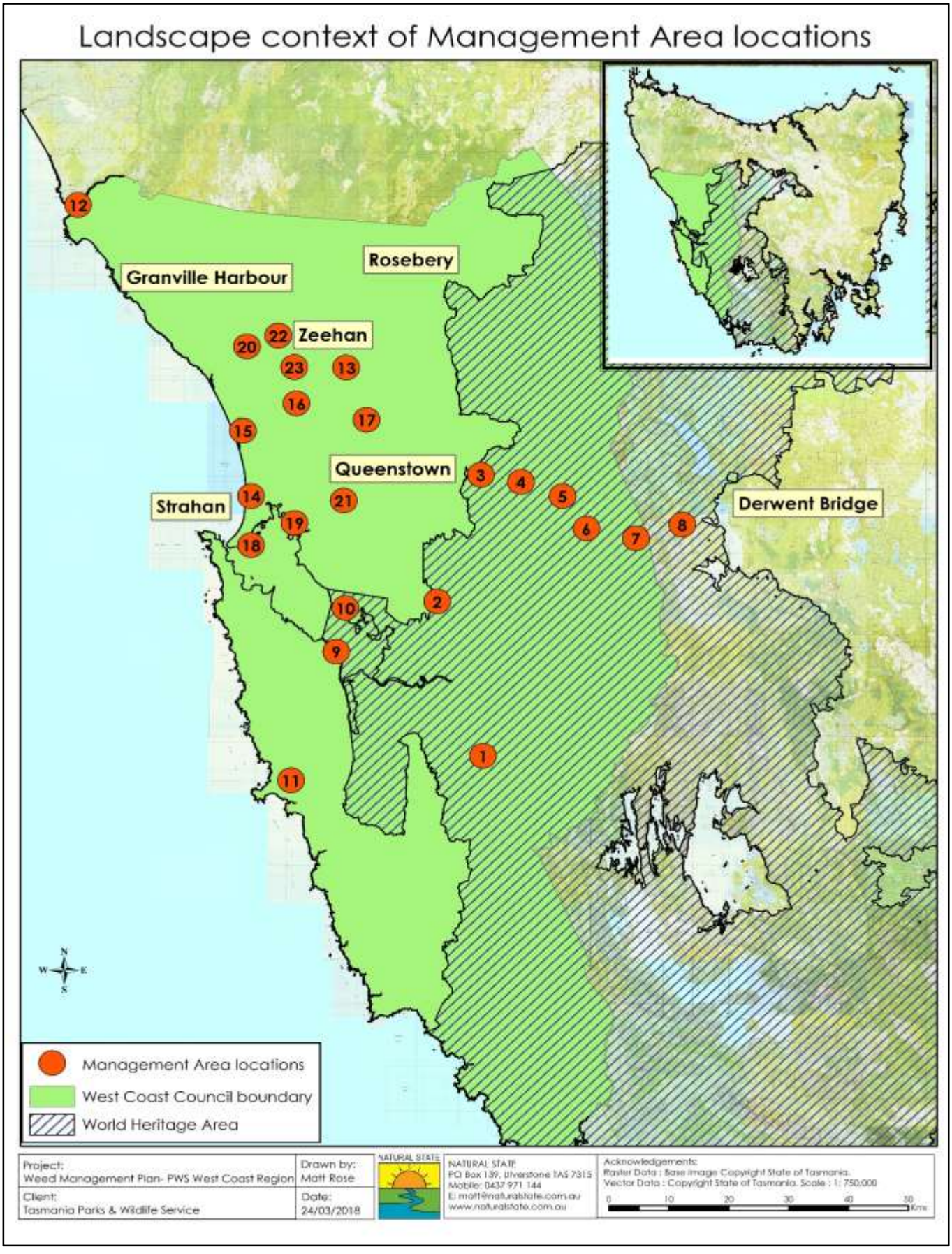
Please note that the mapping is limited to the plants which have been observed and mapped by GPS only. The actual extent and density of weeds within the management areas is likely to be greater than what is presented in the maps in this document.



Photos 1,2 & 3 : Some common weeds of the West Coast Region include from left to right Spanish Heath, Holly and Gorse.

3. Plan area

The management areas in this plan are all situated on public land within the PWS Northwest Region which are managed by staff from the Queenstown and Strahan offices, located within the West Coast Council of Tasmania.



4. Weed management legislation

This plan targets, but is not limited to, the following weeds: Blackberry, Elisha's Tears, English Broom, Gorse, Holly, Montpellier Broom, Pampas Grasses, Slender Thistles, Spanish Heath, Spear Thistle & Tutsan.

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

Landowners within the West Coast Council area have legal responsibilities for managing declared weeds.

Table 1: Target weed status.

Scientific Name	Common Name	Declared weed in TAS	Weed of National Significance (WoNS)
Cirsium vulgare	Spear Thistle		
Carduus pycnocepalus	Slender Thistle	YES – Zone A	
Carduus tenuiflorus	Winged Slender Thistle	YES – Zone A	
Cortaderia species	Pampas Grasses	YES – Zone A	
Erica lusitanica	Spanish Heath	YES – Zone B	
Leycesteria Formosa	Elisha's Tears	YES – Zone B	
Hypericum androsaemum	Tutsan		
Hieracium species	Hawkweed	YES – Zone A	
Rubus fruiticosus var. aggregate	Blackberry	YES – Zone B	YES
Cytisus scoparius	English Broom	YES – Zone B	YES
Genista monspessulana	Montpellier Broom	YES – Zone B	YES
Ilex aquifolium	Holly	YES	
Ulex europaeus	Gorse	YES – Zone B	YES

The West Coast Council is classified as a Zone A municipality for Hawkweed, Pampas Grasses, Winged Slender Thistle and Slender Thistle. Eradication is the most appropriate management objective for Zone A municipalities which have little or no Hawkweed, Pampas Grasses, Winged Slender Thistle and Slender Thistle, or when a credible plan for eradicating existing infestations is being developed and implemented. The ultimate management outcome for Zone A municipalities is achieving and maintaining the total absence of Hawkweed, Pampas Grasses, Winged Slender Thistle and Slender Thistle from within municipal boundaries.

The West Coast Council is classified as a Zone B municipality for Blackberry, Elisha's Tears, English Broom, Gorse, Montpellier Broom and Spanish Heath. Containment is the most appropriate management objective for Zone B municipalities which have problematic infestations but no plan and/or resources to undertake control actions at a level required for eradication. The management outcome for Zone B municipalities is ongoing prevention of the spread of these weeds from existing infestations to areas free, or in the process of becoming free, of these species.

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

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

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

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

Gorse - http://weeds.ala.org.au/WoNS/gorse/

English Broom & Montpellier Broom - http://weeds.ala.org.au/WoNS/brooms/

4.1 Registered herbicides and mix rates

The registered herbicides (and mix rates) for use in Tasmania for the Declared Weeds recorded are available in detail on the DPIPWE Invasive Species website. For more information, or future reference, a web link for each species is provided below:

Herbicides for Blackberry control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/blackberry/blackberry-herbicides-for-control

Herbicides for Elisha's Tears control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/elishas-tears/elishas-tears-herbicides-for-control

Herbicides for English Broom & Montpellier Broom control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/weeds-index-declared-weeds/broom/broom-herbicides-for-control

Herbicides for Gorse control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/weeds-index-declared-weeds/gorse/gorse-herbicides-for-control

Herbicides for Hawkweed control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/hawkweed/hawkweed-herbicides-for-control

Herbicides for Pampas Grass control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/pampas/pampas-herbicides-for-control

Herbicides for Slender Thistle control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/weeds-index-declared-weeds/slender-thistle/slender-thistles-herbicides-for-control

Herbicides for Spanish Heath control
http://dpipwe.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/spanish-heath/spanish-heath-herbicides-for-control

4.2 Permits required for off-label herbicide use

Some herbicides are not registered for certain uses in Tasmania, which will not be mentioned on product labels. The herbicides recommended in this plan require copies of the following Australian Pesticides and Veterinary Medicines Authority (APVMA) Permits to be kept to allow off-label herbicide use : APVMA Permit PER 8949, PER 10741 & PER 13160.

For more information visit the APVMA website - http://apvma.gov.au/.

Please note: at the time of writing this document these permits and other relevant permits for weed control in non-crop situations have expired. They are currently in the process of being renewed by DPIPWE.

5. Challenges and logistics of weed management works in the West Coast Region

The West Coast is a very unique region which presents several challenges when planning to implement effective weed control work. Some of the specific logistical challenges that need consideration are included below.

5.1 Planning

The Parks and Wildlife Service may be required to undertake a Reserve Activity Assessment (RAA) as part of the on ground works planning process.

Recent traffic management legislation requires the preparation of certified Traffic Management Plans for any works on roadsides. It is recommended that PWS engage a traffic management company or the West Coast Council to prepare Traffic Management Plans for the management areas where work will be conducted along the Lyell and Zeehan Highways. Staff or contractors with the 'Implement Traffic Management Plan' qualifications can then undertake work on these sites as long as the plan is adhered to.

5.2 Workplace safety

Workplace Health and Safety legislation requires Safe Work Method Statements (SWMS) or Job Safety Analysis (JSA) to be completed before commencing weed control work. Risk management measures will need to cover the job tasks, potential hazards, and hazard controls to be implemented, communications plans, public safety, first aid provisions, Personal Protective Equipment (PPE) requirements, and working on steep, or in remote areas of the region.

Access to some sites within the TWWHA will require personnel to walk in with equipment or to be transported by raft, boat or even helicopter. For the more remote management areas, food, water, camping equipment and medical supplies will also be required.

5.3 Adequate funding

The current PWS Northwest Region Queenstown and Strahan operational budget allocation for weed management is less than $20,000 per year. A total budget of at least $250,000 is required over 5 years for contractor or specialised labour and herbicides to cover the 23 Management Areas in this plan. The equivalent time for a PWS staff member to implement the same tasks equates to at least 65 days per year.

Opportunities for external funding programs can often be limited. Short lead in times often miss the optimal timing required to plan and implement works adequately to achieve the best results. The previous one or two year federal government funding model did not enable long term weed management programs to follow up on the initial investments. Future funding should be sought for a period of at least 5 years at a time.

The most likely opportunity to attract funding to implement this plan will require communicating the primary objective to protect and enhance the natural values of the TWWHA, threatened native vegetation communities and threatened species with regional stakeholders (in particular Cradle Coast NRM, Tourism Tasmania and Department of State Growth).

5.4 Biosecurity procedures

Vehicles and machinery are a common vector for weed dispersal. This can easily be managed through system controls such as enforcing hygiene procedures. Contractors, volunteers and even apiarists, should comply with the '*Weed and Disease Planning and Hygiene Guidelines* (DPIPWE, 2015)' and '*Keeping it Clean field hygiene manual* (DPIPWE, 2010)' as minimum standards.

5.5 Engaging contractors

Where contractors are engaged they should have a current Commercial Operators License issued by DPIPWE, hold current public liability insurance cover for at least $10,000,000, and should be qualified, competent and experienced in the services being offered. If the contractors employ staff, they will also need Workers Compensation Insurance.

As mentioned previously, traffic management qualifications are required for work on roadsides. The minimum qualifications required are 'Traffic Control with a Stop/Slow Bat' and 'Implement Traffic Management Plan'. This extra responsibility will add further costs to the estimated budgets due to the traffic management requirements.

There are a limited number of qualified and licensed contractors available in North West Tasmania that can be called upon to provide these services and deliver effective results, when needed. Scheduling contractors in to do the work can require a lead up time of at least several months' notice, several contractors may be required to meet timeframes. Budget allocations will also need to factor in contractor accommodation, food & travel expenses.

5.6 Weather

Suitable weather conditions for spraying work can be very limited in this region. The optimal time with ideal conditions for spraying is generally between Spring and Autumn, however the available window of opportunity is often much shorter than this. Constant analysis of long term weather forecasting to monitor predicted rainfall and wind speed / direction will help to maximise efficiency when planning spraying work. Even with fastidious monitoring and planning the weather is unpredictable on the West Coast. Early morning starts can make the most of suitable conditions before the wind picks up during the middle of the day.

5.7 Water supply

The quantity of water required each day will depend on the technique used, density of the target species and proximity of water supply to work sites. Spot spraying with a spray unit can use 1,000L of water per day, per unit; even more if fitted with two hose reels. Additional water supplies of at least 1,000L per day will be beneficial, particularly on the Lyell Highway. Water will also be required for washing down and flushing out equipment after use.

5.8 Proximity to apiary sites

According to PWS staff the current Memorandum of Understanding with apiarists states a weed spraying exclusion zone of 1Km from beehive sites to prevent potential chemical exposure.

Depending on the season, the Leatherwood flowering occurs during December and January. The current strategy to avoid disruption includes changing the time of chemical control to when hives have been removed between late Autumn and early Spring (Murphy, 2015). The efficacy of weed treatments during the cooler months of year will be reduced.

Contractors and volunteers should be made aware of the proximity of control sites to licensed beehive locations.

6. Collaborating with local stakeholders

Further collaboration should be encouraged with a range of local stakeholders to discuss options for co-investing, with either funding, in-kind labour, equipment or other resources to help implement this plan. Some of the stakeholders specific to this plan include:

Birthday Bay Track Conservation Group
Mr Hugh Calvert
Phone: 0409216650, Email: hugh.calvert@yahoo.com.au

Cradle Coast NRM
Mr Jay Rowley - Biodiversity Coordinator
Phone: 03 6433 8400, Email: jrowley@cradlecoast.com

Department of State Growth
Mrs Jillian Jones - Environmental Extension Officer, Network Planning.
Phone: 03 6166 3432, Email: Jillian.Jones@stategrowth.tas.gov.au

Granville Harbour Community Coastcare Group
Mr Ian Wotherspoon
Phone: 03 6471 6273, Email: wothers@activ8.net.au

King River Rafting
Mr Paul Steane and Mrs Michele Cordwell-Steane
Phone: 0409 664 268, Website: http://www.kingriverrafting.com.au

Sea Spurge Remote Area Teams - SPRATS
Mr Chris Arthur - President
Email: SPRATS@wildcaretas.org.au

R Stephens Honey
Mr Ewen Stephens
Phone: 0418 534 057

Sustainable Timber Tasmania
Mr John McNamara - North West Region Manager
Phone: 03 6433 2666

Tasmanian University White Water Rafting Club
www.tasunirafting.com.au

Tourism Tasmania
Ms Theresa Lord – Regional Tourism Manager North West / West Coast
Phone: 0419 372 400 , Email: tlord@cradlecoast.com

West Coast Council
Phone: 03 6471 4700, Email: wcc@westcoast.tast.gov.au

West Coast Weed Management Group
Mr Lindsey Newman - Chairperson
Phone: 0418 368 708, Email: lnewman@westcoast.tas.gov.au

West Coast Wilderness Railway
Phone: 03 6471 0100, Email: enquiries@wcwr.com.au

7. Prioritisation of management areas

The recommended management areas are listed in order of priority after considering:

1. statutory obligations,
2. the condition and reservation category of the natural assets,
3. the risks posed to the vegetation condition and threatened vegetation communities,
4. the aesthetic and tourism impacts for visitors,
5. follow-up requirements from previous works,
6. ability to achieve successful results,
7. and basic benefit and cost analysis.

This plan incorporates weed management activities to protect and enhance the following PWS reserves:

Table 2: PWS Reserves where proposed weed management activities will occur.

Reserve name	Total reserve area - Hectares
Tasmanian Wilderness World Heritage Area (TWWHA)	1,584,000
Franklin- Gordon Wild Rivers National Park	461,774
Southwest National Park	7,775
Pieman River State Reserve	3,561
Crotty Ridge Regional Reserve	3,125
Four Mile Beach Regional Reserve	0.01
Mt Dundas Regional Reserve	38,846
Mt Heemskirk Regional Reserve	16,701
Tikkawoppa Plateau Regional Reserve	4,534
West Coast Range Regional Reserve	18,041
Arthur Pieman Conservation Area	98,657
Ocean Beach Conservation Area	4,052
Princess River Conservation Area	8,634
Southwest Conservation Area	138,452
Macquarie Harbour Historic Site	7,870

Photo 4: Little Henty River Gorse regrowth since 2009.

8. Recommended management areas

The following recommendations are for weed control works within the newly defined management areas. The recommended approach is to control the weed infestations using a combination of mostly chemical and mechanical control techniques.

Annual costs associated with the works have been estimated for each management area, over a 5 year period. The actual budgets required will be subject to ongoing monitoring of the treatment success, weed regrowth and the quantity of PWS herbicide stock remaining.

The cost estimates in this plan provide a guide only to assist with allocating budgets for engaging contractor or volunteer labour and the herbicide expenses, or for allocating PWS staff labour. For comparison, in the case where an annual budget is not available, the PWS staff time required to do the same activity has also been conservatively estimated in consultation with local PWS staff.

The contractor labour and herbicide costs are mostly estimated at the current market rates as of January 2018. Contractor spraying labour has been calculated at $90 per hour for an 8 hour day. Prices do not include traffic management requirements, travel time, accommodation and meal allowances.

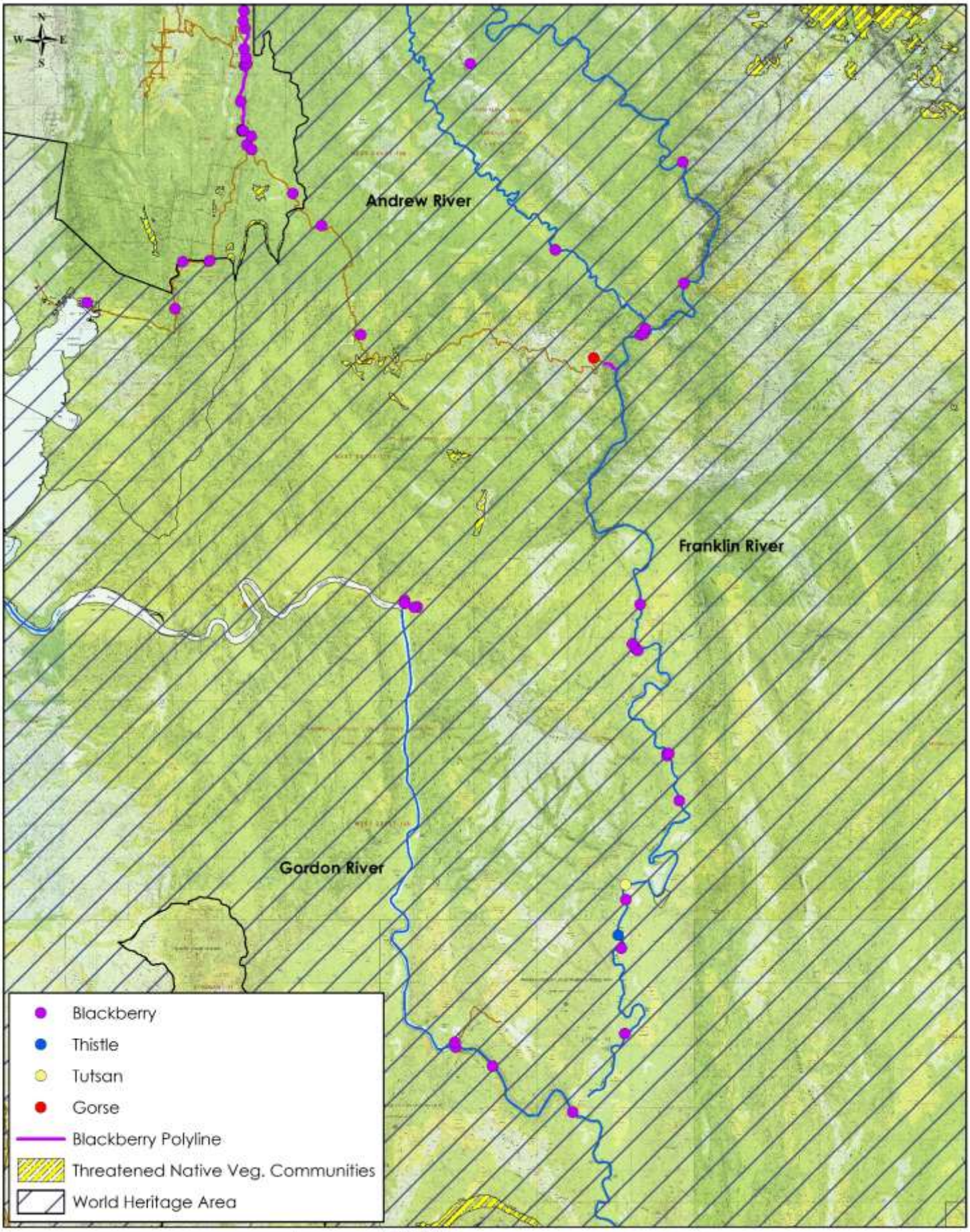
Two management areas in particular, Andrews, Franklin & Gordon Rivers (MA1) and Ocean Beach & Southwest Conservation Area (MA11) are not practical for contractor or PWS labour to implement due to the extent and location. Ongoing collaboration with the volunteer groups who have managed these areas previously should be fostered e.g. Tasmanian University White Water Rafting Club and Sea Spurge Remote Area Teams. An estimate for the in-kind costs associated with transport, food and herbicide is included.

The costs shown exclude Goods and Services Tax (GST) and are a guide only. Quotes for works should be sought by several service providers before confirming budgets.

The recommendations suggest the time of year to conduct the weed control, and the herbicides registered for controlling specific weeds. This information is referenced from the Department of Primary Industries, Parks, Water and Environment (DPIPWE), Invasive Species, Weeds website.

Photo 5: Primary control of Blackberry along the Nelson Creek within the TWWHA.

Management Area 1 - Andrew, Franklin & Gordon Rivers



Project: Weed Management Plan- PWS West Coast Region	Drawn by: Matt Rose
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018

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Management Area 1 – Andrew, Franklin & Gordon Rivers

Target species : Blackberry, Gorse, Thistle & Tutsan.

Objectives : to prevent further spread, to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park, West Coast Range Regional Reserve and nearby threatened native vegetation communities, to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

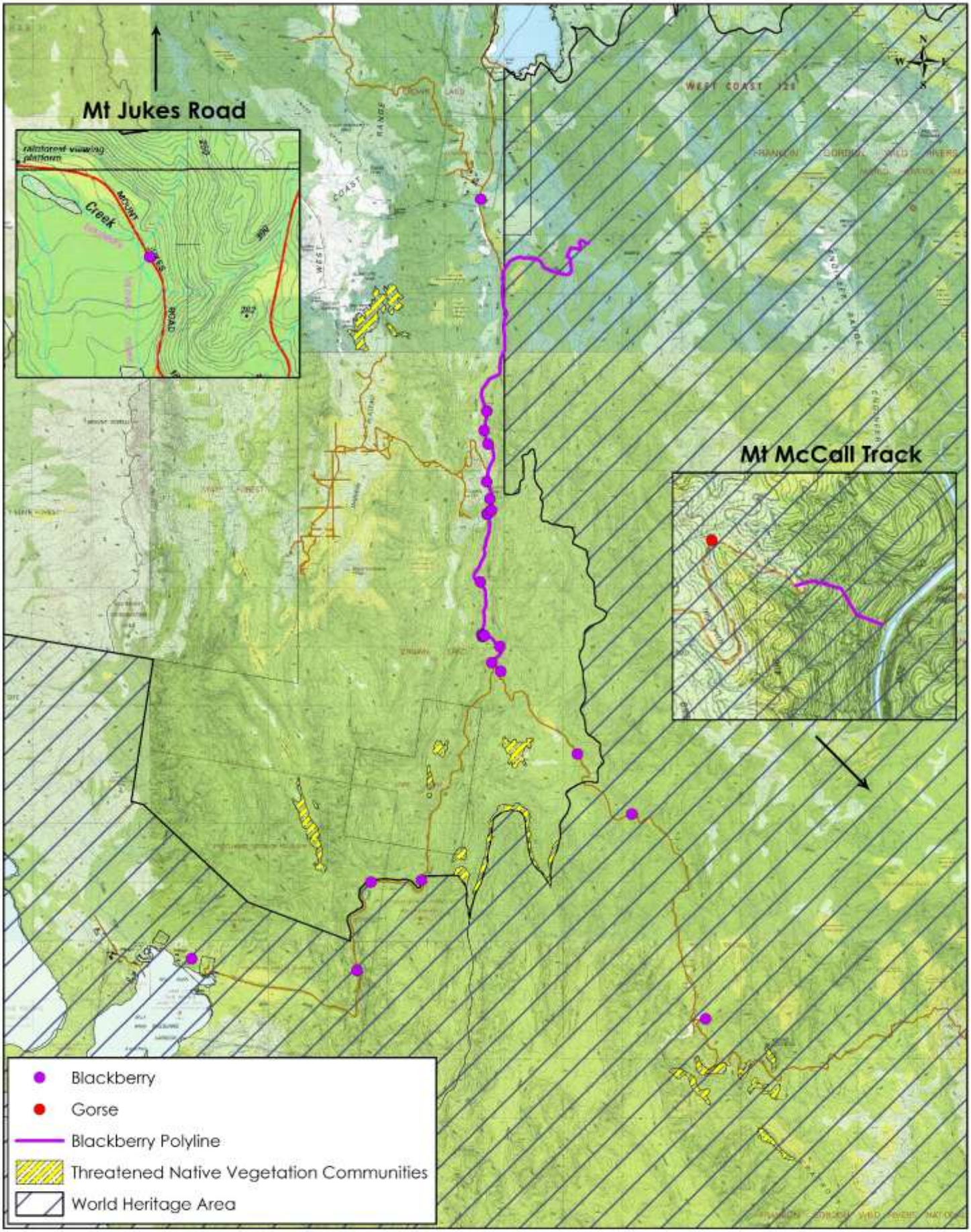
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 3: Recommendations for Management Area 1 over the next 5 years.

Year	Description of activities	Volunteer in-kind contribution	Herbicide cost	PWS staff labour required
1	Control Blackberry, Gorse, Thistle & Tutsan. Method – Control through a combination of spot spraying and cut and paint.	$5,000	$600	10 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$5,000	$600	10 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$5,000	$600	10 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$15,000**	**$1,800**	**30 days**

Recommendations : approach Cradle Coast NRM and Tasmanian University White Water Rafting Club to discuss options for integrating weed management resources.

Management Area 2 - Crotty Rd, Bird River & Mt McCall Track



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 2 – Crotty Road, Bird River & Mt McCall Track

Target species : Blackberry & Gorse.

Objectives : to prevent further spread, to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park, West Coast Range Regional Reserve and nearby threatened native vegetation communities, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

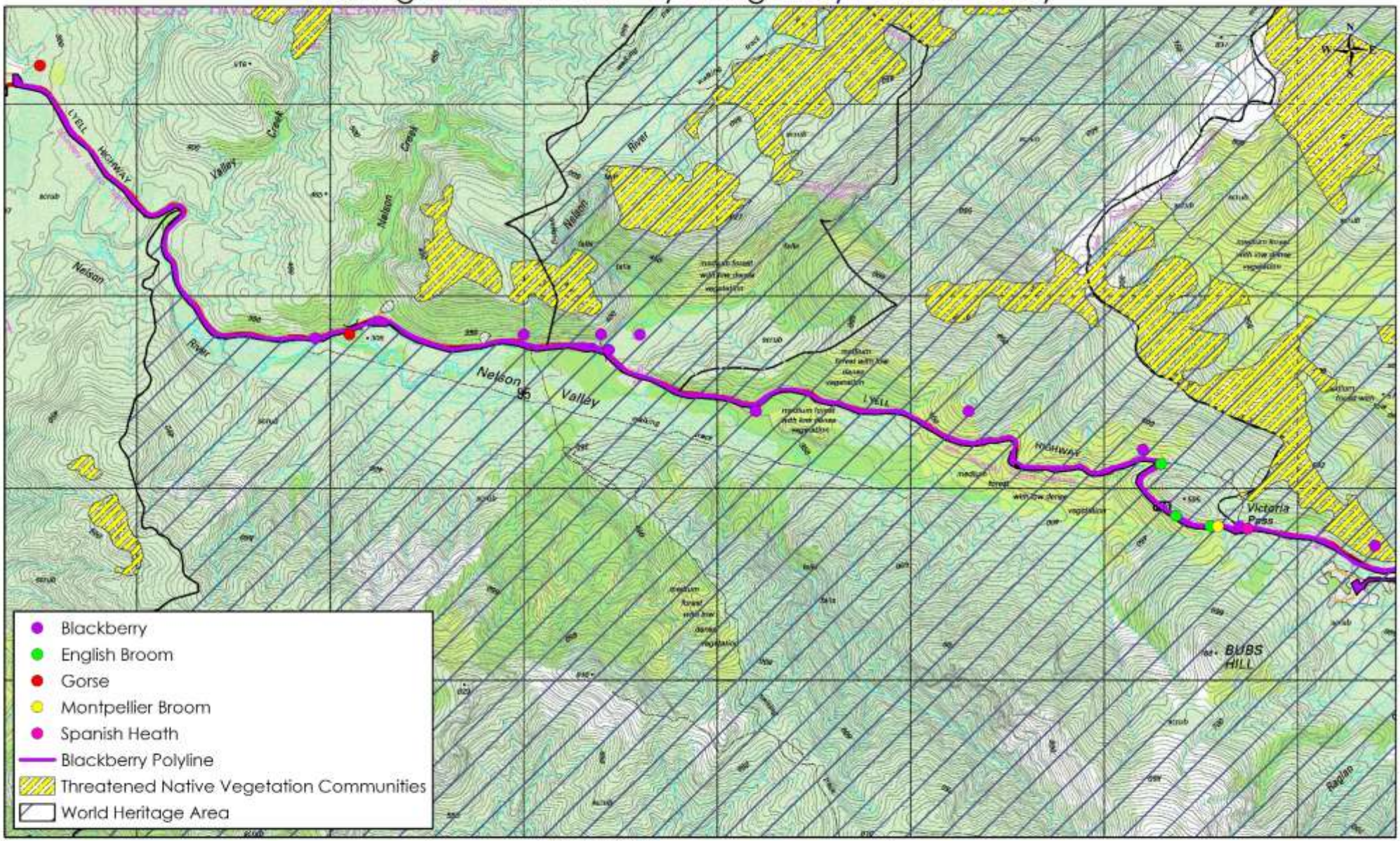
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 4: Recommendations for Management Area 2 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry & Gorse. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$600	5 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$600	5 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$0	3 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$400	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$0	3 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$13,680**	**$1,600**	**19 days**

Recommendations : approach Cradle Coast NRM and Stephens Honey to discuss options for integrating weed management resources.

Management Area 3 - Lyell Highway Nelson Valley



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Management Area 3 – Lyell Highway Nelson Valley

Target species : Blackberry, Elisha's Tears, English Broom, Holly, Gorse, Montpellier Broom & Spanish Heath.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park, Princess River Conservation Area and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

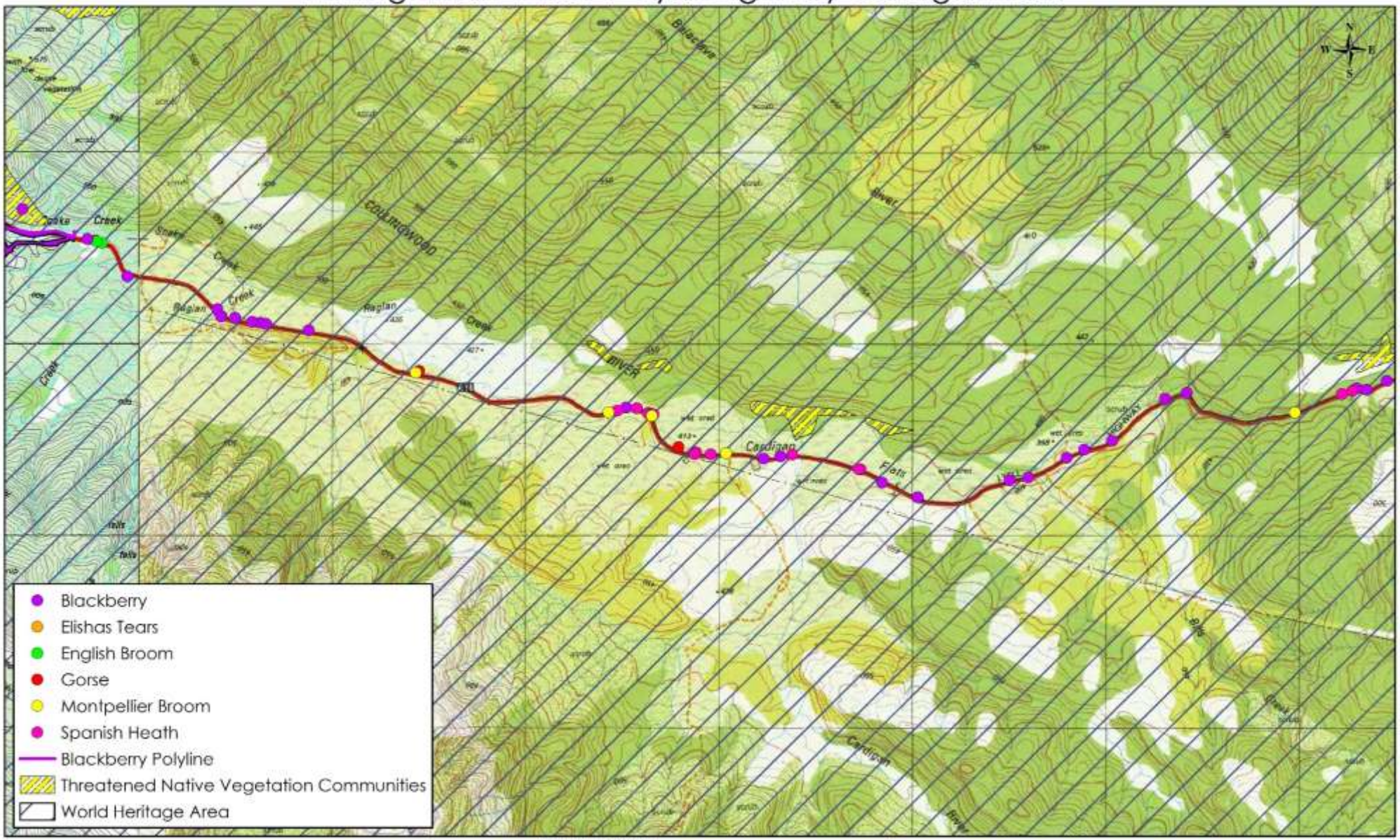
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 5: Recommendations for Management Area 3 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Holly, Montpellier Broom & Spanish Heath. Method – Control through a combination of spot spraying, cut and paint and hand pull.	80 Hrs. x $90/hr. = $7,200	$1,000	10 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	40 Hrs. x $90/hr. = $3,600	$0	5 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	40 Hrs. x $90/hr. = $3,600	$1.000	5 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$17,280**	**$2,000**	**24 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources.
Budget for extra costs associated with traffic management requirements.

Management Area 4 - Lyell Highway Cardigan Flats



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0 500 1,000 1,500 2,000 Metres

Management Area 4 – Lyell Highway Cardigan Flats

Target species : Blackberry, Elisha's Tears, Gorse, Montpellier Broom, Spanish Heath & Tutsan.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

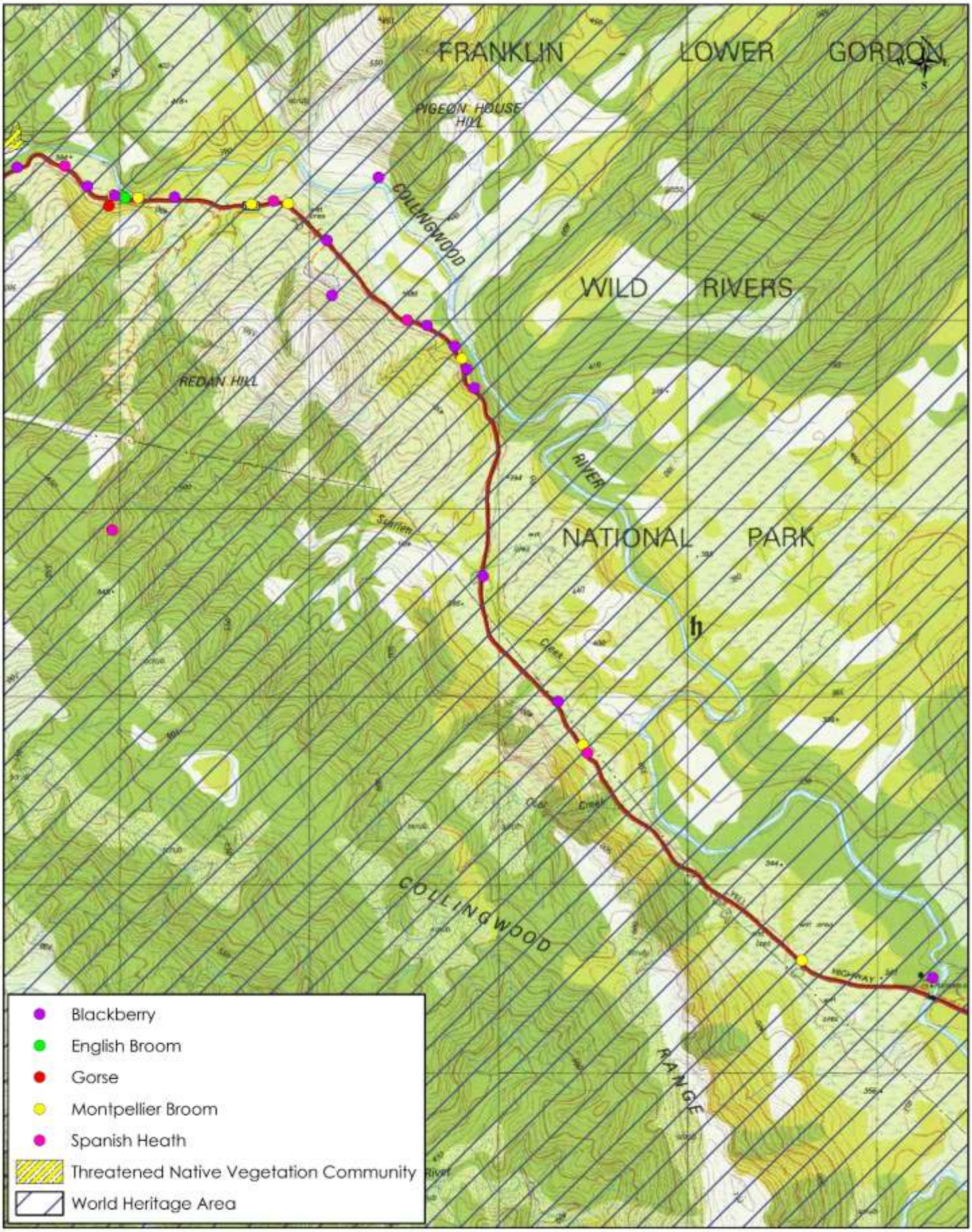
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 6: Recommendations for Management Area 4 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Montpellier Broom, Spanish Heath & Tutsan. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$400	1 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$5,040**	**$800**	**7 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources.
Budget for extra costs associated with traffic management requirements.

Management Area 5 - Lyell Highway Collingwood River



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 5 – Lyell Highway Collingwood River

Target species : Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

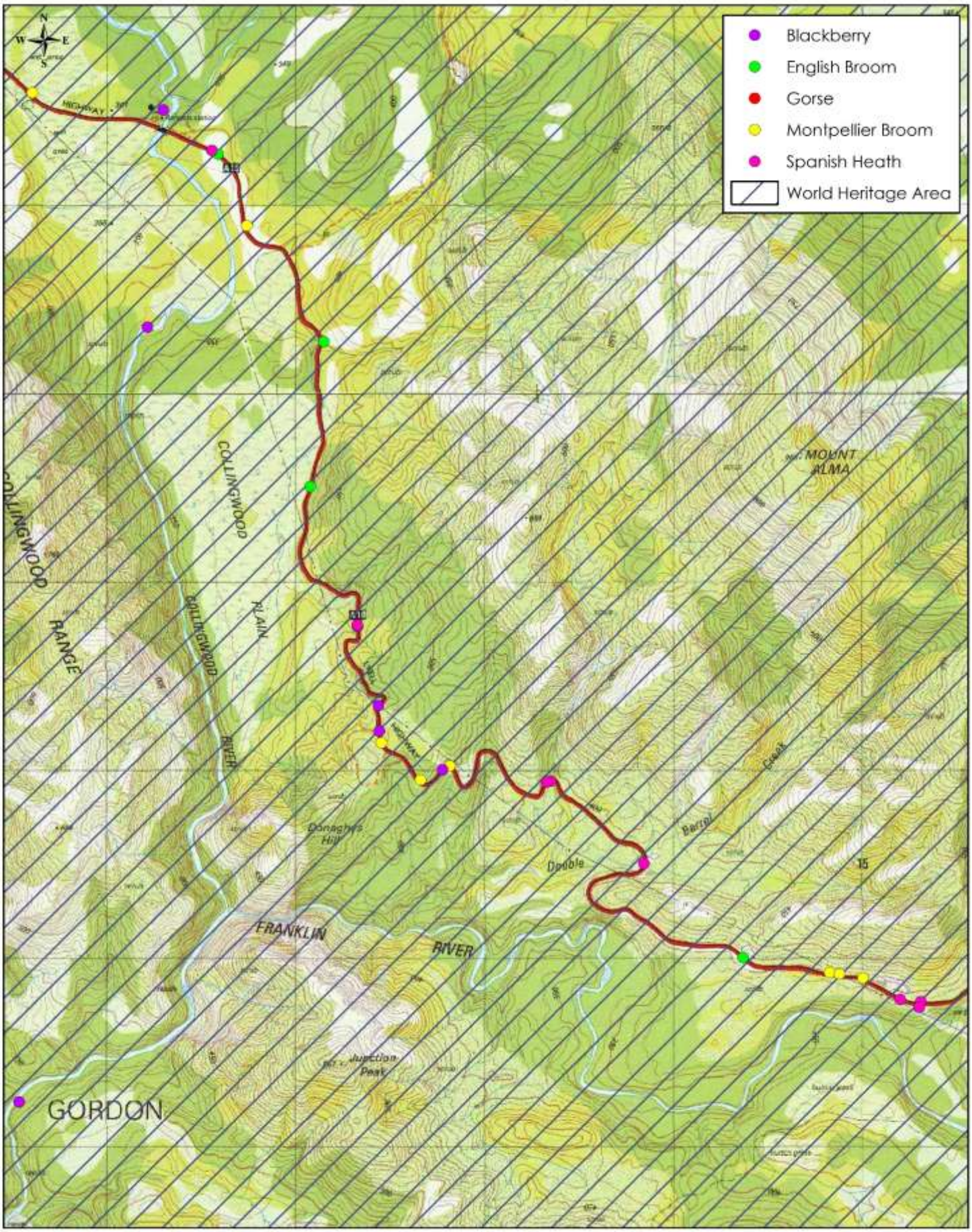
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 7: Recommendations for Management Area 5 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$400	1 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$5,040**	**$800**	**7 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources.
Budget for extra costs associated with traffic management requirements.

Management Area 6 - Lyell Highway Donaghys Hill



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 6 – Lyell Highway Donaghys Hill

Target species : Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

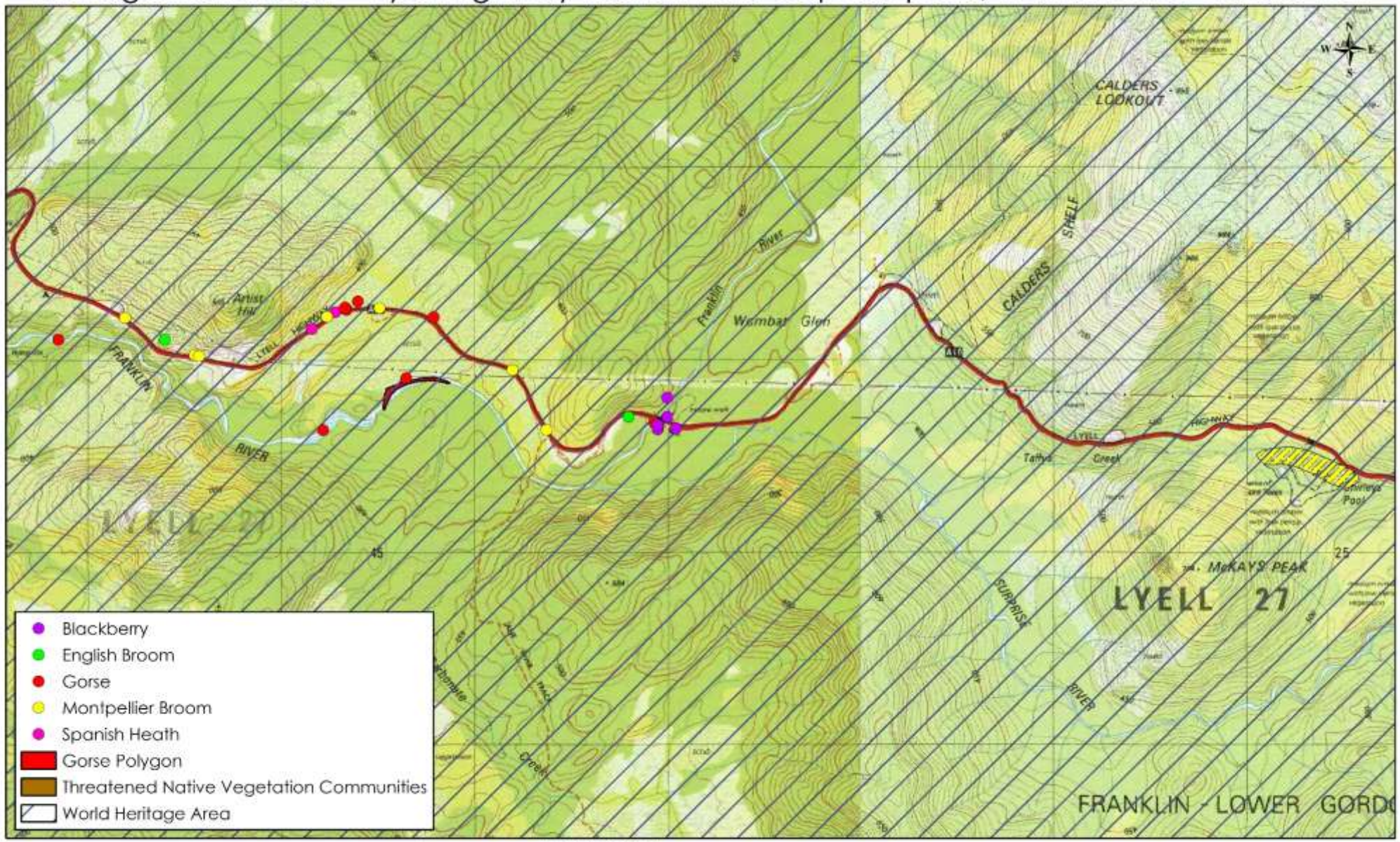
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 8: Recommendations for Management Area 6 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$400	1 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$5,040**	**$800**	**7 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources.
Budget for extra costs associated with traffic management requirements.

Management Area 7 - Lyell Highway Frenchmans Cap car park / Franklin River Nature Trail



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0 500 1,000 1,500 2,000 Metres

Management Area 7 – Lyell Highway Frenchmans Cap car park / Franklin River Nature Trail

Target species : Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

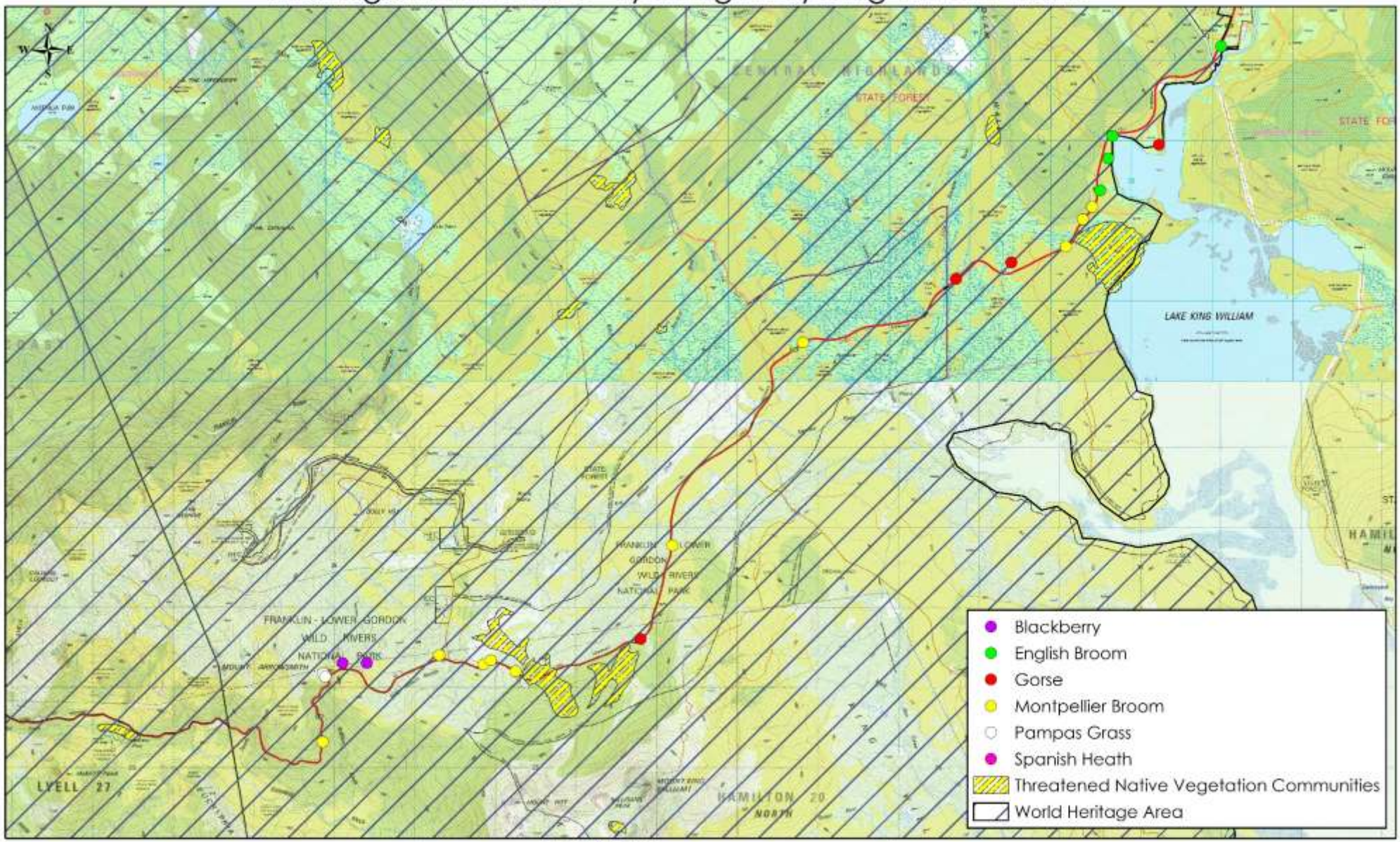
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 9: Recommendations for Management Area 7 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$400	1 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$5,040**	**$800**	**7 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources.
Budget for extra costs associated with traffic management requirements.

Management Area 8 - Lyell Highway King William Plains



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0 1,250 2,500 3,750 5,000 Metres

Management Area 8 – Lyell Highway King William Plains

Target species : Blackberry, English Broom, Gorse, Hawkweed, Pampas Grass & Montpellier Broom.

Objectives : to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Franklin-Gordon Wild Rivers National Park and nearby threatened native vegetation communities, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 10: Recommendations for Management Area 8 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, English Broom, Gorse, Hawkweed, Pampas Grass & Montpellier Broom. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$400	1 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	$0	$0	N / A
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$2,160**	**$400**	**3 days**

Recommendations : approach Cradle Coast NRM and the Department of State Growth to discuss options for integrating weed management resources. **Budget for extra costs associated with traffic management requirements.**

Management Area 9 - Sarah Island

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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018

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0 125 250 375 500 Metres

Management Area 9 – Sarah Island

Target species : Blackberry, Dock, Dog Rose & Thistles.

Objectives : to prevent further weed incursions within the Tasmanian Wilderness World Heritage Area, to protect and manage the integrity of the Macquarie Harbour Historic Site, Southwest Conservation Area and threatened native vegetation communities, to comply with statutory obligations & improve the aesthetics of the major tourism asset. Continue to implement the weed management actions (p.36) in the PWS report '*Sarah Island Visitor Services Site Plan 2006*'.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible. Before the peak of the tourism season.

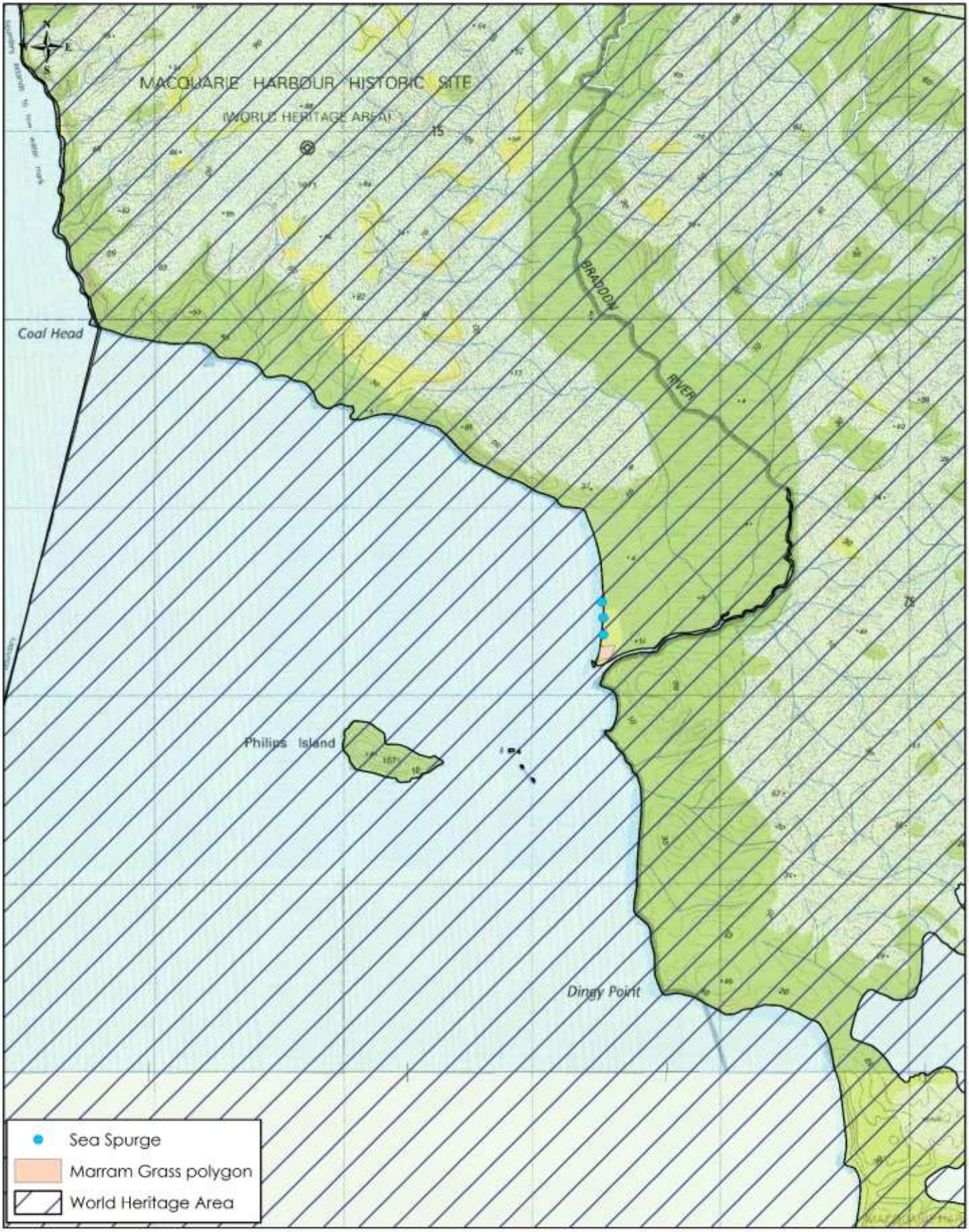
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. For thistles (Lontrel) - Clopyralid, or (KambaM) – MCPA. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 11: Recommendations for Management Area 9 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Dock and introduced Blackberry, Dog Rose, and Thistle. Method – Control through a combination of brushcutting / slashing, spot spraying, and cut and paint.	40 Hrs. x $90/hr. = $3,600	$1,000	5 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of brushcutting / slashing, spot spraying, and cut and paint.	24 Hrs. x $90/hr. = $2,160	$0	3 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of brushcutting / slashing, spot spraying, and cut and paint.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of brushcutting / slashing, spot spraying, and cut and paint.	24 Hrs. x $90/hr. = $2,160	$400	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of brushcutting / slashing, spot spraying, and cut and paint.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$9,360**	**$1,400**	**13 days**

Recommendations : approach Cradle Coast NRM to discuss options for integrating weed management resources.

Management Area 10 - Braddon River Macquarie Harbour



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 10 – Braddon River Macquarie Harbour

Target species : Sea Spurge and Marram Grass.

Objectives : to prevent further spread, to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, West Coast Range Regional Reserve, Macquarie Harbour Historic Site, to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

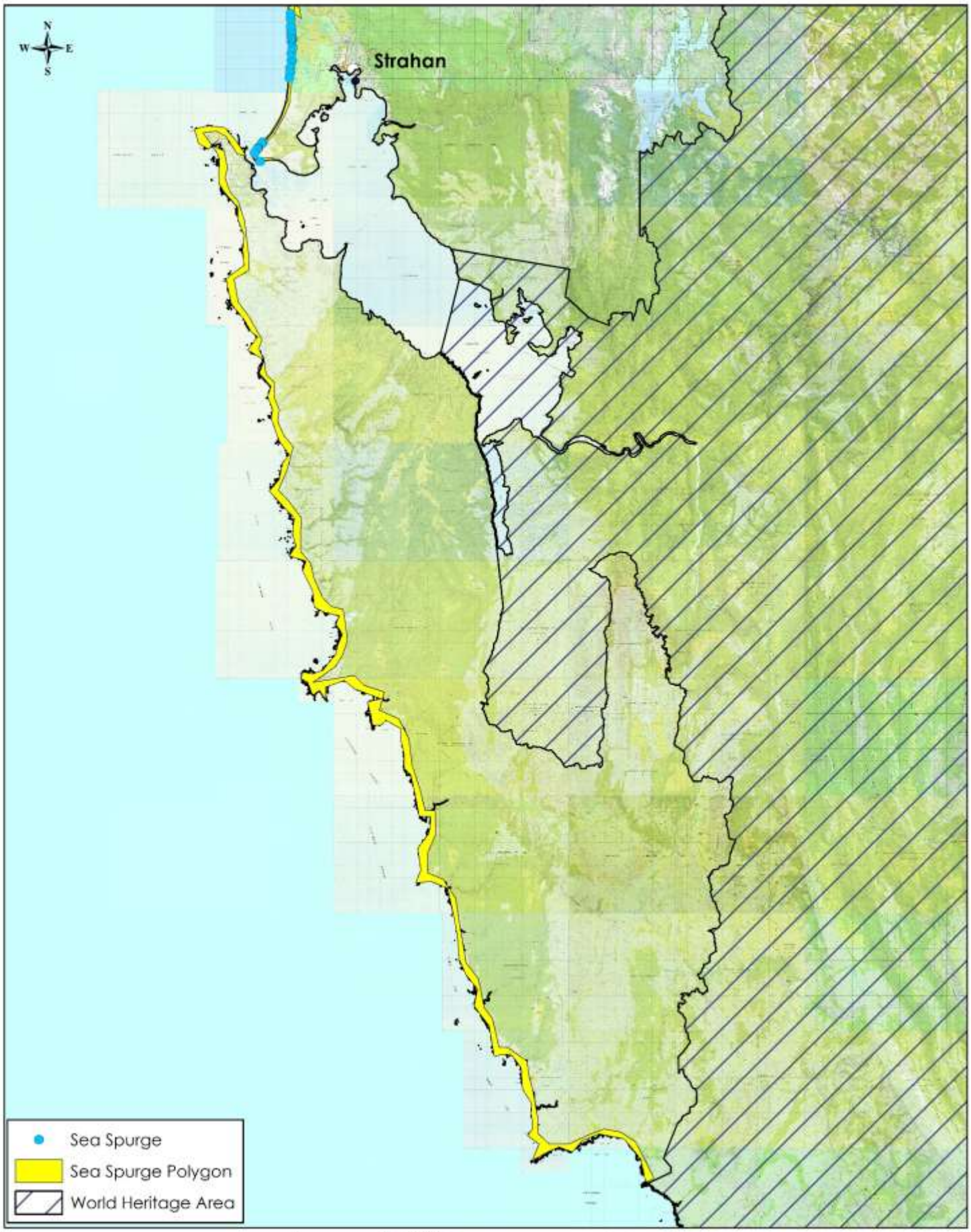
Herbicides : Broadleaf selective (Brushoff) – Metsulfuron methyl or a non-selective (Weedmaster Duo) – Glyphosate for Sea Spurge and grass selective (Taskforce) – Flupropanate or a non-selective (Weedmaster Duo) – Glyphosate for Marram Grass. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 12: Recommendations for Management Area 10 over the next 5 years.

Year	Description of activities	Volunteer in-kind contribution	Herbicide cost	PWS staff labour required
1	Control Sea Spurge and Marram Grass. Method – Control through a combination of hand pulling and spot spraying.	$720	$400	1 day x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$720	$0	1 day x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$0	$0	N / A
5	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$720	$0	1 day x 1 person
TOTAL COST over 5 years for weed management at this site		**$2,160**	**$400**	**3 days**

Recommendations : approach Sea Spurge Remote Area Teams (SPRATS) to discuss options for integrating weed management resources.

Management Area 11 - Ocean Beach & Southwest Conservation Area



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 11 – Ocean Beach & Southwest Conservation Area

Target species : Sea Spurge and Marram Grass.

Objectives : to prevent further spread, to protect and manage the integrity of the Tasmanian Wilderness World Heritage Area, Southwest National Park, Southwest Conservation Area, to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

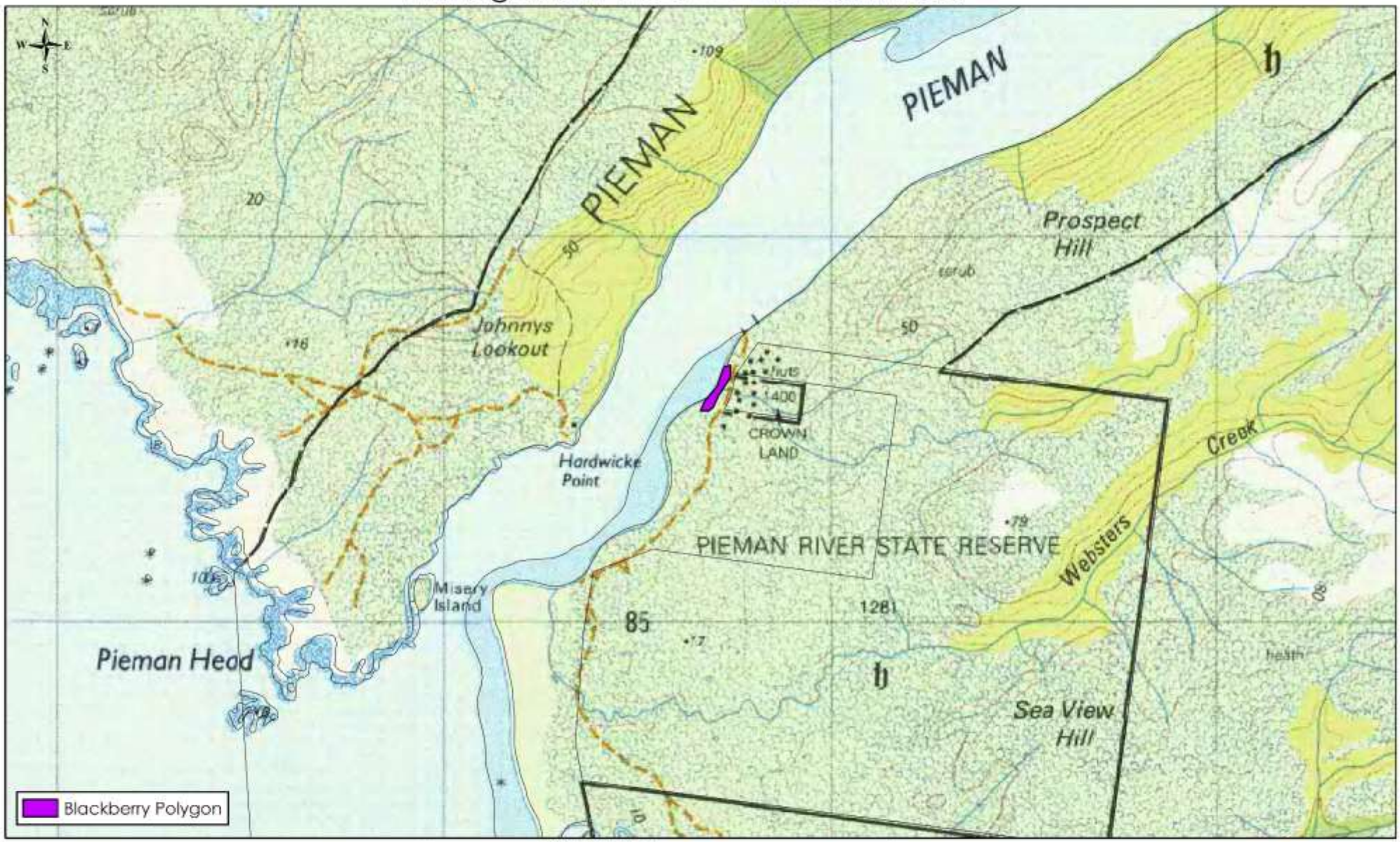
Herbicides : Broadleaf selective (Brushoff) – Metsulfuron methyl or a non-selective (Weedmaster Duo) – Glyphosate. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 13: Recommendations for Management Area 11 over the next 5 years.

Year	Description of activities	Volunteer in-kind contribution	Herbicide cost	PWS staff labour required
1	Control Sea Spurge and Marram Grass. Method – Control through a combination of hand pulling and spot spraying.	$5,000	$600	20 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$5,000	$0	20 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of hand pulling and spot spraying.	$0	$600	N / A
TOTAL COST over 5 years for weed management at this site		**$10,000**	**$1,200**	**40 days**

Recommendations : approach Sea Spurge Remote Area Teams (SPRATS) and Birthday Bay Track Conservation Group to discuss options for integrating weed management resources

Management Area 12 - Pieman Head



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Management Area 12 – Pieman Head

Target species : Blackberry.

Objectives : to protect and manage the integrity of the Pieman River State Reserve, Tikkawoppa Plateau Regional Reserve, Four Mile Beach Regional Reserve and Arthur Pieman Conservation Area, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

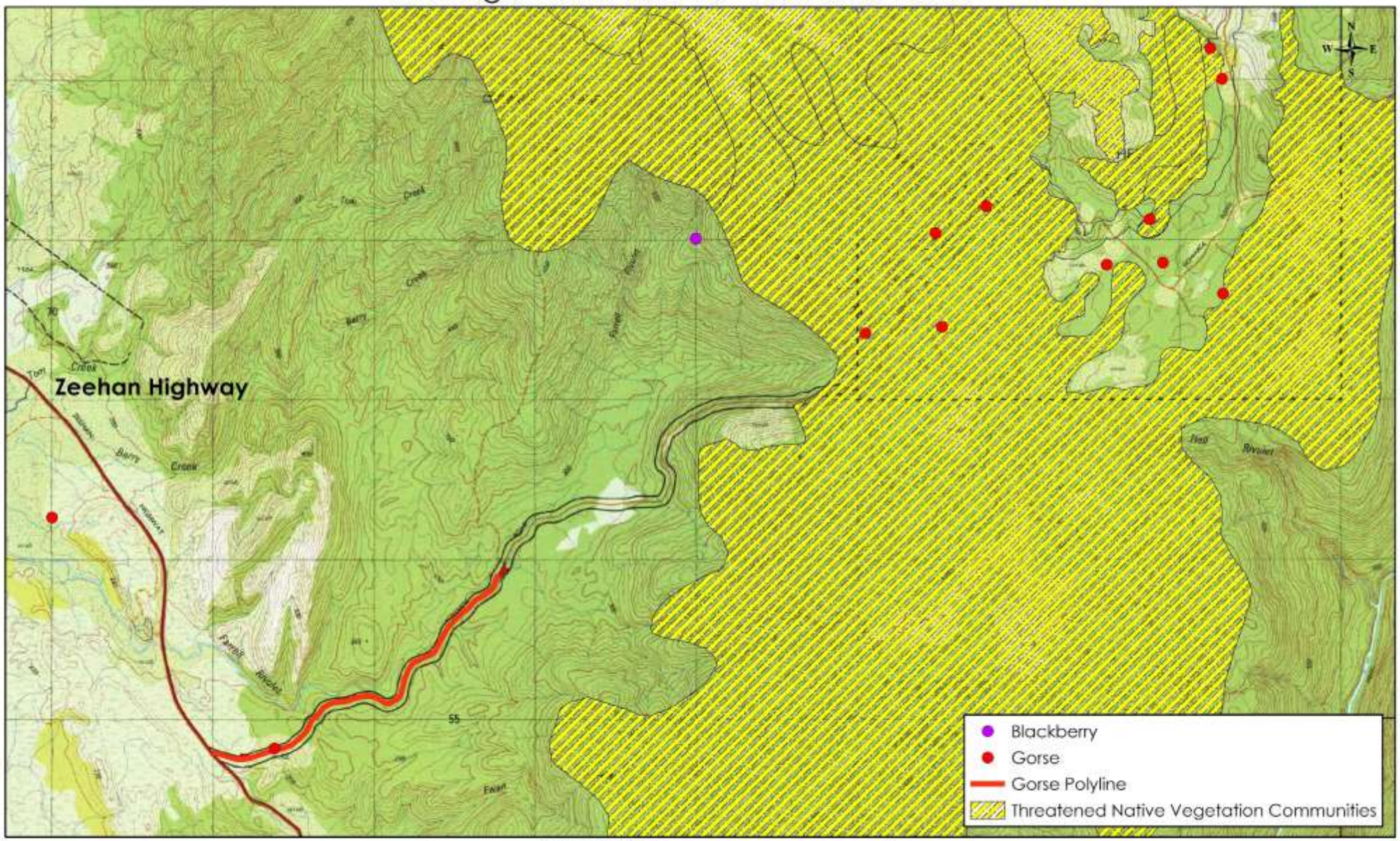
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 14: Recommendations for Management Area 12 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$200	2 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$3,600**	**$600**	**5 days**

Recommendations : approach the Granville Harbour Community Coastcare Group to discuss options for integrating weed management resources.

Management Area 13 - Howards Road



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0 500 1,000 1,500 2,000 Metres

Management Area 13 – Howards Road

Target species : Blackberry & Gorse.

Objectives : to prevent further spread, to protect and manage the integrity of Mount Dundas Regional Reserve and nearby threatened native vegetation communities, to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

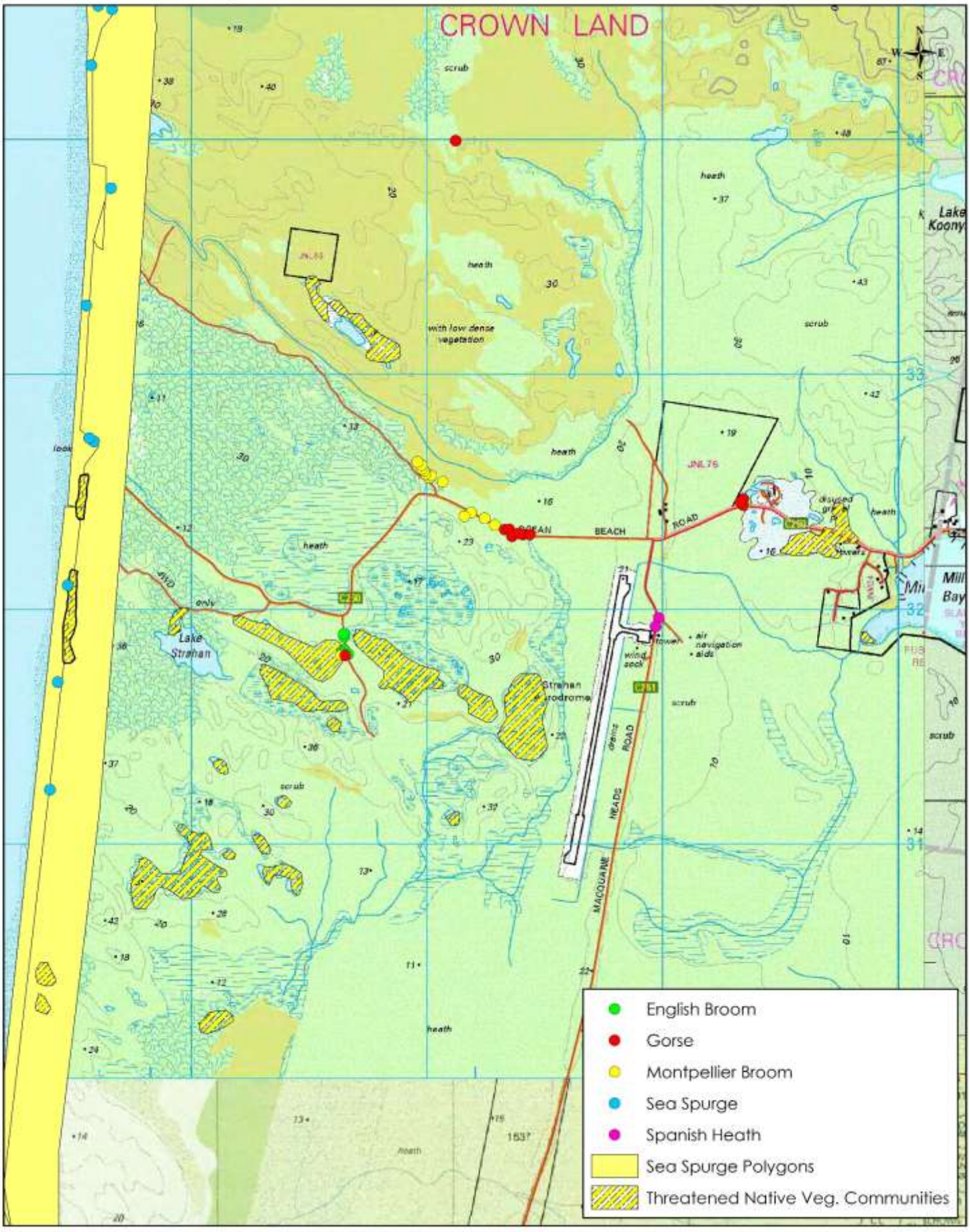
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. Use only (Weedmaster Duo) – Glyphosate along the watercourses. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 15: Recommendations for Management Area 13 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry & Gorse. Method – Control through a combination of spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$800	4 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$0	4 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$800	4 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$8,640**	**$1,600**	**12 days**

Recommendations : approach the Department of State Growth to discuss options for integrating weed management resources along the Zeehan Hwy.

Management Area 14 - Ocean Beach Road



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Management Area 14 – Ocean Beach Road

Target species : English Broom, Gorse, Montpellier Broom, Sea Spurge & Spanish Heath.

Objectives : to create a Sea Spurge buffer zone protecting the Tasmanian Wilderness World Heritage Area, to protect and manage the integrity of the Ocean Beach Conservation Area and threatened native vegetation communities, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. For Sea Spurge (Brushoff) – Metsulfuron methyl, or (Weedmaster Duo) - Glyphosate. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 16: Recommendations for Management Area 14 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control English Broom, Gorse, Montpellier Broom, Sea Spurge & Spanish Heath. Method – Control through a combination of spot spraying, cut and paint and hand pull.	24 Hrs. x $90/hr. = $2,160	$800	3 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$5,760**	**$1,200**	**8 days**

Recommendations : approach the West Coast Council to discuss options for integrating weed management resources.

Management Area 15 - Henty Backwash

Project: Weed Management Plan- PWS West Coast Region	Drawn by: Matt Rose	NATURAL STATE	NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2016		

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Management Area 15 – Henty Backwash

Target species : Agapanthus, Blackberry, Elisha's Tears, Gorse, Montpellier Broom, Pampas, Sea Spurge and Spanish Heath.

Objectives : to protect and manage the integrity of the Ocean Beach Conservation Area and threatened native vegetation communities, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

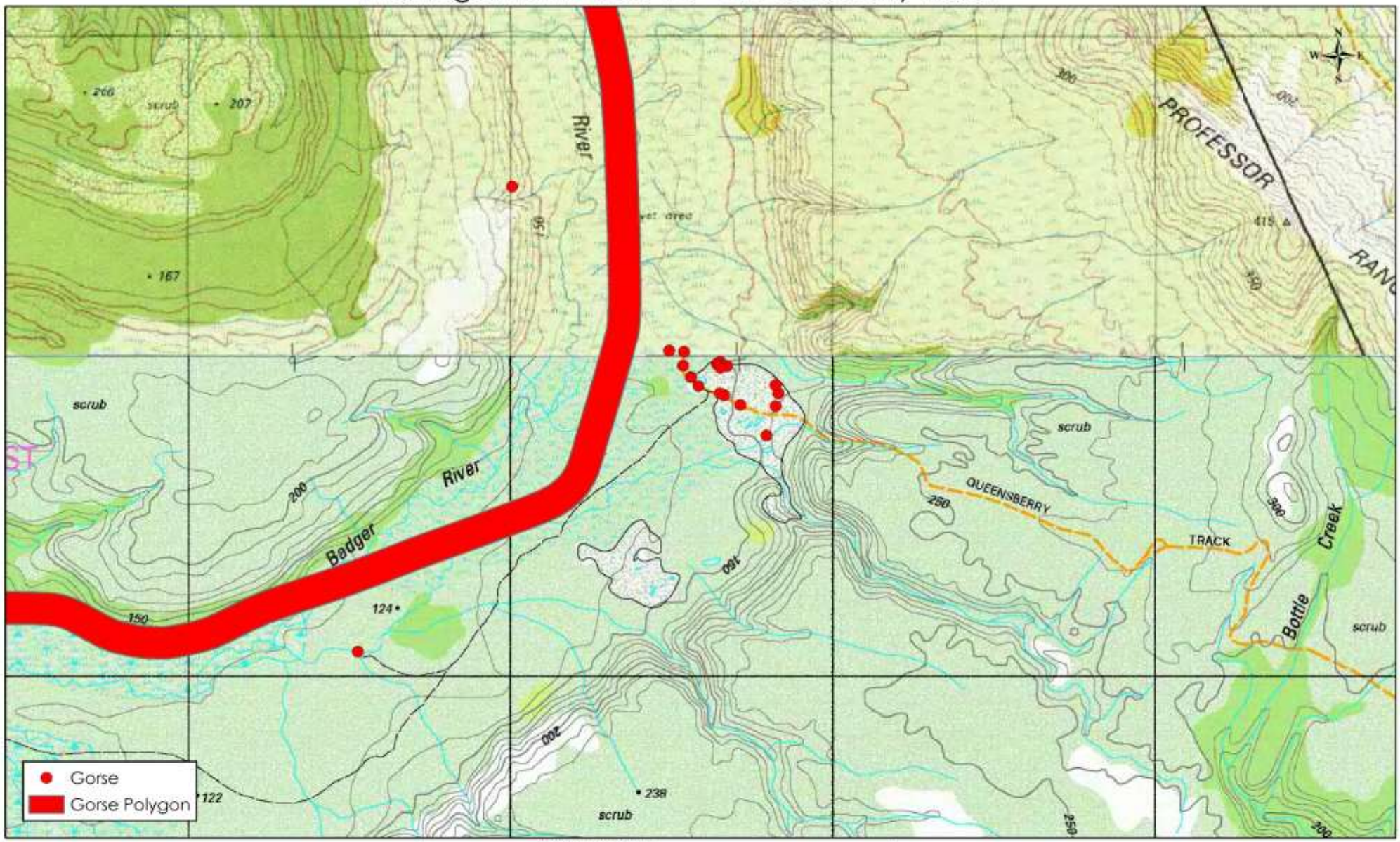
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. For Pampas (Weedmaster Duo) - Glyphosate. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 17: Recommendations for Management Area 15 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Agapanthus, Blackberry, Elisha's Tears, Gorse, Montpellier Broom, Pampas, Sea Spurge and Spanish Heath. Method – Control through a combination of spot spraying and cut and paint.	56 Hrs. x $90/hr. = $5,040	$1,000	7 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$800	4 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$0	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$600	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$11,520**	**$2,400**	**16 days**

Recommendations : approach adjoining landowners to discuss options for integrating weed management resources.

Management Area 16 - Queensberry Track



Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose	NATURAL STATE	NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base Image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania. Scale : 1: 15,000 0 250 500 750 1,000 Metres
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 16 – Queensberry Track

Target species: Gorse.

Objectives : to protect and manage the integrity of the Mount Dundas Regional Reserve, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

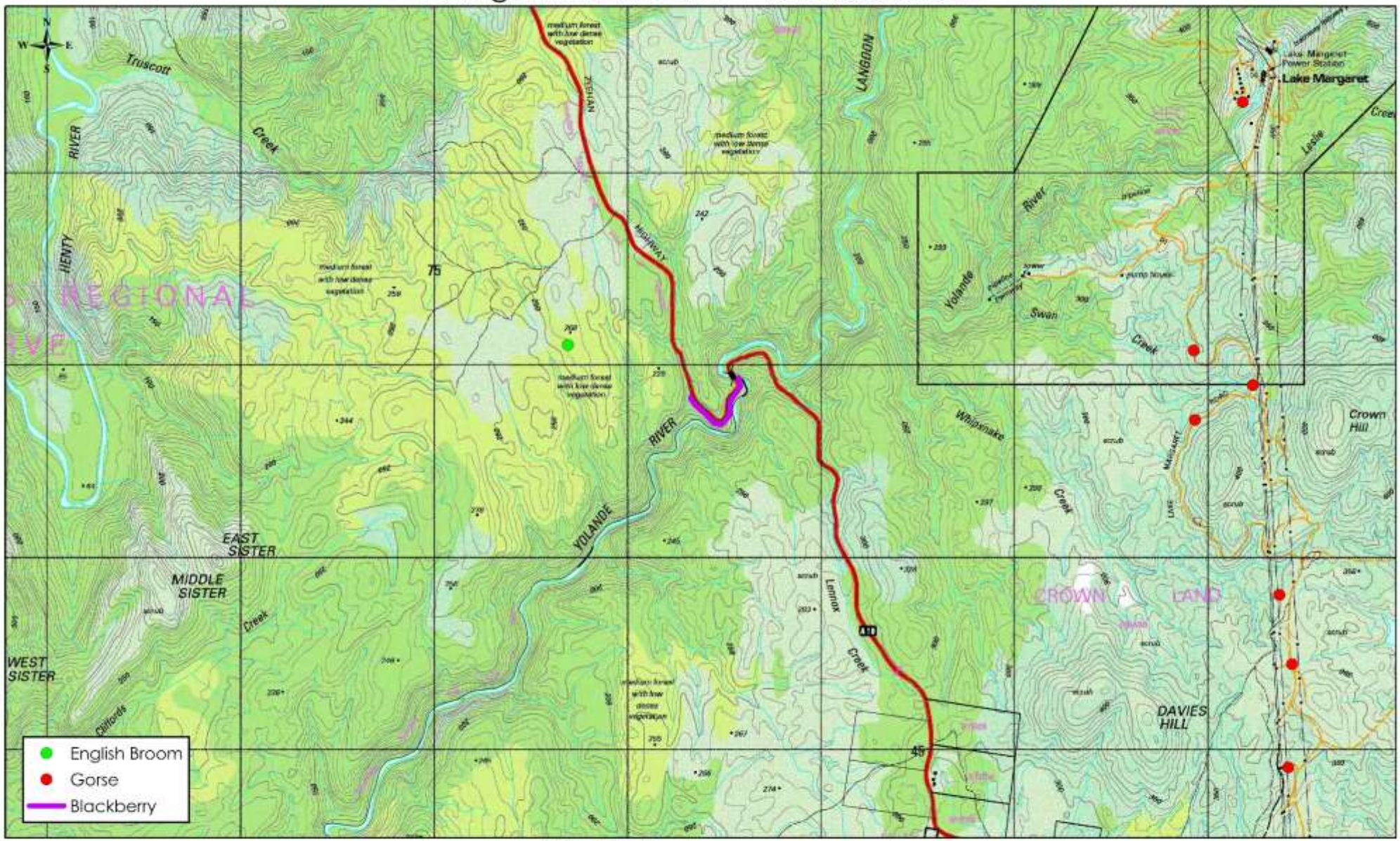
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 18: Recommendations for Management Area 16 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Gorse. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$0	1 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$200	1 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
TOTAL COST over 5 years for weed management at this site		**$2,880**	**$600**	**4 days**

Recommendations : approach the Department of State Growth to discuss options for integrating weed management resources on the Zeehan Highway.

Management Area 17 - Yolande River



Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose	NATURAL STATE	NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania. Scale : 1: 25,000 0 500 1,000 1,500 2,000 Metres
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 17 – Yolande River

Target species : Blackberry, English Broom and Gorse.

Objectives : to follow up on previous works, to protect and manage the integrity of the Mount Dundas Regional Reserve, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 19: Recommendations for Management Area 17 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, English Broom & Gorse. Method – Control through a combination of brushcutting, spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$800	4 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of brushcutting, spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$400	2 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of brushcutting, spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$200	1 day x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of brushcutting, spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$200	1 day x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of brushcutting, spot spraying and cut and paint.	8 Hrs. x $90/hr. = $720	$200	1 day x 1 person
TOTAL COST over 5 years for weed management at this site		**$6,480**	**$1,800**	**9 days**

Recommendations : approach the Department of State Growth and TasNetworks to discuss options for integrating weed management resources. **Extra costs are likely to cover traffic management requirements.**

Management Area 18 - Swan Basin

Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose	NATURAL STATE	NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania. Scale : 1: 35,000 0 750 1,500 2,250 3,000 Metres
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Management Area 18 – Swan Basin

Target species : Blackberry, Gorse, Montpellier Broom & Sea Spurge.

Objectives : to create a Sea Spurge buffer zone protecting the Tasmanian Wilderness World Heritage Area, to protect and manage the integrity of the Ocean Beach Conservation Area and threatened native vegetation communities, to comply with statutory obligations, to improve the aesthetics of local campsites.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. For Sea Spurge (Brushoff) – Metsulfuron methyl, or (Weedmaster Duo) - Glyphosate. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 20: Recommendations for Management Area 18 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Gorse, Montpellier Broom & Sea Spurge. Method – Control through a combination of spot spraying, cut and paint and hand pull.	40 Hrs. x $90/hr. = $3,600	$1,000	5 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	24 Hrs. x $90/hr. = $2,160	$400	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying, cut and paint and hand pull.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$9,360**	**$2,000**	**13 days**

Recommendations : approach Sustainable Timber Tasmania to discuss options for integrating weed management resources.

Management Area 19 - Lowana Rd, Strahan & King River Island

Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018

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0 500 1,000 1,500 2,000 Metres

Management Area 19 – Lowana Rd, Strahan & King River Island

Target species : Blackberry, Cotoneaster, Elisha's Tears, Gorse, Holly, Montpellier Broom & Pampas.

Objectives : to protect and manage the integrity of threatened native vegetation communities, to comply with statutory obligations, to improve the aesthetics along the West Coast Wilderness Railway corridor.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible. Before the peak of the tourism season.

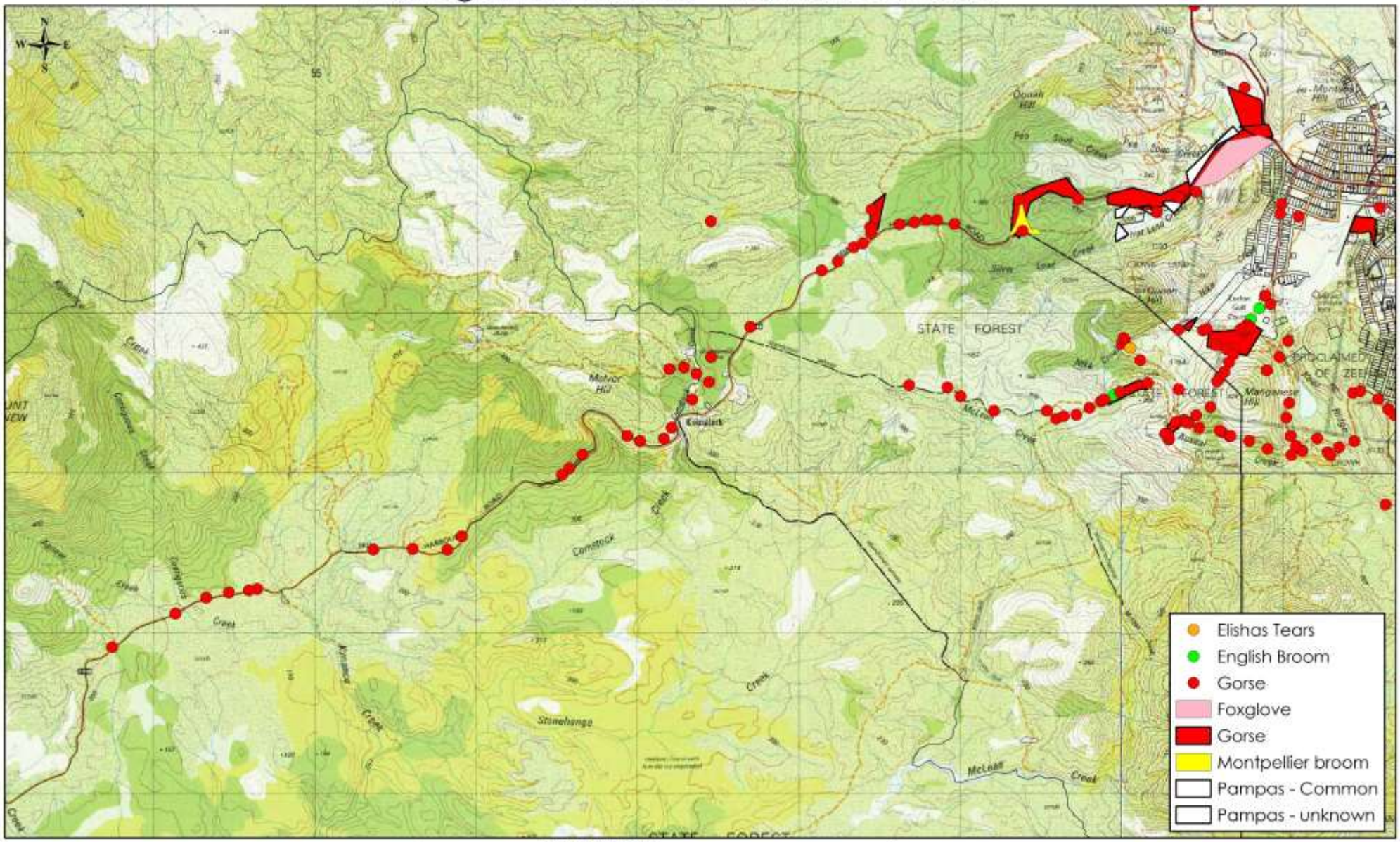
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. For Pampas (Weedmaster Duo) - Glyphosate. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 21: Recommendations for Management Area 19 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Cotoneaster, Elisha's Tears, Gorse, Holly, Montpellier Broom & Pampas. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$1,000	5 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	32 Hrs. x $90/hr. = $2,880	$800	4 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	$0	$0	N / A
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$600	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$10,080**	**$3,600**	**14 days**

Recommendations : approach adjoining landowners, the West Coast Council and the West Coast Wilderness Railway to discuss options for integrating weed management resources.

Management Area 20 - Trial Harbour Road



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Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018

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0 500 1,000 1,500 2,000 Metres

Management Area 20 – Trial Harbour Road

Target species : Gorse.

Objectives : to prevent further spread towards Trial Harbour, to protect and manage the integrity of the Mount Heemskirk Regional Reserve, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

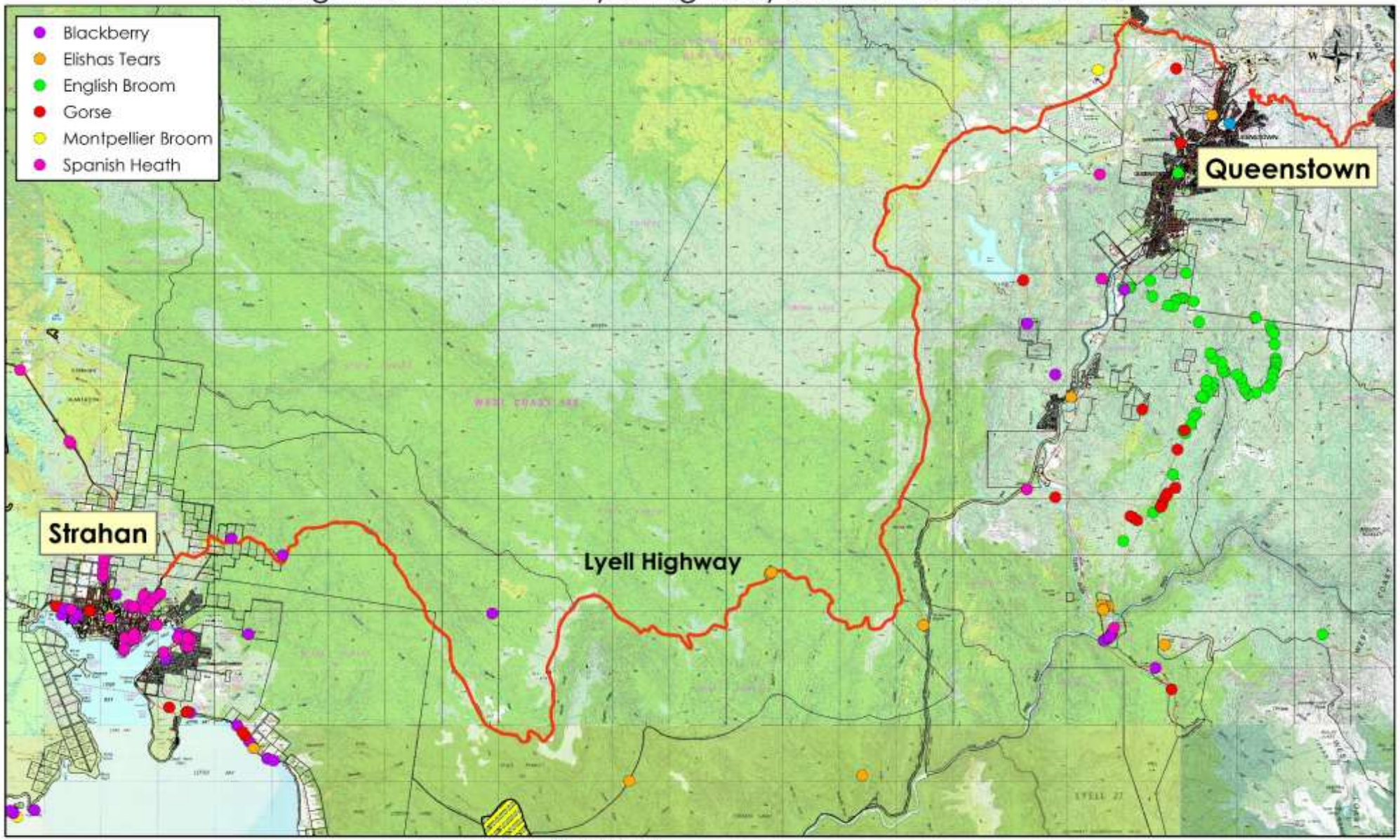
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 22: Recommendations for Management Area 20 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Gorse. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$1,000	5 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$0	5 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$12,960**	**$2,200**	**18 days**

Recommendations : approach the West Coast Council to discuss options for integrating weed management resources.
Extra costs are likely to cover traffic management requirements.

Management Area 21 - Lyell Highway Strahan to Queenstown



Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018

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0 1,250 2,500 3,750 5,000 Metres

Management Area 21 – Lyell Highway Strahan to Queenstown

Target species : Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath.

Objectives : to prevent further spread along the Lyell Highway, to protect and manage the integrity of Mt Dundas Regional Reserve, to improve the aesthetics of a major tourism route and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

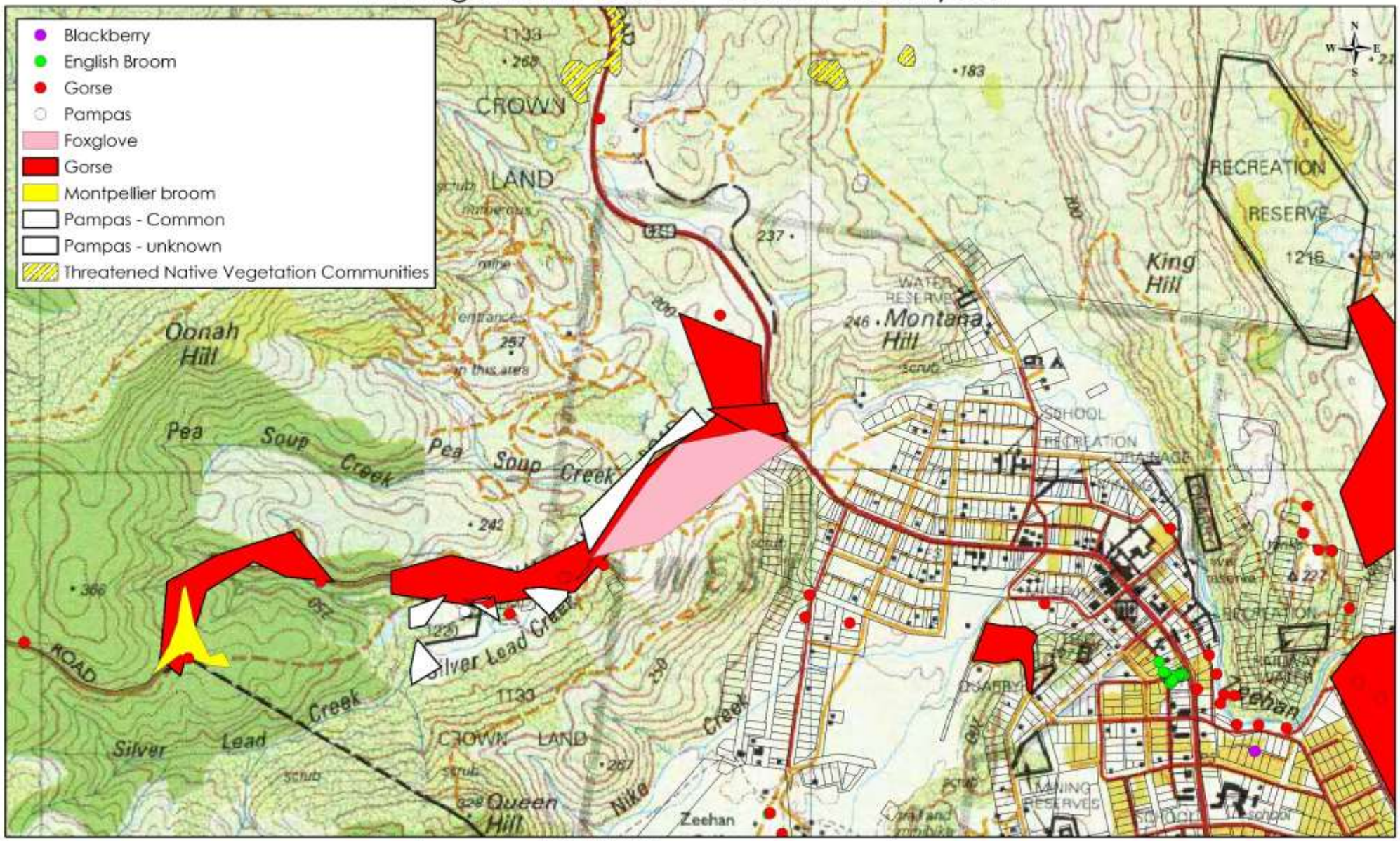
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 23: Recommendations for Management Area 21 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears, Gorse, Montpellier Broom & Spanish Heath. Method – Control through a combination of spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$2,000	10 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$600	10 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	64 Hrs. x $90/hr. = $5,760	$0	8 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$0	5 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	40 Hrs. x $90/hr. = $3,600	$600	5 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$27,360**	**$3,200**	**38 days**

Recommendations : approach the Department of State Growth, West Coast Council and Sustainable Timber Tasmania to discuss options for integrating weed management resources. **Budget for extra costs associated with traffic management requirements.**

Management Area 22 - Zeehan wood yard



Project: Weed Management Plan for the PWS West Coast Region	Drawn by: Matt Rose	NATURAL STATE	NATURAL STATE PO Box 139, Ulverstone TAS 7315 Mobile: 0437 971 144 E: matt@naturalstate.com.au www.naturalstate.com.au	Acknowledgements: Raster Data : Base image Copyright State of Tasmania. Vector Data : Copyright State of Tasmania. Scale : 1: 12,500 0 250 500 750 1,000 Metres
Client: Tasmania Parks & Wildlife Service	Date: 24/03/2018			

Management Area 22 – Zeehan Wood yard

Target species : Gorse.

Objectives : to follow up on previous works, to contain Gorse regrowth to the outer edges of the site and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

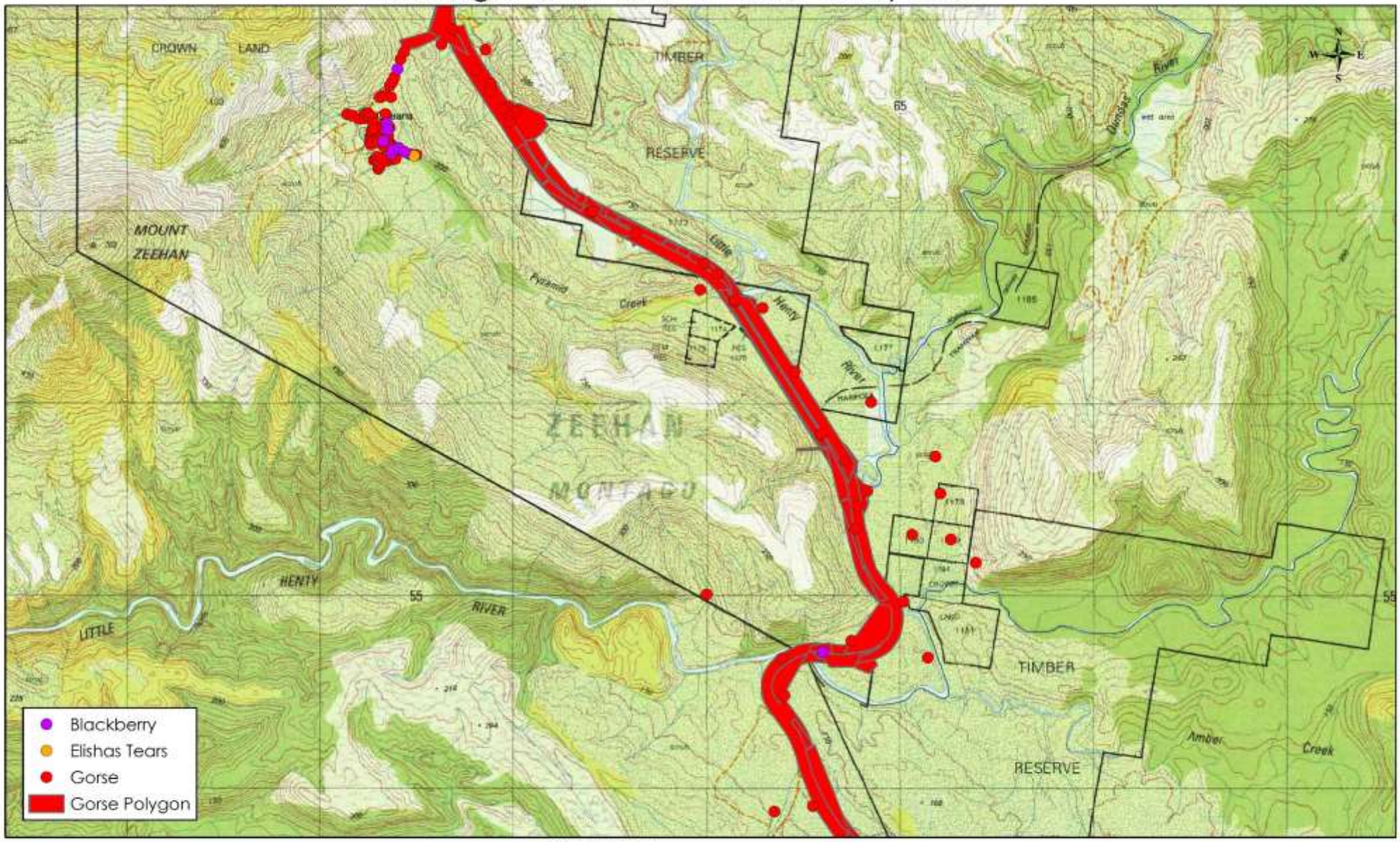
Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 24: Recommendations for Management Area 22 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Gorse. Method – Control through a combination of spot spraying and cut and paint.	48 Hrs. x $90/hr. = $4,320	$1,000	6 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	48 Hrs. x $90/hr. = $4,320	$0	6 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	24 Hrs. x $90/hr. = $2,160	$600	3 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of spot spraying and cut and paint.	16 Hrs. x $90/hr. = $1,440	$0	2 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$14,400**	**$2,200**	**20 days**

Recommendations : approach the West Coast Council to discuss options for integrating weed management resources.

Management Area 23 - Little Henty River



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0 500 1,000 1,500 2,000 Metres

Management Area 23 – Little Henty River

Target species : Blackberry, Elisha's Tears and Gorse.

Objectives : to follow up on previous works, to contain Gorse regrowth, to protect and manage the integrity of the Crotty Ridge Regional Reserve, and to comply with statutory obligations.

Timing for control : Spring / Summer when actively growing, before flowering to prevent seed-set where possible.

Herbicides : Broadleaf selective for woody weeds (Grazon) - Triclopyr and Picloram, or (Garlon) – Triclopyr, or (Brushoff) – Metsulfuron methyl. The use of a surfactant and marker dye can improve the efficiency of herbicide application.

Table 25: Recommendations for Management Area 23 over the next 5 years.

Year	Description of activities	Contractor labour cost	Herbicide cost	PWS staff labour required
1	Control Blackberry, Elisha's Tears & Gorse. Method – Control through a combination of mechanical mulching / slashing, spot spraying and cut and paint.	60 Hrs. x $120/hr. = $7,200	$0	20 days x 1 person
2	Monitor and follow-up control works. Method – Control through a combination of mechanical mulching / slashing, spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$3,000	10 days x 1 person
3	Monitor and follow-up control works. Method – Control through a combination of mechanical mulching / slashing, spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$1,000	10 days x 1 person
4	Monitor and follow-up control works. Method – Control through a combination of mechanical mulching / slashing, spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$1,000	10 days x 1 person
5	Monitor and follow-up control works. Method – Control through a combination of mechanical mulching / slashing, spot spraying and cut and paint.	80 Hrs. x $90/hr. = $7,200	$1,000	10 days x 1 person
TOTAL COST over 5 years for weed management at this site		**$36,000**	**$6,000**	**60 days**

Recommendations : DO NOT START UNLESS FUNDS CAN BE SECURED FOR AT LEAST 5 YEARS OF FOLLOW UP CONTROL. The regrowth on this site has resulted from insufficient follow up control after the initial mulching and spraying. This cost estimated is for establishing strategic access points using an excavator mulcher for knockdown to allow access for vehicle mounted spray unit. **Budget for extra costs associated with traffic management requirements.**

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10. Appendix A – Summary table of sites, priorities and budget required over 5 years

Management Area	Site objectives / priorities	Yr1	Yr2	Yr3	Yr4	Yr5	Total Cost
MA 1 – Andrew, Franklin & Gordon Rivers	Refer to page 14	* $600	* $0	* $600	* $0	* $600	* $1,800
MA 2 – Crotty Road, Bird River & Mt McCall	Refer to page 16	$4,200	$4,200	$2,160	$2,160	$2,160	$14,880
MA 3 – Lyell Hwy Nelson Valley	Refer to page 18	$8,200	$3,600	$4,600	$1,440	$1,440	$19,280
MA 4 – Lyell Hwy Cardigan Flats	Refer to page 20	$1,840	$1,440	$720	$1,120	$720	$5,840
MA 5 – Lyell Hwy Collingwood River	Refer to page 22	$1,840	$1,440	$720	$1,120	$720	$5,840
MA 6 – Lyell Hwy Donaghys Hill	Refer to page 24	$1,840	$1,440	$720	$1,120	$720	$5,840
MA 7 – Lyell Hwy Frenchmans Cap car park / Franklin River Nature Trail	Refer to page 26	$1,840	$1,440	$720	$1,120	$720	$5,840
MA 8 – Lyell Hwy King William Plains	Refer to page 28	$1,120	$0	$720	$0	$720	$2,560
MA 9 – Sarah Island	Refer to page 30	$4,600	$2,160	$0	$2,560	$1,440	$10,760
MA 10 – Braddon River Macquarie Harbour	Refer to page 32	$1,120	$0	$720	$0	$720	$2,560
MA 11 – Ocean Beach & Southwest Conservation Area	Refer to page 34	* $600	* $0	* $0	* $0	* $600	$1,200
MA 12 – Pieman Head	Refer to page 36	$1,840	$0	$1,640	$0	$720	$4,200
MA 13 – Howards Road	Refer to page 38	$3,680	$0	$2,880	$0	$3,680	$10,240
MA 14 – Ocean Beach Road	Refer to page 40	$2,960	$1,440	$0	$1,840	$720	$6,960
MA 15 – Henty Backwash	Refer to page 42	$6,040	$3,680	$0	$2,160	$2,040	$13,920
MA 16 – Queensberry Track	Refer to page 44	$1,840	$720	$0	$920	$0	$3,480
MA 17 – Yolande River	Refer to page 46	$3,680	$1,840	$920	$920	$920	$8,280
MA 18 – Swan Basin	Refer to page 48	$4,600	$2,760	$0	$2,560	$1,440	$11,360
MA 19 – Lowana Road, Strahan & King River Island	Refer to page 50	$4,600	$3,680	$0	$2,760	$2,040	$13,080
MA 20 – Trial Harbour Road	Refer to page 52	$4,600	$3,600	$2,760	$2,760	$1,440	$15,160
MA 21 – Lyell Hwy Strahan to Queenstown	Refer to page 54	$9,200	$7,800	$5,760	$3,600	$4,200	$30,560
MA 22 – Zeehan Wood Yard	Refer to page 56	$5,320	$4,320	$2,760	$2,760	$1,440	$16,600
MA 23 – Little Henty River	Refer to page 58	$7,200	$10,200	$8,200	$8,200	$8,200	$42,000
TOTAL BUDGET REQUIRED		**$83,360**	**$55,760**	**$36,600**	**$39,120**	**$37,400**	**$252,240**

* Herbicide cost only assuming volunteer in-kind contribution is secured.

10. Appendix B – Traffic management requirements

The Traffic Control for Works on Roads Tasmanian Guide (DSG, 2014) states the following legislative requirements:

"There are a range of legislative provisions relevant to the management and control of works at road sites in Tasmania, including the Traffic Act 1925, the Roads and Jetties Act 1935, the Local Government Highways Act 1982, and the Road Rules 2009……

……Those involved in providing traffic control at worksites, both in operational and managerial roles, must be competent. This means they must be appropriately trained, hold relevant qualifications, and have relevant field experience for the tasks they undertake.

1. Personnel undertaking traffic management activities in the road reserve must have satisfactorily completed the Australian Qualifications Framework Resources and Infrastructure Industry training package unit RIIOHS302A – 'Implement Traffic Management Plan' or equivalent.

2. In addition to the above qualification, where manual traffic control is required it shall be performed by those who have also satisfactorily completed the Australian Qualifications Framework Resources and Infrastructure Industry training package unit RIIOHS205A – 'Control Traffic with a Stop/Slow Bat' or equivalent.

3. As a minimum, traffic management plans must be certified by a person who has satisfactorily completed the Australian Qualifications Framework Resources and Infrastructure Industry training package unit RIICWD503A – 'Prepare Work Zone Traffic Management Plan' or equivalent. Satisfactory completion of the training specified at 1. (Implement Traffic Management Plan) is a pre-requisite.

4. For works involving more complex traffic arrangements, or staging, or both, traffic management plans shall be prepared by a person who has satisfactorily completed the Australian Qualifications Framework Resources and Infrastructure Industry training package unit RIICWD503A – 'Prepare Work Zone Traffic Management Plan' or equivalent and the Australian Qualifications Framework Resources and Infrastructure Industry training package unit RIIRIS301A – 'Apply Risk Management Processes' or equivalent. Satisfactory completion of the training specified at 3. (Prepare Work Zone Traffic Management Plan) and at least 12 months experience in the previous 3 years in selecting/modifying traffic control plans are pre-requisites.

Personnel are required to complete refresher training at three year intervals to keep up with ongoing changes to standards and legislation. Employers are required to ensure that employees' qualifications are sufficient and current."