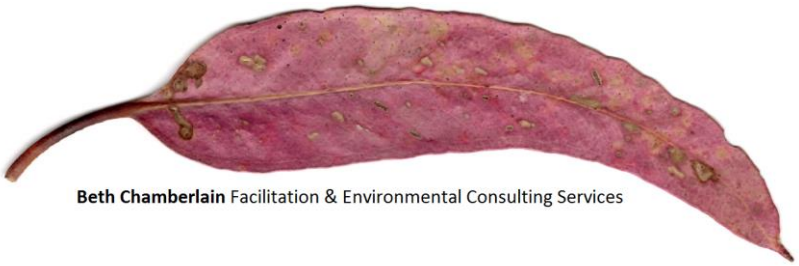

Kingborough Council's Bruny Island Ragwort Program Review and Action Plan

An independent evaluation of the effectiveness and efficiency of Kingborough Council's ragwort management practices on Bruny Island

May 2018

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ACKNOWLEDGEMENTS

The author acknowledges the generous assistance of the following people:

Rene Raichert, Liz Quinn, Scott Corbett & Cara Broke (Kingborough Council); Kim (Alonnah Post Office); Anne (Bruny News); Karen Stuart (Department of Primary Industries, Parks, Water and Environment); Richard Clarke & Trevor Adams (Bruny Island Primary Industries Group & Bruny Island Advisory Committee); Fran Davies (Bruny Island Community Association); Bob Graham & Daniel Sprod (Bruny Island Environment Network); Bernard Edwards & Scott Thornton (Tasmanian Parks & Wildlife Service); Kristen Dransfield (Sustainable Timbers Tasmania); Jill Jones (State Growth); James Gourlay (Crown Land Services); Richard Holloway (Consultant – Bio-control); Cassie Strain (Environmental Consultant); Ellen Davis (Tasmanian Farmers and Graziers Association); Phil Barker & Sue Jungalwalla (North Barker Ecosystem Services); Alison Hughes (Huon Valley Council); and the Bruny Island community.

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1 AIM

"To determine whether Kingborough Council's efforts to eradicate ragwort on Bruny Island have been effective and strategic, whilst identifying the strengths/weaknesses of the existing program to inform the recommendations of the Ragwort Management Action Plan."

2 INTRODUCTION

Kingborough Council (KC) has requested that an independent evaluation of the effectiveness and efficiency of their ragwort management practices on Bruny Island be undertaken, with the view to informing an action plan for KC ragwort management and community/stakeholder support/engagement.

The four key study areas for this review are:

- KC's Ragwort Management Program on Bruny Island including compliance of control on private land;
- Community support and engagement provided by KC for ragwort management on Bruny Island;
- Stakeholder resources and engagement;
- The challenges/successes of ragwort management to date.

2.1 Purpose of the Ragwort Review

In the last ten years, stakeholders have invested considerable resources to minimise the impact of ragwort on Bruny Island. The purpose of this review is to provide a critical analysis of past/current ragwort management practices to inform future actions and ensure strategic efforts continue to be supported, maintained and where possible enhanced.

Left: Flower head of ragwort (*Senecio jacobaea*)

2.2 Project Scope

The following questions were provided by KC as the basis for investigation for the Ragwort Review:

1. What risk does ragwort pose to KC's daily operations and natural values?
2. Is the eradication of ragwort on Bruny Island strategic and achievable?
3. What resources are being used to manage ragwort?
4. Has resource use changed over time? If so, why?
5. Is best practice management being achieved – i.e. could improvements in efficiency and effectiveness be made to maximise resources?
6. What are the greatest challenges to managing ragwort on Bruny Island?
7. What are the strengths and weaknesses of past/current ragwort management practices?
8. Are stakeholders supported/engaged?
9. How can KC improve stakeholder support/engagement?

The findings from this review will inform the priority actions for the Ragwort Management Action Plan (Section 5). The review will clearly identify areas in which efficiency and effectiveness can be improved, maximising cost-effectiveness and outcomes for ragwort management on Bruny Island.

2.3 Background

The Bruny Island Weed Management Strategy 2007 (BIWMS), identified ragwort as a priority weed, and it became the subject of a high profile awareness and eradication campaign on the Island.

Ragwort is a declared weed under the *Tasmanian Weed Management Act 1999* (WMA). Despite its widespread distribution across Bruny Island and its classification as a Zone B weed where the primary management objective was containment in the Kingborough Municipal Area (KMA), it was deemed a species of high threat that should be targeted for eradication by 2027 on Bruny Island for the following reasons:

- A strategic weed management plan existed – (BIWMS);
- It was prioritised for eradication as it was one of 9 weeds identified as having "the potential to impact upon industry and thus have a direct impact on the economy of the island";[1]
- There was a high level of community engagement and participation in ragwort management.

2.4 Compliance

A number of Council staff are weed inspectors under the WMA. In regards to compliance, KC has focused on issuing requirement notices to date.

KC has a comprehensive understanding of the issues of ragwort management at a whole Island scale on Bruny Island. For this reason they are the best agency placed to deliver compliance.

[1] Chamberlain, B. (2007) Bruny Island Weed Management Strategy (p.6)

The WMA includes a number of mechanisms by which inspectors can ensure compliance:

- A requirement notice detailing broadly accepted measures to be carried out by the offender to appropriately control the declared weed. Failure to comply with a requirement notice can result in prosecution in court with fines of up to $10,000;
- Infringement notices that describe an offence and its associated penalty. Penalties for offences range from 4 penalty units to 8 penalty units, with a unit currently worth $157;
- An 'on-the-spot' fine for offences;
- 'Works-in-Default' should the landowner fail to comply with a requirement notice.

Requirement notices provide the opportunity to engage and educate property owners and in theory ensure that problematic ragwort infestations are managed.

2.5 Bruny Island - Geography

Bruny Island is situated in southeast Tasmania and covers approximately 362 square kilometres, with a population of approximately 813.[2] There are approximately 1600 rateable properties on Bruny Island.[3] A small proportion of these would be owned by government agencies. To effectively manage ragwort, KC needs to engage with private landowners on the Island. This can be challenging due to the number of absentee landowners.

The Island is separated from the Tasmanian mainland by the D'Entrecasteaux Channel, with the east coast fronting the Tasman Sea.

Geologically, Bruny Island is actually two land masses, North Bruny and South Bruny, which are joined by a long, narrow sandy isthmus. Bruny Island has a total length of approximately 100 kilometres. The geology of the region is generally made up of Permian mudstone, Triassic sandstone, or Jurassic dolerite. Low lying areas typically contain more fertile alluvial deposits.

A diversity of anthropogenic and natural environments are present. The Island is covered in grazing fields and large tracts of predominantly dry or wet sclerophyll forest, with smaller extents of non-forest and non-eucalypt forest types and rainforest.

Tenure	Area (ha)	Percent
Private	18,137	51%
Parks and Wildlife Service	10,034	28%
Department of Primary Industry Water & Environment – Future Potential Production Forest[4]	4,982	14%
Sustainable Timbers Tasmania	1,758	5%
Crown Land Services	332	1%
Council	36	0.1%
State Growth	4	0.01%
TOTAL MAJOR STAKEHOLDERS	**35,283**	**99.11%**
TOTOL ON BRUNY ISLAND	**35,658**	

Table 1: Stakeholders as land tenure area (ha) and percent of total area on Bruny Island

[2] Population and Demographic Change in Kingborough, Tony Ferrier 2017
[3] Kingborough Council Rates Department 2018
[4] This land is currently reserved but the Liberal Government's policy is to reconsider its potential to be harvested after 2020. This may result in the land tenure changing at that time.

3 REVIEW METHOD

The review will be evidence-based and recommendations will aim to achieve improved outcomes through more effective and efficient weed management and stakeholder support/engagement. The review will consult with relevant state, regional and local government organisations, as well as industry, environmental and community groups. The process for completing the review will be as follows:

1. **Consultation Phase:**

- **Survey** – 350 surveys sent to landowners with reply paid envelopes, hard copies made available at the Alonnah Post Office with reply paid envelopes and access to the survey online.
- **Community Forum** at the Alonnah Hall 20th August, 2017.
- **Promotion of the Survey and Community Forum** – sign erected on the Island, posts on KC/ Bruny Island Community Association (BICA)/Bruny Island Community Notice Board Facebook pages, notification via KC website, posters at the Alonnah Post Office and Adventure Bay store, promotion at BICA meeting.
- **Stakeholder Forum** at the Council Chambers 28th August, 2017.
- **Liaison** with landowners involved in Bio-Control Project (Landcare Tasmania 2014-2015) and all key stakeholders invited to the Stakeholder Forum.

2. **Data Analysis Phase:**

- **Survey results**
- **Kingborough Council's ragwort management program**
- **Community participation in ragwort management**

3.1 Guiding principles

Identified in the Weed Management Strategy and Action Plan (WMS&AP) KMA (2017-2027) were seven key planks to steer future weed management within Kingborough towards effective and efficient weed management. The management actions described in these key planks provided the benchmark against which to assess KC's ragwort management data. These key planks are consistent with the overall principles of strategic weed management and prescriptive of 'best-practice' weed management practices.

Key Plank	
Best Practice Weed Management	• Baseline data • A planned weed control program on an annual/seasonal basis • Accurate up to date weed mapping • Up to date daily work records • Eradication of isolated outliers • Identification and treatment of the source of reinvasion • Commitment to ongoing treatments • Improving hygiene • Prioritised management (catchment led priorities, primary producer led priorities, natural values led priorities, weed led priorities) • Completing all stages of treatment of an achievable number of tasks • A commitment to integrated weed management • Manage risks associated with herbicide use • Minimising site disturbance • Monitoring of primary treatments and prescribed responses to ensure appropriate and timely secondary treatment • Working efficiently • Optimising utilisation of equipment • Utilising ChemCert trained staff and well-trained volunteers • Selecting, applying and storing chemical appropriately and safely
Integrated Weed Management	• Long term management approach • Optimising a range of weed management techniques
Planning	• Pragmatic plans that allow flexibility • Plans that accommodate management efforts that are responsive to changing priorities and aspirations • Strategic priorities and best practice methods • Include monitoring • Consistency between high level strategic framework and site treatment plans • S.M.A.R.T. goals (Specific, Measurable, Attainable, Realistic, Timely)
Risk Management	• Prevention and early detection • Eradication • Control/containment • Monitoring of ragwort free areas • Weed identification skills • Compliance checks • Enforcement of Requirement Notices

	• Awareness of changing climatic conditions • Awareness of unprecedented weed growth/behaviour • Weed species prioritisation
Stakeholder Engagement and Partnerships	• Integrated ragwort management across all tenures – private and public • Develop stakeholder relationships/partnerships • Seek opportunities for cooperation/collaboration/new partnerships • Cooperative service agreements between stakeholders and mandatory monitoring and secondary treatments • Form alliances/partnerships with private landowners • Foster community support and build upon relationships and networks • Seek external funding opportunities in collaboration with community groups • Lead by example
Education and Training	• Raise awareness and provide education – local weed management issues and solutions, what is at risk, where it is at risk and why it is at risk • Provide training that is specific to the delivery of the municipal Weed Management Strategy
Monitoring and Review	• Consider composition, distribution and abundance of ragwort in relation to resources applied • Record and data-base weed management efforts and results • Respond to challenges • Set targets that are S.M.A.R.T. (Specific, Measurable, Attainable, Realistic, Timely) • Generate meaningful performance indicators

Table 2: Key Planks adapted from the Kingborough Weed Management Strategy and Action Plan (2017-2027)

The management of ragwort on Bruny Island requires a cooperative, organised approached that works across land tenures. The goal is "... to optimise the level of integration of the interests and resources of the various stakeholders. This will provide cost effective and efficient weed management outcomes".[5] The review will seek to identify sound practices for advancing consistent, community wide responses for improved outcomes.

[5] Barker, P. (2017-2027) Kingborough Weed Management Strategy & Action Plan (p.16)

4 RESULTS AND DISCUSSION

4.1 Kingborough Council's Ragwort Management Program

KC has been working towards the overall management objective of eradication of ragwort on Bruny Island since 2007.

The current budget for ragwort management on Bruny Island is split into the following areas:

- Roadside ragwort management and compliance of control on private land
- Ragwort Bagging Program
- Awareness raising – signs, articles etc

4.1.1 Is eradication strategic and achievable?

The question of whether the eradication of ragwort on Bruny Island is strategic and achievable has been raised by KC in the commission of this report.

The Ragwort Statutory Weed Management Plan states that eradication is the most appropriate management objective ... when a credible plan for eradicating existing infestations is being developed and implemented and resources are secured. The ultimate management outcome ... is achieving and maintaining the total absence of ragwort from within municipal boundaries, in this case, Bruny Island's boundaries.[6]

Whilst the BIWMS is a credible plan, it could be argued that it lacked the detail required to guide an effective and efficient eradication program. It could also be argued that due to the lack of baseline data, particularly in regards to the accurate mapping of ragwort across land tenures that an understanding of the level of resources required could not have possibly been known, let alone secured for long-term management of this weed.

The success of KC's efforts to eradicate ragwort from Bruny Island to date and to deliver compliance has been limited due to:

- the widespread nature of ragwort on Bruny Island;
- the lack of a suitably detailed plan to ensure effective and efficient long-term management of ragwort ; and
- the lack of consideration of the management objective of eradication in the context of available resources to manage the weed (including KC).

In the last 10 years there has been a shift in the way that widespread weeds are managed. While landowners tend to focus on treating widespread weeds due to their more obvious presence, their impact on production and biodiversity, and the costs associated with controlling them; the public sector, including KC, are increasingly focusing resources on prevention and eradication of new weeds to avoid future costs. Given the large number of weed species, there is broad agreement that

[6] Department Primary Industries, Parks, Water & Environment (DPIPWE)

effective programs must direct effort and funding towards actions that will achieve the greatest outcomes.[7]

Due to the widespread nature of this weed on Bruny Island, eradication by 2027 is deemed inappropriate. To pursue this management outcome would not be strategic – the benefit relative to the cost would be disproportionate.

As greater information about the distribution of ragwort has become available, KC's NRM Team have realised that containment with a much longer-term commitment to eradication is a more strategic management objective. This management objective is consistent with current best practice weed management principles.

4.1.2 Roadside ragwort management and compliance

From 2010-2015 KC's Ragwort Management Program was focused on eradication. Rosettes were treated early in the season. Known infestations on KC roadsides and assets were targeted initially, and new roadsides/assets were brought into the program as ragwort was identified. Requirement notices were issued to a number of landowners who failed to treat ragwort on their land and were followed up to ensure adherence to the notice. How these particular target areas and landowners were prioritised is not clear from the data.

From 2015-2017 KC's Ragwort Management Program was still focused on eradication; however the primary management technique was revised. Flower heads were cut and bagged. This was due to the adoption of an integrated weed management approach supporting bio-control populations and reallocation of funds to implement a more strategic, planned approach to high threat weed species across the KMA. In 2016-17 all KC roadsides/assets on Bruny Island were checked for the presence or absence of ragwort. On roadsides/assets where ragwort was present, plants were hand pulled. Due to the resource intensive nature of issuing requirement notices, a generic letter was sent to all landowners with ragwort.

An estimate of the resources invested by KC for ragwort management on Bruny Island was calculated in the following way:

- Data from daily work records (October 2010 – February 2017) extracted to calculate the number of hours spent in the field carrying out roadside ragwort management and compliance of control on private land, and delivery of the Ragwort Bagging Program;
- Approximate values were applied to account for the following costs - labour, chemical use (as detailed in daily work records), traffic management, administration and Bruny Island Ferry. These approximate values were supplied by Rene Raichert from KC NRM Team;
- Actual costs were calculated for skip bin hire, transport and disposal;
- Totals were then calculated for each annual summer season.

[7] Natural Resource Commission (2014) Issue Paper – Review of Weed Management in NSW

Figures 1, 2 & 3 demonstrate that KC is invested in ragwort management and compliance on Bruny Island. There is an obvious variation as to the level of investment provided from season to season. It is difficult to draw quantifiable conclusions from the data as to the reasons for the variation in costs, and to assess the efficiency and effectiveness of the on-ground and compliance program without baseline data records or monitoring and evaluation of sites.

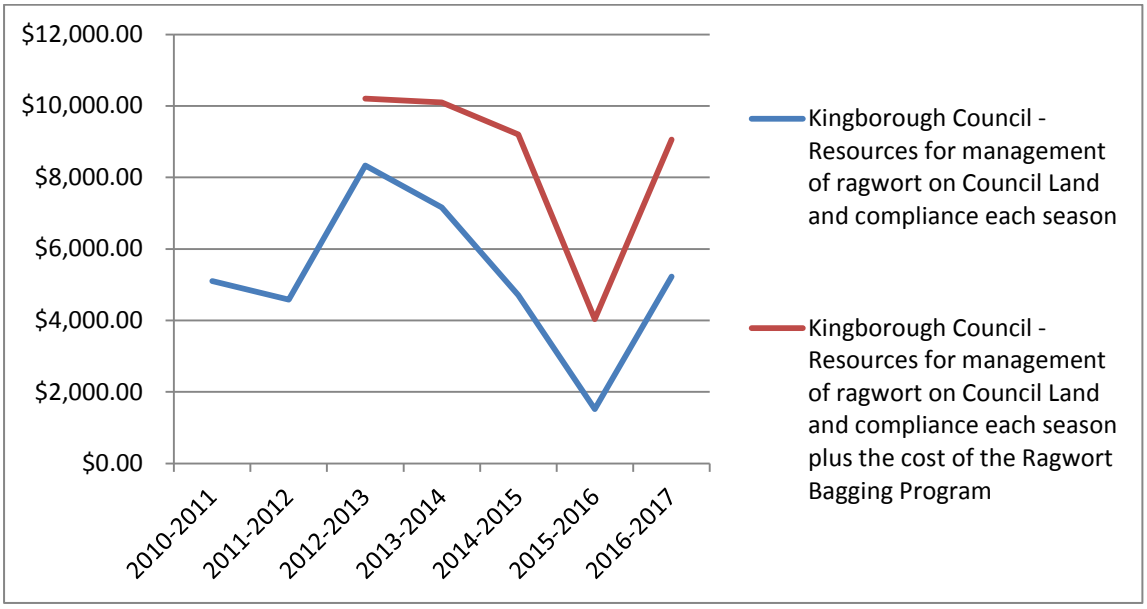


Figure 1: Estimate of resources for management of ragwort on Council land and compliance for control on private land plus Ragwort Bagging Program (this graph does not include the cost of bags for the Bagging Program or the cost for the Ragwort Review in 2017-2018)

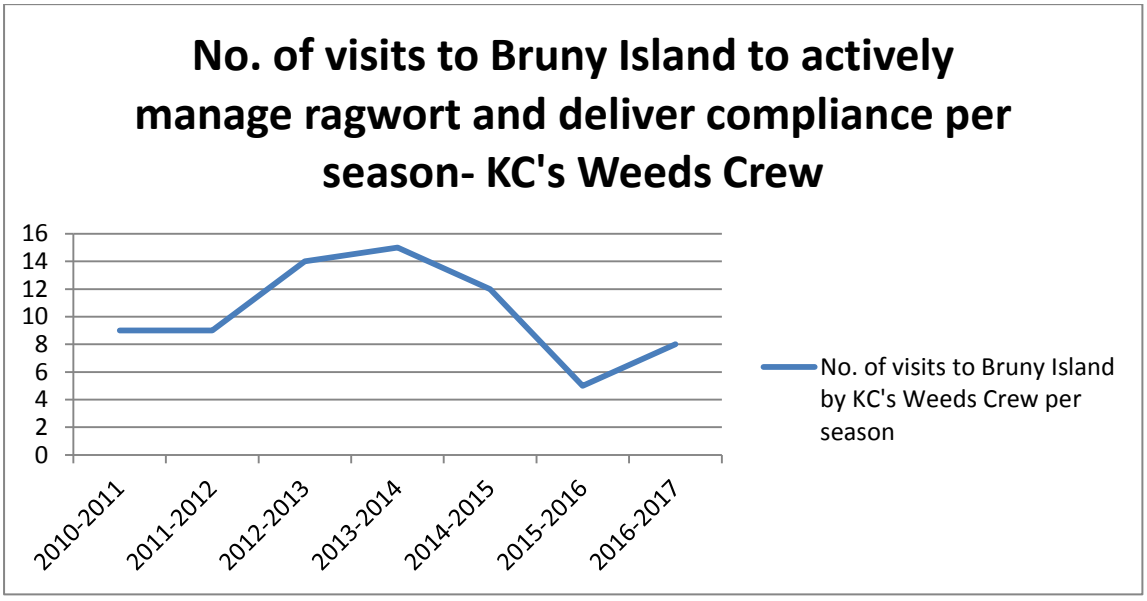
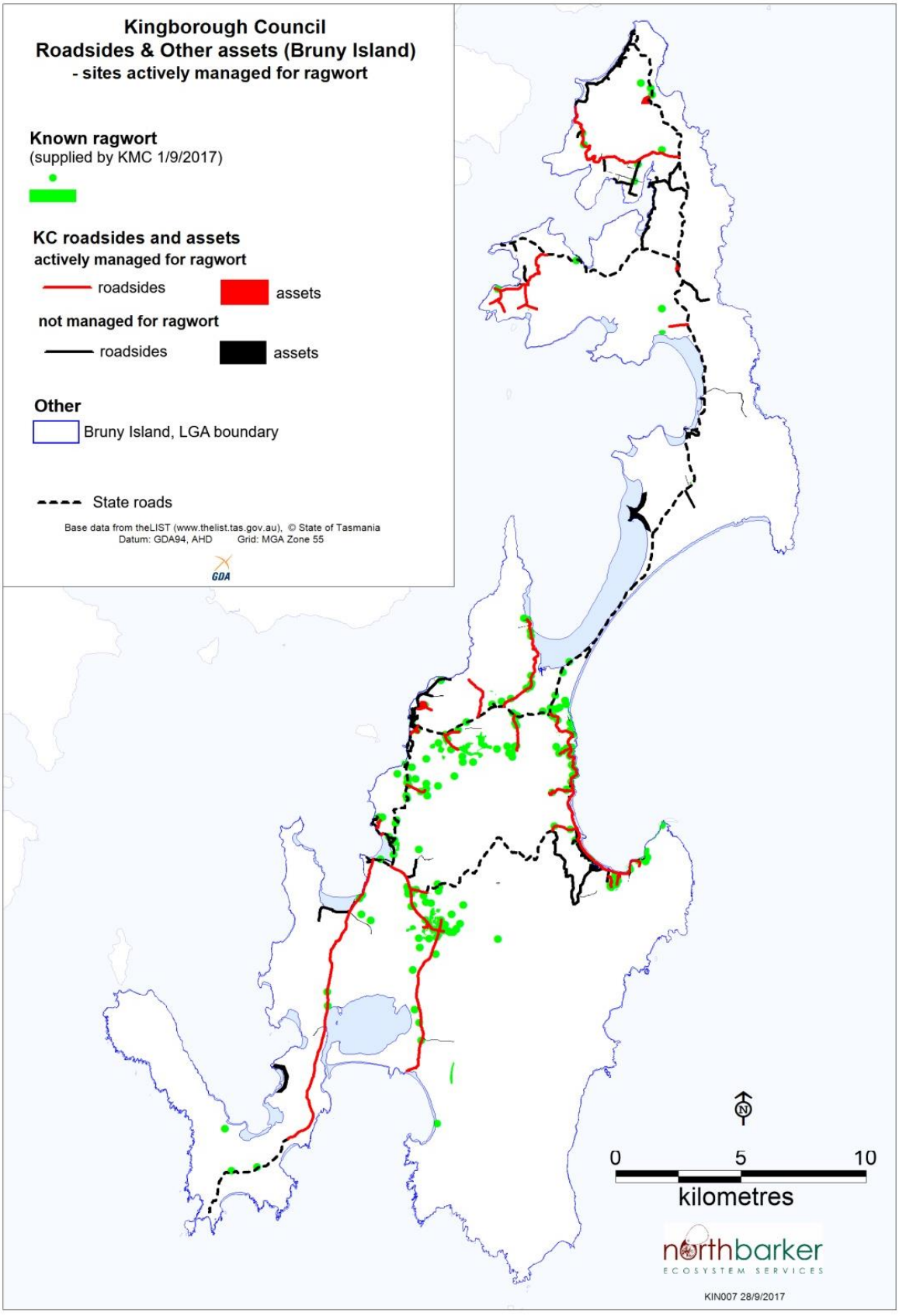


Figure 2: Number of visits to Bruny Island to actively manage ragwort and deliver compliance on private land (KC's Weeds Crew)

Figure 3: Kingborough Council's roadsides and assets actively managed (ragwort)



Interpretation of the map – Black or red solid lines/polygons are Kingborough Council's roadsides/assets. The red lines/polygons indicate that the roadside/asset is being actively managed for ragwort. The intersection of the green dots (representing ragwort) and the red lines/polygons demonstrates that Kingborough Council is actively managing the known ragwort infestations on their roadsides/assets 2010-2017.

Further to Figure 3, the results in Table 5 (Appendix 1) provide specific information about the roadsides/assets where ragwort control has/has not been carried out, the number of treatments in a season and each season that control occurred at that roadside/asset.

There are 77 KC roads on Bruny Island.[8] Of these 31 are known to have ragwort infestations. Weed maps from the Bruny Island Roadside Weed Management Plan, KC Roadsides (2009) and data from daily work records (2010-2017) was collated to determine which roads were known to have ragwort infestations. Based on the data, in 2010-2011 26% of these ragwort infested roads were treated by KC. This more than doubled by 2016-2017 to 61%. Between 2010-2017, 74% of roads known to have ragwort infestations were treated in one or more seasons. This equates to 23 out of the 31 roads.

The data indicates that a reasonably consistent and thorough on-ground program has been implemented by KC. Three-quarters of the roads have received both initial and follow up treatments in the last seven years. The current program for roadside ragwort management, where all KC roadsides/assets on Bruny Island known to have ragwort infestations are monitored will help to mitigate the re-establishment of this weed at any of these sites. To ensure that the budget allocated for the management of ragwort on roadsides is maximised, all known sites should be ranked using the priorities outlined in Table 4 (Action 3, from Section 5). Roadsides that have not been treated in the last seven years are of the lowest priority unless they are adjacent to properties that are Priority 1 ranked in Table 5. Lowest priority roadsides known to have ragwort should be monitored as a minimum. This is in-line with best-practice weed management principles and will result in the best outcomes both on-ground and in regards to effective budget allocation.

Baseline data recording the extent of infestations at roadsides will provide quantitative data for assessing the effectiveness of the on-ground program. For example, this could be a mud-map or a photo point. This needs to be implemented as part of KC Ragwort Management Program – roadside ragwort management.

4.1.3 Ragwort Bagging Program

In the summer of 2006-2007, KC initiated what has become their annual Ragwort Bagging Program. It was developed in response to community concern about the threat that ragwort posed to primary industry on the Island. The distinct boundaries of Bruny were seen to provide an advantage for the effective management of this weed. Over 700 bags of ragwort were collected on private land. These bags were collected by KC from properties for disposal.

In 2007-2008, a skip bin was provided by KC for the disposal of bagged ragwort and the Department of Infrastructure Energy and Resources (now State Growth) supplied signs to raise the profile of ragwort and awareness of the Bagging Program/ragwort management.

[8] Data provided by Kingborough Council (2018) Andrew Coombe

Approximately 45 landowners participated in the 2016-2017 Ragwort Bagging Program and the bin was filled twice in this season. The register of participating landowners provides a valuable source of information regarding locations/densities of ragwort infestations and the level of community engagement.

The cost of the skip bin varied from season to season. It can be broken down into the following categories:

- Delivery of the bin
- Monthly hire cost
- Collection and disposal

The variation in cost can be attributed to the number of times the skip bin was filled (and therefore needed to be emptied) and the number of months the skip bin was on the Island.

On average the skip bin cost $3,129 per season ($1873 - $4493). $240 was the average cost of disposal of the bagged ragwort.

As mentioned previously, the management of widespread weeds relies on engaging and coordinating community resources for long-term collaborative management. The Ragwort Bagging Program (including the signs) is an example of a successful long-term awareness and education program initiated by KC.

Above: Signs erected each season by Kingborough Council to raise awareness about ragwort (*Senecio jacobaea*) and its management.

The success of KC's Ragwort Bagging Program is demonstrated by the continued engagement of a number of landowners since its beginning. According to the records, these landowners are hand pulling less ragwort from their properties. When combined with the data from the survey it is clear that these landowners now have less ragwort on their property than when the program started, and in some cases they have eradicated ragwort from their property. This KC initiative is a success story in terms of community support and engagement.

4.2 Ragwort Review Survey

There were 47 responses to the survey – 37 by post and 10 were completed online (results detailed in Appendix 2).

4.2.1 Discussion – Ragwort Review Survey

66% of survey respondents are managing ragwort on their land. They are progressing well, using less resources and have little left to manage. Indeed, 84% of them believe that they can eradicate ragwort from their property.

Primary producers/horse owners are the most invested, engaged and committed group. They are spending the most time treating ragwort on their land and resources on chemicals. This is expected as the relative risk posed to this group is high as discussed in Section 5.

The residential/accommodation group make up 19% of the survey group managing ragwort on their land (6 respondents). They are spending the most time hand-pulling ragwort. Changing the location of the skip bin for the Ragwort Bagging Program will impact the most on this group. 2 respondents agreed to the change of location, 2 disagreed and 2 did not answer the question. However, 83% had an opinion on the reallocation of the funds saved by moving the skip bin. Engagement of this group may be required to ensure their continued participation in the program.

The Ragwort Bagging Program is highly valued (68% of respondents find it to be extremely useful). 58% support the change of location for the skip bin and would like the funds saved to be channelled into other areas, particularly enforcement.

42% of survey respondents are interested in using the bio-control as part of their integrated weed management. 70% of primary producers/horse owners are interested, 50% of Land for Wildlife/bush and 66% of accommodation/residential.

Only 29% of the survey respondents (managing ragwort) believe that it can be eradicated from the whole Island.

The barriers for achieving eradication were identified as:

- lack of awareness;
- lack of participation by all landowners,
- lack of education;
- current compliance program;
- poor management practices; and
- lack of integrated weed management.

Based on the survey results, the most useful ways in which the Kingborough Council could support the Bruny Island community to manage their Ragwort involved:

- a consistent and realistic compliance program;
- a greater presence on the Island;
- community engagement;
- education and resources;
- rewards and assistance;
- the continuation of the Ragwort Bagging Program; and
- best practice weed management.

The responses to the survey demonstrate that a proportion of the Bruny Island community is invested and engaged in ragwort management. For those that are engaged, the majority are succeeding in containing/eradicating their ragwort.

Figure 4 (p.18) shows that when the data is collated (survey, Ragwort Bagging Program, Bio-Control Program and inspected properties now treating ragwort), that there are a significant proportion of landowners, ragwort present, that are not recorded as actively managing their ragwort. This is consistent with frustrations expressed by survey respondents and Islanders that attended the Community Forum. Records from the Ragwort Bagging Program also reflect that it is generally the same landowners participating each season.

The challenge for KC is to work out how they can effectively engage all landowners with ragwort infestations, and how they can best support the landowners who are invested and engaged in ragwort management. This will be discussed further in Section 5 – Action Plan.

4.3 Community Forum

Two members of the community came to the Community Forum and there were several apologies.

The lack of attendance at the Community Forum was disappointing. Despite this, it was valuable to engage with those that did come along and that were apologies. The fact that a number of people representing the primary producers group were away may have significantly impacted on the number of attendees. The lack of attendance is consistent with a lack of broad community engagement as demonstrated by the number of survey respondents and Figure 4 (p.18).

The aim of the Community Forum was to provide landowners with the opportunity to have their say about ragwort management – the highs and lows of treating ragwort on their property, what has worked well, and how ragwort management across the Island could be improved. Considering the level of passion and dedication landowners had shown; it was critical to give them a voice and encourage their input to help to shape the future direction of ragwort management on the Island.

Landowner 1

This landowner has a small acreage on the south end of Bruny Island. They have been vigilant in managing ragwort on this property and there is very little left. Neighbouring properties have ragwort infestations – they have bagged up to 20-25 bags on these two properties this year. Each year, this landowner organises for a contractor to spray on one of the properties, on behalf of the absentee landowner.

This landowner initially opposed moving the skip bin to a different location on Bruny Island. Rationale for moving the bin was discussed. The landowner became supportive of using the existing waste management site to free up funds for strategic re-investment into the program.

The highest priorities for this landowner are compliance and enforcement.

There was a valuable exchange of information about the bio-control and ragwort infestation locations.

Landowner 2

This landowner manages other properties on the Island that are infested with ragwort. They were not supportive of moving the bin however they would like more resources to be spent on compliance and enforcement.

Landowner 3 (apology)

Initially this landowner was not supportive of the bin being moved. The possibility of it being moved to the Bruny Island tip site was discussed. This landowner would like to be able to drop bags at the Electrona tip site as they work in the week, and are often off the Island on weekends. Access to the mainland tip would be more practical in their case.

This landowner is disillusioned by the current compliance program and their highest priority is an improved compliance and enforcement program that delivers results.

Primary producers (apologies)

There were a group of primary producers who were unable to attend the meeting as they were off the Island attending a prior engagement.

4.4 Bio-Control Project (Landcare Tasmania 2014-2015)

Bio-control is the reduction of pest populations using natural predators. In Tasmania, bio-control has proven to be a very effective component of integrated ragwort management. Three bio-control agents for ragwort have been released in Tasmania over the last 35 years.[9]

Ragwort bio-control agents were first introduced to Bruny Island in the 90s to properties in Alonnah. In 2014-2015 Landcare Tasmania received funding for a bio-control program. The outcomes of this project on Bruny Island were:

- a number of ragwort sites were visited looking for the presence of the ragwort flea beetle (*Longitarsus flavicovnis*) – Dillons Road, Apollo Bay, Whaymans Road and Cloudy Bay;
- the ragwort flea beetle was found at all of the locations except for Cloudy Bay;
- a 'bio-control' workshop was held at one of the properties where the ragwort flea beetle was found with good attendance;
- a nursery site was established at Simpsons Point.

As part of the review, three of the landowners were contacted to discuss the outcomes of the project to date.

Property 1 (Alonnah)

- First property to have the ragwort bio-control introduced on Bruny Island
- This landowner is working towards eradicating ragwort from their property and has their current ragwort infestation under control
- There is no stock run on this property
- Mostly hand pulls ragwort plants, however when spraying other weeds will spray rosettes to minimise infestation
- Different climate conditions (dry vs.wet periods) have impacted on bio-control populations on this property
- Bio-control favoured dry conditions
- No indication of the presence of the ragwort flea beetle this season – has been a very wet spring so far
- Possible nursery site

[9] Ragwort Bio-control Integrated Management – Landcare Tasmania brochure

Property 2 (Alonnah)

- This is the neighbouring property to Property 1
- 80 hectares of bush
- Property was heavily covered in ragwort in both the pasture and bush
- 60 bags of flower heads were collected in the first year (2011) – 4 bags of flower heads collected last season (2016)
- Ran sheep on the property to keep ragwort infestation down
- Carried out some spot spraying
- No sign of the beetle
- Monitors and treats outbreaks in the bush areas in December, February and June
- Ragwort flea beetle found to be ineffective in wet areas or wet seasons

Property 3 (North Bruny)

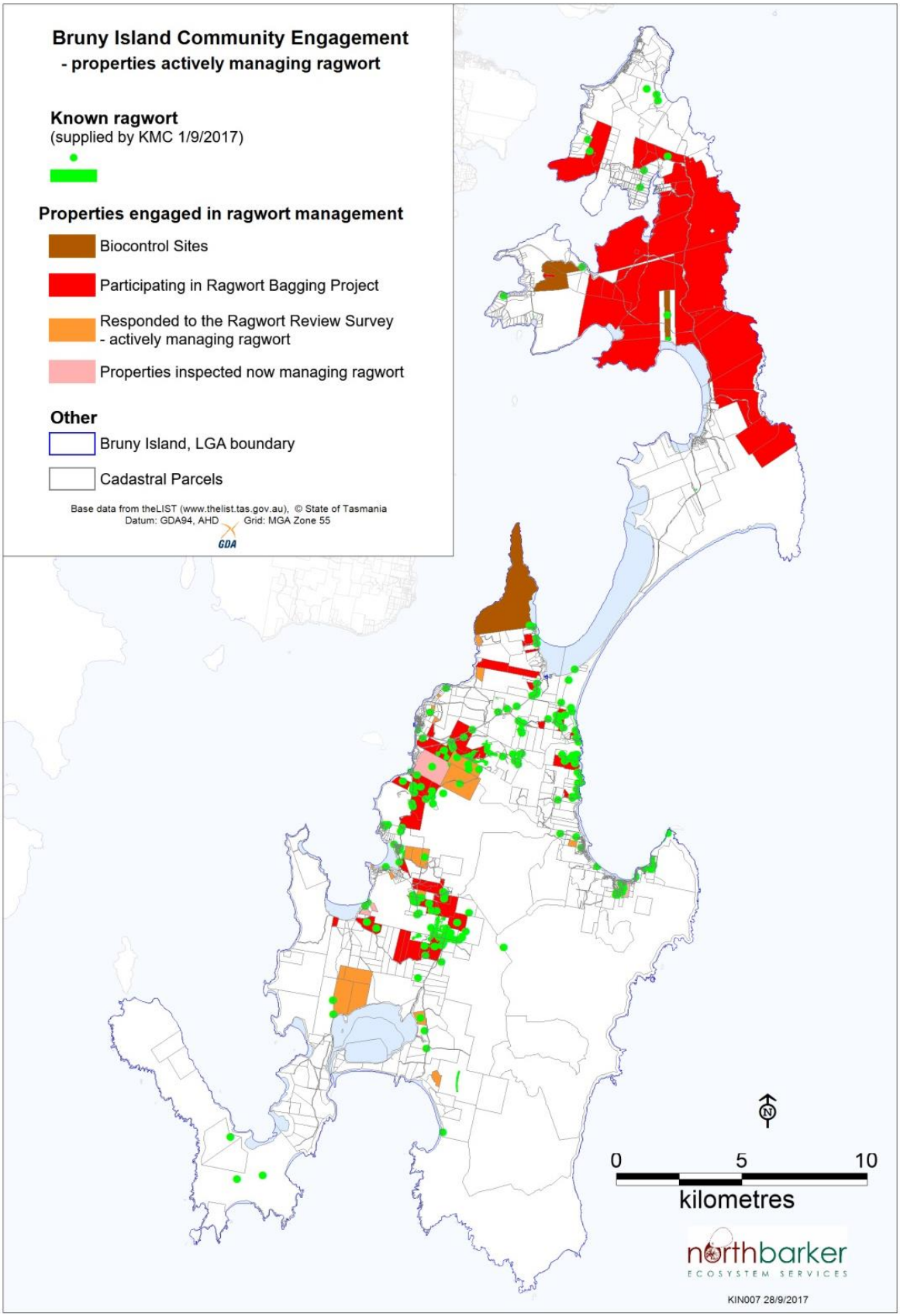
- Land for Wildlife
- 41 hectares – bottom 2 hectares infested with ragwort
- Believes it is likely that the seed spread over the channel from Middleton
- Noticed an improvement in ragwort infestation since integrating bio-control into their management efforts
- Continue to actively manage, cutting and bagging flower heads, aiming for containment

It was indicated in both the survey and at the Stakeholder Forum that there is an interest in initiating a cross-stakeholder funded, long-term bio-control program. The above interviews identify some of the limitations and opportunities that exist in such a program.

If there are enough properties identified that can benefit from the bio-control, and funding can be sourced collaboratively, the opportunity exists to build on the Bio-control Project (Tasmanian Landcare, 2014-2015).

Left: The ragwort flea beetle (*Longitarsus flavicornis*) can be an affective agent in ragwort control, provided land managers understand how to integrate the beetle into their weed control activities. Mismanagement can have an enormous detrimental impact on beetle population numbers, allowing ragwort to persist and spread.

Figure 4: Community actively managing ragwort



Interpretation of the map – The areas coloured in brown, red, orange and pink represent private landowners that are actively engaged in managing ragwort on their property.

The intersection of a coloured polygon and a green dot represents properties where ragwort is present and the landowner is engaged in management. A coloured polygon with no green dot represents a parcel of land where ragwort is being managed (infestation not known to KC or not mapped across multiple titles for single landowner). The intersection of a cadastral parcel, not coloured, with a green dot represents either an engaged landowner unknown to KC, or a property where the landowner is not engaged in ragwort management.

As previously mentioned in Section 4.2.1, there are a significant proportion of landowners, ragwort present, that are not recorded as actively managing their ragwort. The majority of private landowners actively managing ragwort are on larger parcels of land, consistent with the survey results.

Currently data is collected from community members as part of the Ragwort Bagging Program. The opportunity exists for KC to also collect data from the proposed compliance and bio-control programs (Section 5). Combined, this valuable data provided by community, will assist KC to evaluate ragwort management on private land and community engagement.

4.5 Stakeholders

Strategic outcomes rely on good stakeholder relationships. The opportunity exists to considerably improve efficiency through collaboration/coordination. All agencies face constraints within their financial budgets. Improved financial outcomes can be gained through collaboration/coordination, resource sharing and forming strategic partnerships. It is critical that all stakeholders are aware of what it is each group is working towards and the opportunities that exist for collaboration/coordination.

The following is a summary provided for this report by each stakeholder group outlining their current involvement in the management of ragwort on Bruny Island:

Parks & Wildlife Service (PWS) – provided by Bernard Edwards and Scott Thornton

Parks & Wildlife Service has no allocated funds for contractors to carry out weed control on Bruny Island. However, strategic and cost-effective programs may attract funding. PWS is responsible for managing more than one quarter of the Island, with approximately 15 conservation areas and nature reserves and South Bruny National Park. South Bruny National Park and the Neck Game Reserve are the highest priorities for PWS on Bruny Island, making up 70% of the land they manage.

Within these natural areas ragwort does not pose a high threat. It is found mostly in previously disturbed areas and paddocks and whilst not establishing well in areas of bush, it can take a hold in coastal environments.

The known infestation at Grass Point within the South Bruny National Park could be an ideal site for using the bio-control as part of an Integrated Weed Management Plan (IWMP).

PWS are interested in collaborating with Kingborough Council – sharing available resources to maximise efficiency and effectiveness of weed management on Bruny Island.

Crown Land Services (CLS) – provided by James Gourlay

Crown Land Services is responsible for Crown land under the *Crown Lands Act 1976* including Future Potential Production Forest land on the Island. CLS understands that ragwort is a priority weed for control on Bruny Island. CLS does not undertake active monitoring or mapping of weed incursions on land under its authority. The full extent of ragwort occurrences on Crown land on Bruny Island is not well understood. One parcel of Crown land affected by ragwort at Adventure Bay has been identified and CLS has planned initial control by spraying during spring 2017. CLS would like to be contacted if other ragwort infestations are found on its land on Bruny Island. CLS may be interested in a bio-control program subject to more information being provided and if supported by the Department (DPIPWE).

Sustainable Timbers Tasmania (STT) – provided by Kristen Dransfield

There is 1758 ha of Permanent Timber Production Zone Land (PTPZL) on Bruny Island, all of which is being actively managed for weeds by Sustainable Timber Tasmania. This is mostly concentrated on roadsides rather than within the forest coupes as the shade caused by tree canopy closure has caused any weeds in the understorey to die off.

All other areas previously managed by STT (and formerly Forestry Tasmania (FT) are now reserved as Future Potential Production Forest managed by Crown Land Services.

An Environmental weed reporting system is established where observations of environmental weed locations are reported in STT's Forest Operations Database and are automatically added to a layer in the mapping system. The management of weeds, including ragwort, is governed by STT's Environmental Weed Control Strategy, which outlines our priorities and legal requirements for weed management.

The area of PTPZL on Bruny Island infested with ragwort is very small, and consequently the management aim is to achieve eradication, in accordance with the WMA management objective for Zone A weeds. Eradication of ragwort on PTPZL is achievable, provided that neighbouring landowners are also managing ragwort in an appropriate manner to prevent its spread.

Ragwort does not pose a threat to forestry operations. The method of ragwort control is by ground spraying with Lontrel™ Advanced, in accordance with the DPIPWE Code of Practice for Ground Spraying and the STT Standard Operating Procedure for Herbicide Application. Hand pulling and bagging ragwort for disposal in the skip bin provided is another method used by STT.

Based on the estimated program, approximately $1000 will be allocated from the 2017/18 budget for control of ragwort on Bruny Island. In previous years when the area now designated FPPF was being managed by FT, approximately $5000 was used for ragwort control.

State Growth (SG) – provided by Jillian Jones

State Growth and Kingborough Council have a partnership arrangement for delivering targeted management in the State Road Reserve as part of SG's Priority Weed Program. In 2017-18, funding for the Kingborough partnership is in the order of $12,000. This funding will be spent on both Bruny Island and other locations within the municipality. Targeted areas for funding have been identified through both the State Growth Weed Strategy and Southern Weed Service Delivery Plan and consultation with KC's NRM Officer. Ragwort is one of the priority weeds included in this program.

Department Primary Industries Parks, Water and Environment (DPIPWE) – provided by Karen Stuart

The Department of Primary Industries, Parks, Water and Environment, through Biosecurity Tasmania, administers the *Weed Management Act 1999* and provides training and compliance support to local government weed officers. This support includes the required DPIPWE signoff for works in default. Biosecurity Tasmania staff provide general regulatory advice to local government along with other stakeholders and the community and provide support to municipal weed programs through participation in stakeholder networks and meetings. The Department maintains a webpage that provides weed identification and integrated management information and staff provide technical advice as requested. The Department also provides permits for exemptions under the Act for activities such as use and movement of declared weeds that assist in the implementation of specific weed management programs and also the provision of off-label permit use for specific herbicides.

Ragwort is a declared weed under the WMA. Despite its widespread distribution on some parts of Bruny Island and its classification as a Zone B – containment weed in the KMA, it was deemed a species of high threat that should be targeted for eradication by 2027 (Bruny Island Weed Strategy 2007). Current investment available across all land managers and stakeholders for ragwort management is not sufficient to achieve eradication on Bruny Island in this time frame. Considerable resources have been invested by Council, the community and other stakeholder groups. Ongoing efforts and resource allocation need to ensure that all ragwort infestations on the Island are subject to ongoing management incorporating a range of integrated control measures, including biological control, to continually reduce population density, spread and impacts.

It is recommended that the KC and other stakeholders:

- Identify all infestations of ragwort on the Island;
- Develop / maintain a database for known infestations that documents management practices implemented and compliance undertaken;
- Coordinate the development of integrated weed management plans for infested areas / properties.

Tasmanian Farmers and Graziers Association (TFGA) **– provided by Ellen Davis**

The Tasmanian Farmers & Graziers Association is Tasmania's state farmer organisation, representing over 3,000 members who live and work on farm businesses situated across Tasmania.

The TFGA is an active, powerful lobby group owned and governed by farmers, for farmers. With a strong record of successful political advocacy and leadership, the TFGA has generated substantial benefits for the agriculture sector since its formation in 1948.

TFGA members lead interest groups and, with the support of staff, provide the power to effectively influence all levels of government on the wide range of issues that impact on modern farming.

TFGA is supportive of specific programs that target invasive weeds, like ragwort, where eradication is a priority.

Bruny Island Advisory Group (BIAG) (https://www.kingborough.tas.gov.au/council/committees/)

"The Bruny Island Advisory Committee was established by Council to provide a communication link between the Bruny Island community and Council. The objectives within the Committee's Terms of Reference are:

- Provide a forum to discuss proposed Council initiatives and to assist in obtaining the views of the Bruny Island community in relation to future Council projects or programs.
- Provide advice to Council on the priority of capital works programs carried out by Council on Bruny Island.
- Assist Council in the development of policies, strategic directions and procedures that relate to Council programs that are relevant to Bruny Island."[10]

Bruny Island Community Association (BICA) – provided by Fran Davis

The Bruny Island Community Association was formed in April 1980. They are an incorporated body and are responsible for publishing the Bruny News.

The Association provides a valuable forum for airing issues affecting the Bruny Island community and takes the community's voice to Local and State Governments seeking appropriate actions.

The Association also assists other community organisations on Bruny in their endeavours and using funds raised by Bruny News advertising, provides financial support to community related development projects.

In 2007, BICA provided funds for the development of the Bruny Island Weed Management Strategy. BICA may be interested in providing funding in collaboration with other stakeholders for other strategic projects for effective ragwort/weed management projects on Bruny Island and may be prepared to partner and build a relationship with Kingborough Council's NRM Team.

[10] Bruny Island Advisory Group - (https://www.kingborough.tas.gov.au/council/committees/)

The opportunity also exists to access the broader community through the Bruny News (e.g. articles about Kingborough Council's Weed Programs on Bruny Island, educational material, resources and promotion of NRM initiatives).

Bruny Island Primary Industry Group (BIPIG) – provided by Richard Clarke

As the name suggests, the Bruny Island Primary Industry Group is made up of a group of primary producers that come together on a regular basis to discuss the issues and successes of farming on Bruny Island.

They have been involved in weed management projects funded by NRM organisations and are a wealth of knowledge in terms of current weed challenges and opportunities, as well as weed locations and densities. They would be willing to partner with KC's NRM Team to maximise knowledge and efficiencies in regards to ragwort management.

The group raises funds and may be interested in collaborating on strategic weed management projects that support their objective as primary producers.

Bruny Island Environment Network (BIEN) – provided by Dan Sprod on behalf of Bob Graham

The Bruny Island Environment Network Inc. is a network of individuals and groups with an interest in the conservation of the natural resources and biodiversity of Bruny Island, Tasmania, Australia. The aims and purpose of the network are to:

1. Promote the biodiversity, cultural heritage and scenic values of Bruny Island and generate resources and support for their protection.
2. Support economic activity on Bruny that is ecologically sustainable, generates sustainable livelihoods on the island and enhances its values.
3. Provide information and support for landholders, the wider Bruny community and visitors about environmental and conservation issues.
4. Enable private and public landholders to improve environmental outcomes, particularly through:

- Vegetation management,
- Improved environmental management practices,
- Environmental education,
- Management of reserved and protected areas, and
- Coastal and marine conservation and management

The opportunity exists to partner with BIEN to further strategic weed management on Bruny Island, and to help coordinate vegetation management, community engagement and environmental education.

Establishing and maintaining long-term relationships with these stakeholder groups will assist in the development of mutually beneficial programs that deliver cost-effective, integrated outcomes. To achieve best practice, this aspect of weed management needs to be factored into available budgets.

4.6 Stakeholder Forum

Five key stakeholder groups were represented at the Stakeholder Forum:

- Kingborough Council – Liz Quinn (NRM Co-ordinator), Rene Raichert (NRM Project Officer) & Cara Brooke (Weeds Officer)
- State Growth – Jill Jones (Environmental Extension Officer)
- Bruny Island Advisory Committee & Bruny Island Primary Industries Group – Trevor Adams
- Sustainable Timbers Tasmania – Kristen Dransfield (Senior Forest Officer – Forest Management)

Other attendees:

- Environmental Consultant – Cassie Strain (Bio-control Project, Landcare Tasmania 2014-2015)
- Consultant – Richard Holloway (previously worked for The Tasmanian Institute of Agriculture Weed Biological Control Unit)
- Huon Valley Council - Allyson Hughes (Natural Resource Management Co-ordinator)

Apologies:

- Bruny Island Advisory Committee & Bruny Island Primary Industries Group – Bill Hughes & Richard Clarke
- Parks & Wildlife Service – Bernard Edwards (Ranger) & Scott Thornton (Field Officer)
- Tasmanian Farmers & Graziers Association – Ellen Davis (Policy Officer)
- Bruny Island Environment Network – Daniel Sprod
- Bruny Island Community Association – Fran Davis (President)
- Department Primary Industries, Parks, Water & Environment – Karen Stuart (Program Co-ordinator - Invasive Species)

The aim of the Stakeholder Forum was to bring together key stakeholders, including those who could provide specialised insight and technical knowledge, to discuss past/present and future ragwort management on Bruny Island.

The Forum provided the opportunity to share the challenges of addressing ragwort infestations on each land tenure, including resourcing and capacity, legislative requirements and cross tenure complications.

The group was given the following list of questions to help guide the conversation:

- Do you think that the ambitions and expectations set out in the Bruny Island Weed Management Strategy were realistic and achievable in regards to ragwort management?
- What do you see as the greatest challenge to managing ragwort on Bruny Island?
- What impact, including economic impacts, does ragwort have on your land and or daily operations?
- What would be the most useful way that key stakeholders could work together to manage ragwort on Bruny Island?
- What resources are you using to manage ragwort on your land?
- Is there any opportunity to collaborate and maximise resources?
- Are you using the bio-control (ragwort flea beetle) to manage ragwort on your land?
- Do you have less/the same/more ragwort on your property now? What is the main reason for this?

The questions were considered within two key topic areas:

- Identifying challenges;
- Generating ideas to address the challenges – possible solutions.

The challenges and possible solutions identified were:

Challenges	Possible solutions
• Absentee landowners • Cross agency communications and relationships • Determining whether or not ragwort is still a priority for the community • The management outcome of eradication by 2027 – very challenging to keep on top of it due to its widespread nature • Challenges associated with enforcement and infringement • Public perception • Getting all landowners on board • Resources • Managing compliance • 50m buffer • Education (control methods/integration) • Ongoing engagement • Impatience • Mixed messages • The way the weed behaves • Education/consistency within agencies • Lack of access/visibility • Reaching the Bruny Island Community	• Downgrade management objective to containment • KC to carry out contracted weed management on other tenures • Be more targeted • Focus on containment • Focus on weeds that can be eradicated • Rewards to engaged landowners • Permits for landowners to treat roadsides • Annual field day – funded across agencies • Fines/multiple fines • BIPIG role – co-ordinate contractors, contact landowners, apply for funding (community grant), partnership with KC • Bio-control Project – investigate current populations, set up nursery site and demonstration sites, raise awareness and commit to long-term education campaign • BIAC & BICA – opportunities to collaborate, for these organisations to take the lead on initiatives

Table 3: Challenges and Possible Solutions identified at the Stakeholder Forum

For more detailed information regarding the challenges and possible solutions identified at the Stakeholder Forum please refer to Tables 6 & 7 (Appendix 3).

The Stakeholder Forum provided an extremely valuable opportunity for key agencies and community groups to come together to share information about the challenges they face, and to explore possible ways in which ragwort management could be improved for their agency as well as across agencies. Maintaining and strengthening these relationships is critical and will result in increased cooperation, maximisation of cost-effectiveness and the exemplification of best practice weed management.

The question is how can relationships be maintained and strengthened within time and budget restraints? Further to this, the question of which organisation is best placed to take the lead on co-ordinating communications also needs addressing. It is evident that the success of any cross-agency ragwort program is reliant on these factors.

When you compare the results from the survey with the above table, it is apparent that there are many consistencies between the identified challenges and possible solutions of community and key stakeholders. With this is mind, it may be possible to make changes with little resistance and high likelihood for success to the current program, providing that effective communication is prioritised.

5 RAGWORT MANAGEMENT ACTION PLAN

This plan details actions that, when implemented, will steer KC's future ragwort management on Bruny Island towards best practice principles described within the planks in section 3.1 (adapted from the Strategic Framework, KCWMS&AP). As stated in the KCWMS&AP, "High level strategies, action plans and site works plans can only succeed if the foundations on which they are built and operate are consistent and sound".[11]

Action 1: Management Objective for ragwort – Bruny Island

As discussed in section 4.1.1, there has been a major shift in the way that widespread weeds are managed. Effective programs must direct effort and funding towards actions that will achieve the greatest outcomes. Weed species are prioritised at a national, state and municipal level based on their distribution, invasive potential and threat level. Governments, including KC, are increasingly focusing resources on prevention and eradication of new weeds/isolated infestations of high priority weeds to avoid future costs.

Due to the widespread nature of ragwort on Bruny Island, eradication by 2027 is deemed inappropriate. To pursue this management outcome would not be strategic – the benefit relative to the cost would be disproportionate. **It is recommended that the management objective be changed back to containment with a longer-term commitment to eradication.**

It is essential that this **change in management objective, including the rationale behind this change, be clearly communicated to the broader Bruny Island community and stakeholders** to ensure a consistent approach is adopted across tenure. **Specific site prioritisation of ragwort on Bruny Island needs be developed to support the landowners/managers to whom ragwort poses the greatest risk.**

Action 2: Roadside ragwort management

It is recommended that KC **continue with the current planned ragwort control program on a seasonal basis** – monitoring all known ragwort infestations on KC roadsides/assets on Bruny Island for the presence/absence of ragwort and cutting the heads of flowering plants. In addition to this, **daily work records need to be completed including mud maps of sites/photo points to provide baseline data.**

All roadsides should be ranked based on the priorities outlined in the proposed compliance program section (Action 3). This will ensure that the landowners/managers to whom ragwort poses the greatest risk are supported as well as strategic and effective management of ragwort on Bruny Island.

[11] Barker, P. (2017-2027) Kingborough Weed Management Strategy & Action Plan (p.25)

It is acknowledged that KC's NRM Team are committed to improving their weed management practices to achieve best practice as demonstrated by:

- the commission of the WMS&AP (2017-2027) KMA;
- the commission of a catchment roadside weed management program which allows for best practice roadside management by combining the priorities identified in the KMS&AP with a catchment based approach;
- the commitment to auditing current weed management practices across the KMA;
- the commission of the Ragwort Review – Bruny Island;
- their new 'live' mapping system which allows for accurate and up to date weed mapping.

To ensure that KC delivers best practice ragwort weed management on Bruny Island, it is recommended that a '**Best Practice Checklist for Ragwort Management**' be developed to ensure the adoption of a consistent, effective and efficient approach.[12]

Action 3: Proactive Compliance Program – assessing the risk and providing priorities

The data provided demonstrates that KC is invested in providing compliance for the control of ragwort on Bruny Island. The effectiveness of the program to date was not assessed due to the lack of data available. However, it is apparent from Figure 4 that there are a significant proportion of landowners, ragwort present, that are not recorded as actively managing their ragwort. This is consistent with frustrations expressed by landowners engaged in ragwort management.

It was identified in the survey that the landowners for whom ragwort poses the greatest risk are the most engaged/invested. **It is critical to support these landowners moving forward and a compliance program directed by robust priorities will assist in providing this support.** It will also provide clear objectives for all stakeholders.

It was suggested by KC's NRM Team that the management objective (eradication) was too broad for this widespread weed to allow for a strategic compliance program. The budget available was not sufficient to check every property on Bruny. **It is recommended that the management objective be changed back to containment with a longer-term commitment to eradication.**

Currently properties that were easily accessible/highly visible (i.e. adjacent to main roadsides) or that were brought to the attention of KC's NRM Team were incorporated into the compliance program. **The development of priorities for ragwort management on Bruny Island specifically, is critical to guide a strategic and effective compliance program.** This will ensure that the maximum return for efforts is achieved and that sites where ragwort poses the greatest risk are prioritised for management.

It is recommended that a '**Request for Compliance**' form be developed and made available on the KC website. This form will act as an educational tool as well as providing the opportunity for any landowner/stakeholder to request compliance on any land tenure.

[12] Barker, P. (2017-2027) Kingborough Weed Management Strategy & Action Plan

The 'Request for Compliance' form should also be a means of data collection. **It is recommended that a database is developed and maintained for known infestations of ragwort, documenting management practices implemented at sites and compliance undertaken.**

The following priorities are recommended to guide the compliance program:

THREAT TO INDUSTRY & ENCONOMY	THREAT TO NATURAL VALUES
Priority 1. Property where hay is cut for feed or for sale	**Priority 1.** Property with high conservation values as assessed by the NRM Team.
Priority 1. Property free of ragwort	
Priority 2. Primary production – actively managing ragwort	
Priority 3. Large property – actively managing ragwort	
Priority 4. Small property – actively managing ragwort	

Table 4: Recommended priorities

The rationale for these priorities can be explained as follows:

Threat to Industry & Economy

Invasion of alien species is acknowledged as the second largest threat to biological diversity, following loss and degradation of habitat, and is damaging native species and ecosystems on a global scale. Recent estimates indicate that the annual cost of weeds to the Australian agricultural community is 3.9 billion dollars annually.[13]

Ragwort poses a high risk to primary producers as it is a serious pasture weed in Tasmania. Ragwort plants are extremely competitive, and can cause a significant reduction in pasture production. Ragwort is also toxic to most types of livestock (excluding sheep). Stock losses due to ragwort poisoning can occur where stock is forced to graze ragwort due to food shortages, or when ragwort is contained in feed.

To prevent the spread of declared weeds in Tasmania, the WMA strictly prohibits the movement of ragwort or materials contaminated with ragwort seed. This has implications for primary producers as any hay cut for sale, must be free of ragwort and its seed.

It is for the reasons outlined above that landowners actively managing ragwort and cutting hay on their property for feed or sale are deemed the highest priority.

One of the most effective ways to minimise the impact of weed species is to prevent their spread. It is therefore equally of the highest priority to prevent the spread of ragwort onto properties or areas of land that are free of ragwort on Bruny Island.

[13] F.J. Richardson et al. (2007) Weeds of the South-East - An Identification Guide for Australia (p.v)

Threat to Natural Values

Bruny Island is rich in natural values. It hosts a diverse range of plant species and vegetation communities, over 140 bird species, as well as a large diversity of terrestrial and marine vertebrate and invertebrate species. [14]

"Plant species under threat include rare native orchids and eyebrights, as well as broader forest communities such as white gum ...

One of Australia's rarest birds, the endangered Forty-spotted pardalote, has half of its entire population living on Bruny Island, with its largest colonies carefully protected on both reserved and private land. The endangered Swift parrot migrates from mainland Australia to south-east Tasmania to breed, and Bruny Island again provides habitat and protection that is crucial to the long-term survival of this species."[15]

"Invasive weeds are among the most serious threats to Australia's natural environment and primary production industries. They displace native species, contribute significantly to land degradation, and reduce farm and forest productivity. Australia spends considerable time and money each year in combating weed problems and protecting ecosystems and primary production on private and public land."[16]

Almost all of Australia's native vegetation communities have been invaded, or are vulnerable to invasion by exotic species that could result in changes to the structure, species composition, fire frequency and abundance of native communities.

Nationally, invasive plants continue to invade the land with exotic species accounting for about 15% of flora.[17] About one-quarter of them are either serious environmental weeds or have the potential to be serious weeds.

Ragwort is primarily associated with disturbed habitats. It is a major agricultural weed in cooler high rainfall districts. The plant is also found in natural areas, particularly near the coast. It thrives in disturbed woodlands and forests in open, sunny locations. While scattered populations occur in the shade, it is rarely abundant in well-shaded bushland.[18]

To ensure that the natural values threatened by ragwort are protected and preserved, prioritisation will need to be on a site by site basis. KC's NRM Team is best placed to evaluate the complexities of the sites (ecology, vectors for spread, threatened species etc) to determine their priority. Dry forests with a grassy understorey like *Eucalyptus viminalis* grassy forest and woodland (DVG)[19] as well as open shrub communities like *Busaria-Acacia* woodland (NBA)[20] are likely to support ragwort infestations due to their open nature. Native grasses, orchids and native *Senecio* species found in these vegetation communities are more likely to be at risk of becoming displaced or outcompeted.

[14] Dr Tonia Cochran & Threatened Species Unit, DPIPWE (2003) Threatened Species, Bruny Island and You
[15] Dr Tonia Cochran & Threatened Species Unit, DPIPWE (2003) Threatened Species, Bruny Island and You
[16] Australia government web site : www.environment.gov.au
[17] Australia government web site : www.environment.gov.au
[18] Adam Muyt (2001) Bush Invaders of South-East Australia
[19] http://dpipwe.tas.gov.au/Documents/DVG_forest_R3V2.pdf
[20] http://dpipwe.tas.gov.au/Documents/NBA_R3V2.pdf

Natural areas that we know as having established ragwort infestations include Simpsons Bay, Grassy Point and around the bush around Alonnah. There has been some form of disturbance at all of these sites. The dominant vegetation communities in these areas are *Eucalyptus pulchella* forest and woodland: grassy facies (DPU)[21] and *Eucalyptus obliqua* dry forest (DOB)[22]. It would be reasonable to conclude, where disturbance has occurred, that these vegetation communities are at high risk of infestation. **It is recommended that ragwort data for Bruny Island be overlayed with the TasVeg 3.0 data to determine trends to identify high risk areas.**

Appendix 4 contains three maps:

- Figure 6 – Bruny Island Reserve Boundaries – these Reserve Boundaries indicate land that has already been assessed for its natural values and has been set aside for protection and preservation. This map can be used as a guide to assess the priority of sites;
- Figure 7 – Bruny Island Threatened Flora Locations ranked by Threat Status and Susceptibility – this map can be used to guide prioritisation as high priority Threatened Flora locations have been identified and ranked;
- Figure 8 – Bruny Island Threatened Vegetation ranked by Threat Status and Rarity – this map can be used to guide prioritisation as high priority threatened vegetation sites have been identified and ranked.

Left: Ragwort (*Senecio jacobaea*) infestation at open, disturbed site amongst native vegetation (*Leptospermum sp.*).

The 'Request for Compliance' form will empower private and public landowners/managers by providing a direct pathway to the appointed inspectors under the WMA. It will also be a tool for the collection of data including data to map ragwort infestations on private property for KC. These maps will provide baseline data to measure the success of community initiatives. The form will also provide KC with the opportunity to engage and educate landowners/managers.

In addition to the form, it is critical that **KC continue to undertake proactive weed inspections** in key areas identified using the priorities.

[21] http://dpipwe.tas.gov.au/Documents/DPU_grassy_woodl_R3V2.pdf
[22] http://dpipwe.tas.gov.au/Documents/DOB_R3V1.pdf

Action 4: Changes to the ragwort bagging program

As discussed in section 4.1.3, the skip bin costs Council $3,129 per season on average. $240 of this is the average cost of disposal of the bagged ragwort per season. These figures highlight the high level of cost to hire and transport the bin. Kingborough Waste Services (KWS) manage the Bruny Island Transfer Station on behalf of Kingborough Council. **It is recommended that KC provide a bin for ragwort disposal at this existing waste facility location to maximise cost effectiveness, and that funds previously spent on the bin hire and transport be better utilised within the current ragwort program.**

Community support for moving the location of the bin was marginal (as per the survey results) and contingent upon the reallocation of funds. The residential/accommodation group from the survey had the highest average for hand-pulling ragwort (hours/year). **Engagement of this group may be required to ensure their continued participation in the program.**

It may be more practical for 'shack' owners to dispose of their bagged ragwort off the Island. **To encourage a greater participation from this group of landowners, it is recommended that the Electrona tip site be considered as a drop-off location for bagged ragwort at no charge.**

It is also recommended that the funds reallocation is clearly communicated with the Bruny Island community to cultivate support for the move and engender a sense of trust.

Action 5: Community partnerships, awareness and education

Stakeholder groups and survey respondents clearly identified a lack of relationship between KC and the broader community/community groups as a weakness of the KC Ragwort Management Program.

It is recommended that **KC seek to partner with community groups to ensure the longevity of the Ragwort Bagging Program and to facilitate other ones like it**. It is critical that the Bruny Island community have a sense of ownership. Recent research indicates that effective programs involve trust and willingness to reciprocate on weed control behaviour, acknowledgement of a mutual problem, positive relationships between public and private landowners and achievable goals.[23]

To date KC has taken a leadership role; facilitating, funding and managing community initiatives like the Ragwort Bagging Program. There are established community groups such as the Bruny Island Community Association (BICA) and the Bruny Island Environment Network (BIEN) for whom engaging in natural resource management programs is core to their purpose. Specific opportunities to partner with existing groups like the Bruny Island Primary Industry Group (BIPIG), BIAC and BIEN as well as funding opportunities were detailed in Section 4.5. **It is recommended that KC continue to facilitate projects like the Ragwort Bagging Program, but seek out opportunities to collaborate with stakeholders/community groups to source funding, and to manage these initiatives.**

[23] Natural Resource Commission (2014) Issue Paper – Review of Weed Management in NSW

Awareness and education programs can improve community capacity, facilitate collaborative responses and allow for new information to be quickly disseminated. They are also necessary to ensure that responsible parties understand their obligations and how to fulfil them.

Each year Tamar NRM hold an event called 'Ragwort Raid'. It is a fantastic example of a community driven, collaborative weed control program. The opportunity may exist to include something like this within the existing Ragwort Bagging Program. It would need to be community driven and led to ensure a sense of community ownership. The 'Ragwort Raid' occurs in January in the Tamar Valley, which may prove to be an ideal time of year to engage absentee landowners on Bruny.

The survey responses highlighted a number of inaccurate perceptions relating to ragwort (risk, biology, status, and the bio-control), responsibilities and KC's Ragwort Management Program. **Additional awareness and education is required and may be as simple as a seasonal feature in existing publications on the Island or in a KC NRM newsletter.** There may also be ideas from the community (see Appendix 2 and Section 4.2), that could be implemented with support from stakeholder groups.

It is recommended that KC revise the content and locations of the ragwort signs erected on the Island each season. It is critical that the signs provide clear and consistent information that supports the key actions of this review. Careful consideration regarding the location of the signs is required to ensure that they are easy to read without causing a traffic hazard.

There are many ways in which KC can **raise awareness about their broader weed management practices and programs on Bruny Island**. **A regular feature in the Bruny News or Bruny Notice Board (Facebook) would serve to engage, inform and educate the community about weed priorities and strategic weed management (e.g. articles about Kingborough Council's Weed Programs on Bruny Island, educational material, resources and promotion of NRM initiatives).** By communicating their clear objectives for weed programs and the rationale for them, KC will empower the community to work with them towards their goals. It is evident in the feedback from the surveys (Appendix 2 & Section 4.2.1) that a level of frustration exists due to the inconsistencies in approach across tenure and a lack of engagement of particular private landowner groups.

Improvements in the two key plank areas of Stakeholder Engagement and Partnerships and Education and Training will ensure that:

- more effective and efficient ragwort management is delivered; and
- community/stakeholders are supported/engaged.

Action 6: Bio-control Program

It was indicated in both the survey and at the Stakeholder Forum that there is an interest in **initiating a cross-stakeholder funded, long-term bio-control program.**

If there are enough properties identified that can benefit from the bio-control, and funding can be sourced collaboratively, a new project may include:

- surveying Bruny to find existing populations of the bio-control;
- setting up a nursery site;
- re-distribution of the bio-control to prioritised sites;
- education for the community about Integrated Weed Management and managing bio-control for success.

After the initial survey, there may be a wait to allow numbers of the bio-control to build up for re-distribution. A bio-control program requires proper management and needs to be part of an integrated weed management plan (IWMP). It is not a 'quick-fix' or 'hands-off' solution.

The crucial factor in adoption of any integrated bio-control strategy is the long term commitment by stakeholder groups to the program and also ongoing liaison with stakeholders to inform them of progress. It is important for the community to be adequately informed of the adoption of a biological control strategy via appropriate signage and local newsletters/social media platforms.

Landowners who adopt a biological control program of ragwort will still be required to ensure that they take reasonable measures to reduce the possibility of contamination of adjacent properties.

A bio-control program will not totally eradicate the target weed but can significantly reduce weed populations to levels that may be considered acceptable or to a level that can subsequently be eradicated using conventional methods. Therefore, management practices that support the bio-control have the potential to add value to any IWMP. The bio-control has worked very effectively at sites in Tasmania and can be a cost-effective addition to an IWMP.

"It is important to consider every control option available when planning a control program. Land managers must assess each situation and develop a program which achieves an acceptable level of control and rehabilitation utilising an acceptable amount of resources (time, labour and money).

... Since biological control will occur naturally at a level determined by location susceptibility and seasonal conditions, biological control is best used on large, inaccessible infestations with low priority for control".[24]

To ensure the success of this initiative, it is recommended that the community has ownership of this project with support from key stakeholders. A long-term commitment to resource the program and provide community education from key stakeholders is also essential.

[24] McLaren & Mickan (1997) The Ragwort Management Handbook (p.43)

Above: The ragwort flea beetle (*Longitarsus flavicornis*) was released at this site in Franklin in January 1988, three years before the first photograph was taken. The second photograph was taken six years after release in 1994. High beetle densities were recorded during the two previous summers and no herbicides were applied since the release. (Photos provided by Richard Holloway).

Action 7: Stakeholder engagement

To encourage all stakeholders to take ragwort management seriously it is essential that Council and key stakeholder agencies lead by example. It is also essential that a consistent approach is adopted across tenure. Weed infestations on public land include some of the more visible examples. Likewise, these sites provide opportunities to demonstrate how well coordinated weed management can be successful.[25] KC and State Growth (SG) have already established a partnership to manage weeds on roadsides in the KMA. **Effective stakeholder engagement and partnerships** will ensure that everyone is working together to do their bit, supporting the credibility of the compliance program.

Whilst it is acknowledged that KC has built a strong relationship with SG, there was again a lack of relationship identified with most other stakeholder groups.

It was clear from the Stakeholder Forum that 'in theory' all the relevant groups are prepared to work together to manage ragwort effectively and efficiently. The challenge lies in turning this intention into tangible outcomes. Some way of maintaining a regular conversation between key stakeholders needs to be established. It is recommended that the **KC initiates a regular forum (perhaps an email group or 'private' online forum) where key stakeholder groups can update each other on individual programs and identify opportunities to collaborate.** The group needs to agree upon and set clear goals that are measurable to ensure that the forum is effective.

Examples of goals may be:

- One collaborative funding arrangement to support a community initiative to manage ragwort annually;
- Annual field day – organised and funded by 3-5 key stakeholder groups;
- Three demonstration sites of best practice ragwort management set up across three tenures.

It is also recommended that KC provides copies of this Review and Action Plan to all key stakeholders identified and that it is also made available on the KC website.

[25] Barker, P. (2017-2027) Kingborough Weed Management Strategy & Action Plan

6 CONCLUSION

Kingborough Council, key stakeholder groups and the Bruny Island Community have invested considerable resources to minimise the impact of ragwort on Bruny Island. Provided within this report is an action plan that builds on this investment, to ensure that efforts continue to be supported, maintained and where possible enhanced.

This review investigated four key study areas:

- Kingborough Council's Ragwort Management Program on Bruny Island including compliance;
- Community support and engagement provided by Kingborough Council for ragwort management on Bruny Island;
- Stakeholder resources and engagement;
- The challenges/successes of ragwort management to date.

The seven key planks identified in the Kingborough Weed Management Strategy & Action Plan (2017-2027), have provided the foundations for this review.

After careful consideration of the data provided and collected, seven key actions were identified to address the questions provided by Kingborough Council as the basis for investigation for the Ragwort Review. Implementation of these seven key actions will strengthen KC's Ragwort Management Program and will ensure improvements in efficiency and effectiveness for future ragwort management on Bruny Island.

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APPENDIX 1: Kingborough Council's Roadside Ragwort Management Program

Column marked with *=number of treatments/follow-up treatments in a season

PLACE	ROAD NAME/ASSET	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*
ADVENTURE BAY	Adventure Bay tip	2010-2011	2			2012-2013	1			2014-2015	1				
ADVENTURE BAY	Hanssons Rd			2011-2012	1	2012-2013	1	2013-2014	2	2014-2015	1	2015-2016	1	2016-2017	1
ADVENTURE BAY	Adventure Bay Rd					2012-2013	1	2013-2014	3	2014-2015	1			2016-2017	1
ADVENTURE BAY	Hayes Rd									2014-2015	1	2015-2016	1	2016-2017	1
ADVENTURE BAY	Seaview Rd											2015-2016	1	2016-2017	1
ADVENTURE BAY	McPhersons Rd											2015-2016	1	2016-2017	1
ADVENTURE BAY	Francis Lane														
SIMPSONS BAY	Simpsons Bay Rd													2016-2017	1
ALONNAH	Pybus Hill Quarry	2010-2011	3	2011-2012	2	2012-2013	1	2013-2014	2						
ALONNAH	Council block Alonnah	2010-2011	1	2011-2012	1	2012-2013	2	2013-2014	1						
ALONNAH	Musketts Rd			2011-2012	1	2012-2013	1	2013-2014	1			2015-2016	1	2016-2017	1
ALONNAH	Alonnah derelict tip Jannali Rd					2012-2013	1					2015-2016	1	2016-2017	1
ALONNAH	Dillons Rd					2012-2013	1	2013-2014	2			2015-2016	1	2016-2017	1
ALONNAH	Sheepwash Rd														
ALONNAH	Ritchie St														
ALONNAH	Matthew-Flinders Dr														

PLACE	ROAD NAME	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*
ALONNAH	Wooreddy Rd									2014-2015	1	2015-2016	1	2016-2017	1
APOLLO BAY	Lowes Rd	2010-2011	1	2011-2012	2	2012-2013	1	2013-2014	4					2016-2017	1
APOLLO BAY	Pybus Rd	2010-2011	2	2011-2012	2			2013-2014	4					2016-2017	1
NORTH BRUNY	Killora Rd														
NORTH BRUNY	Power Rd														
APOLLO BAY	Youngs Rd	2010-2011	1	2011-2012	3	2012-2013	1	2013-2014	4					2016-2017	1
APOLLO BAY	Mulcahys Rd	2010-2011	2	2011-2012	2			2013-2014	3						
APOLLO BAY	Apollo Bay Rd	2010-2011	2	2011-2012	2	2012-2013	2	2013-2014	3	2014-2015	1	2015-2016	1	2016-2017	1
APOLLO BAY	Road easement Apollo Bay			2011-2012	2	2012-2013	2								
DENNES POINT	Dennes Point					2012-2013	1	2013-2014	1						
LUNAWANNA	Lobdales Rd	2010-2011	5	2011-2012	3	2012-2013	3	2013-2014	2	2014-2015	3	2015-2016	1	2016-2017	1
LUNAWANNA	Cuthberts Rd	2010-2011	3	2011-2012	2	2012-2013	3	2013-2014	2	2014-2015	2	2015-2016	1	2016-2017	1
LUNAWANNA	Cloudy Bay Rd	2010-2011	7	2011-2012	3	2012-2013	5	2013-2014	4	2014-2015	3	2015-2016	2	2016-2017	1
LUNAWANNA	Coolangatta Rd					2012-2013	2	2013-2014	1	2014-2015	1			2016-2017	1
LUNAWANNA	Blinkbonny Rd														
LUNAWANNA	Cleveland Rise														
LUNAWANNA	Cemetery Rd							2013-2014	1	2014-2015	1				
LUNAWANNA	Wrights Rd									2014-2015	1				

PLACE	ROAD NAME	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*	Season	*
NORTH BRUNY	Whaymans Rd					2012-2013	2								
SOUTH BRUNY	Lighthouse Rd							2013-2014	1					2016-2017	1
TOTAL NO. TREATMENTS			**29**		**26**		**31**		**41**		**17**		**13**		**19**

Table 5: Kingborough Council Roadside Ragwort Management Program (by season – no. of treatments/follow up treatments)

Road known to have ragwort infestation. Not recorded as treated 2010-2017.

APPENDIX 2: Survey Results

Question One: Do you manage ragwort on your property?

66% of respondents are managing ragwort on their property.

Answers 2-18 have been calculated using the respondent group that are managing ragwort on their property only.

Question Two: How important to you is it that you manage ragwort on your property?

74% extremely important	23% important	3% not important

90% of primary producers/horse owners think that managing ragwort on their land is extremely important

67% of Land for Wildlife/bush land owners think that managing ragwort on their land is extremely important

67% of accommodation/residential land owners think that managing ragwort on their land is extremely important

Please provide details of your land use:

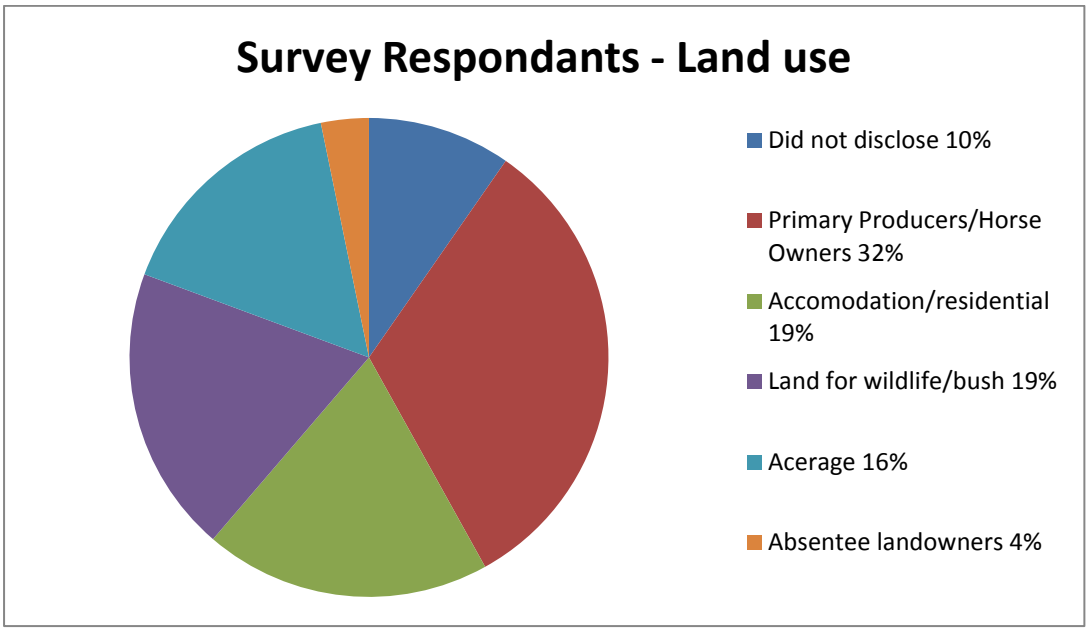

Figure 5: Survey Respondents land use

Question Five: How many hours do you estimate you spend managing ragwort on your property each year?

967.5 hours are spent managing ragwort/year

57% of the total hours spent managing ragwort/year is by primary producers/horse owners. This group is spending an average of 54 hours/year managing ragwort. The range in hours for ragwort management was between 2-200 hours/year.

2% of the total hours spent managing ragwort/year is by Land for Wildlife/bush land owners. This group is spending an average of 3.5 hours/year managing ragwort. The range in hours for ragwort management was between 0-10 hours/year.

34% of the total hours spent managing ragwort/year is by accommodation/residential land owners. This group is spending an average of 54 hours/year managing ragwort. The range in hours for ragwort management was between 0-200 hours/year.

Question Six: If you use chemicals to treat ragwort on your property, what would be the approximate value of the chemicals you use each year be for the treatment of ragwort?

42% of the respondents are using chemicals

$2280 spent on chemicals/year

60% of the respondents using chemicals are primary producers/horse owners

90% of the chemicals used are purchased by this group

33% of the respondents using chemicals are Land for Wildlife/bush land owners

4% of the chemicals used are purchased by this group

17% of the respondents using chemicals are accommodation/residential land owners

<1% of the chemicals used are purchased by this group

Question Seven: If you hand-pull ragwort on your property, how many hours would you spend doing this per year?

530 hours spent hand pulling/year

44% of the total hours spent hand pulling ragwort/year is carried out by primary producers/horse owners. This group is spending an average of 23.5 hours/year hand-pulling ragwort. The range in hours for hand-pulling ragwort was between 0-100 hours/year.

3% of the total hours spent hand pulling ragwort/year is spent by Land for Wildlife/bush land owners. This group is spending an average of 2.5 hours/year hand-pulling ragwort. The range in hours for hand-pulling ragwort was between 0-9 hours/year.

58% hand pulling ragwort/year is carried out by accommodation/residential land owners. This group is spending an average of 50.5 hours/year hand-pulling ragwort. The range in hours for hand-pulling ragwort was between 0-200 hours/year.

Question Sixteen: In the last 10 years, which of the following options would best represent your resource use to manage ragwort?

13% using more resources	19% using same amount	58% using less resources	10% did not answer

80% of primary producers/horse owners are using fewer resources

50% of Land for Wildlife/bush land owners are using fewer resources

33% of accommodation/residential land owners are using fewer resources

Question Eight: Do you utilise the skip bin/bags to dispose of your ragwort when they are available?

68% YES	29% NO	3% did not answer

Qu**estion Nine: How would you rate the usefulness of the skip bin/bags?**

71% extremely useful	16% useful	3% not useful at all	10% did not answer

Question Ten: Would you support the Council changing the drop off location of the bagged ragwort from the skip bin at Alonnah to an alternate location on Bruny Island?

58% YES	32% NO	10% did not answer

33% YES 33% NO 33% NA - accommodation/residential land owners

Question Eleven: How would you spend the funds previously allocated to the skip bins?

77% of respondents would like the funds to be spent on enforcement of non-compliant landowners

Question Twelve: Do you use the bio-control on your property?

3% YES	97% NO

The one respondent that uses the bio-control finds it to be ineffective due to water logging on their property.

Question Fifteen: Would you be interested in using the bio-control on your property?

42% YES	39% NO	19% did not answer

70% of primary producers/horse owners are interested in using the bio-control on their property

50% of Land for Wildlife/bush land owners are interested in using the bio-control on their property and 50% are not

66% of accommodation/residential land owners are **not** interested in using the bio-control on their property

Question Seventeen: In 2007, the Bruny Island Weed Management Strategy was published. In the Strategy ragwort was identified as a species of high threat to be targeted for eradication in the next 5-20 years. Based on the infestation(s) of Ragwort on your property do you think this goal is achievable for you?

84% YES	6% NO	10% did not answer

80% of primary producers/horse owners believe they can eradicate ragwort from their property

83% of Land for Wildlife/bush land owners believe they can eradicate ragwort from their property

66% of accommodation/residential land owners believe they can eradicate ragwort from their property

Question Eighteen: Do you think this goal is achievable across the whole of Bruny Island?

29% YES	58% NO	13% did not answer

60% of primary producers/horse owners do not believe that this goal is achievable across the whole Island

67% of Land for Wildlife/bush land owners believe that this goal is achievable across the whole Island

50% of accommodation/residential land owners believe that this goal is achievable across the whole Island

Question Nineteen: If you answered no to question 17 and/or 18, could you please provide details of what you see as being the greatest challenge to achieving this goal?

Abbreviations – PP/HO (Primary Producers/Horse Owners), LFW/B (Land for Wildlife/Bush), A/R (Accommodation/Residential)

- Everyone on board participating (PP/HO, LFW/B, A/R)
- Absentee landowners/large uncontrolled areas
- Poor management of the bio-control program (LFW/B)
- Lack of enforcement (LFW/B, PP/HO)
- Dispersal of the seed (LFW/B, PP/HO, A/R)
- Consistency across agencies (PP/HO)
- Lack of education (PP/HO)
- Compliance process too slow (PP/HO)
- Ragwort slashed when in seed on roadsides (PP/HO)

Question Twenty: In your opinion, what would be the most useful way in which the Kingborough Council could support the Bruny Island community to manage their Ragwort?

- Fines/enforcement (PP/HO, LFW/B, A/R)
- Ensure absentee landowners comply (PP/HO LFW/B, A/R)
- If landowners do not comply carry out 'Works in default' (PP/HO, A/R)
- Bruny Island Weed Officer (PP/HO)
- Rate rebates for participating landowners (PP/HO, A/R)
- Annual community event/assistance for hand-pulling (PP/HO, A/R)
- Continue to provide the skip bin and bags (LFW/B)
- Education and Resources (fridge magnet, for new residents) (LFW/B, A/R)
- Continued control on KC land (LFW/B, PP/HO)
- List of contractors (A/R)
- Agencies to fulfil their obligations (PP/HO)

APPENDIX 3: Stakeholder Forum results

Challenges	Explanation
Absentee landowners	• Lack of general understanding of the problem and/or responsibilities under the WMA • Lack of investment • Presence of ragwort is not a high risk
Cross agency communications and relationships	• Multiple policies, strategies and plans operating at different scales • Lack of consistent approach across land tenure • Changes in staffing within agencies • Why is it that cross agency communications and relationships are not actively sought out?
Determining whether or not ragwort is still a priority for the community	• Was it ever/ is it now considered a problem across the broader community? • In what circumstances is ragwort posing a high risk? • Was the initial goal of eradication unrealistic? Has this put landowners off?
The management outcome of eradication by 2017 – very challenging to keep on top of it due to its widespread nature	• Effectiveness in managing widespread weeds • Is the level of risk that ragwort poses reflected in its categorisation?
Political will of council to back up fines	• Are there clear values that need protecting? • How will fines be justified?
Perception	• Landowners have a range of motivations and perspectives • Poor communication of the bigger picture leads to a perception that 'nothing is being done'
Getting all landowners on board	• Lack of general understanding of the problem and/or responsibilities under the WMA • Lack of investment • Presence of ragwort may not be high risk • Landowners have a range of motivations and perspectives
Resources	• Resources are limited • Prevention and eradication of new and emerging weeds is the most

	cost-effective approach to weed management • Was the initial goal of eradication unrealistic? • Eradication of a widespread weed is resource intensive
Managing compliance	• Need to have clear and consistent priorities
50m buffer	• How is this buffer decided upon? • Are there sufficient resources available to achieve a 50m buffer?
Education (control methods/integration)	• Investment in education needed
Ongoing engagement	• Investment in engagement needed
Impatience	• In reference to the bio-control – up to 7 years for it to be effective
Mixed messages	• In reference to the bio-control –chemicals and the bio-control do not go together • Eradication of ragwort and maintaining a population of the bio-control on Bruny Island do not go together
The way the weed behaves	• Changing climate conditions – ragwort flowering earlier this year
Education/consistency within agencies	• Knowledge is lost when employees move on • Information is not handed-over to new employee
Lack of access/visibility	• Most agencies do not have a representative living/working regularly on the Island • Difficult to know the full extent of ragwort infestations across the Island
Reaching the Bruny Island Community	• Bruny News & Bruny Notices Facebook page– feature article each month • BIAC, BICA, BIPIG, BIEN – attend meetings • Ferry – build relationship

Table 6: Challenges identified – Stakeholder Forum

Generating ideas to address the challenges – possible solutions	Explanation
Downgrade management objective to containment	• Would this be more realistic and achievable? • How likely is it that ragwort will be eradicated from Bruny Island? • What is the risk that changing the categorisation will result in a regression of weed management efforts?
KC to carry out contracted weed management on other tenures	• Does the council have the capacity to do this? • Partnership already exists with State Growth and KC Weeds Crew is contracted by them to carry out weed management for specific high priority weeds on their roadsides
Be more targeted	• Develop priorities
Focus on containment	• Creates an opportunity for the bio-control to have a clear role in integrated weed management • More realistic and achievable
Focus on weeds that can be eradicated	• Prevention and eradication of new and emerging weeds is the most cost-effective approach to weed management
Rewards	• Is there scope to offer incentives/rewards for participating landowners?
Permits for landowners to treat roadsides	• Possible opportunity as OH&S regulations would be met by permit
Annual field day – funded across agencies	• Mutually beneficial • Sharing the responsibility of weed management
Fines/multiple fines	• Could provide a clear message to landowners not participating
BIPIG role – co-ordinate contractors, contact landowners, apply for funding (community grant), partnership with KC	• Opportunity for collaboration
Bio-control Project – investigate current populations, set up nursery site and demonstration sites, raise awareness and commit to long-term education campaign	• Opportunity for stakeholders to collaborate and fund a bio-control program and education/awareness campaign • Opportunity for State agencies/Local Government (State Growth, Crown Land Services, Sustainable Timbers Tasmania, Huon Valley Council) to transport the bio-control to key sites across Tasmania • Integrated weed management essential • Not a 'hands off' approach – boundaries and pathways actively managed • Long-term project

	• Minimal costs involved • Tolerance of ragwort required • Need to build trust around the effectiveness of the bio-control
BIAC & BICA	• Seek out opportunities to collaborate and partner on ragwort projects

Table 7: Possible solutions – Stakeholder Forum

APPENDIX 4: Figures 6, 7 & 8

Figure 6: Bruny Island Reserve Boundaries

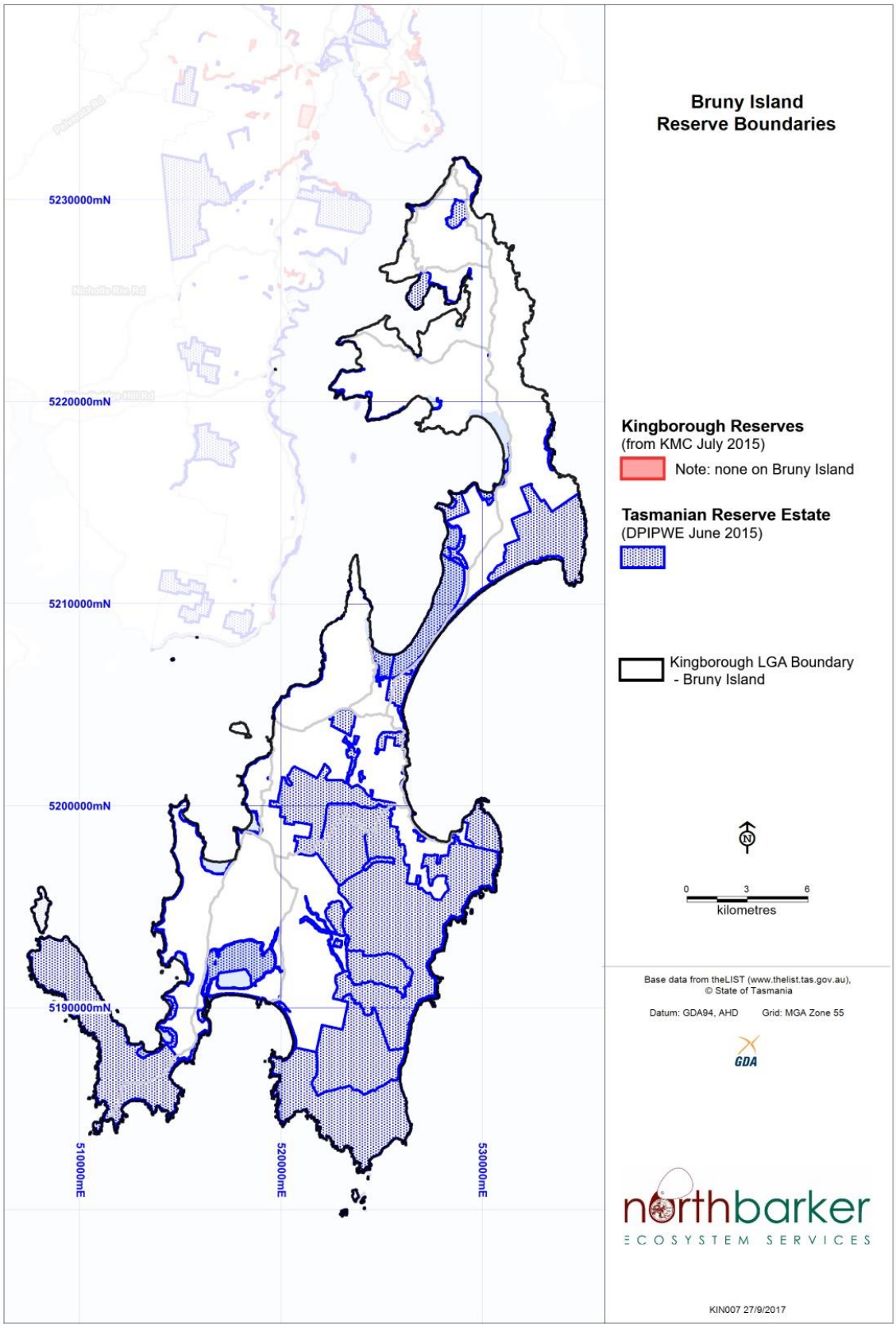

Figure 7: Threatened Flora Locations

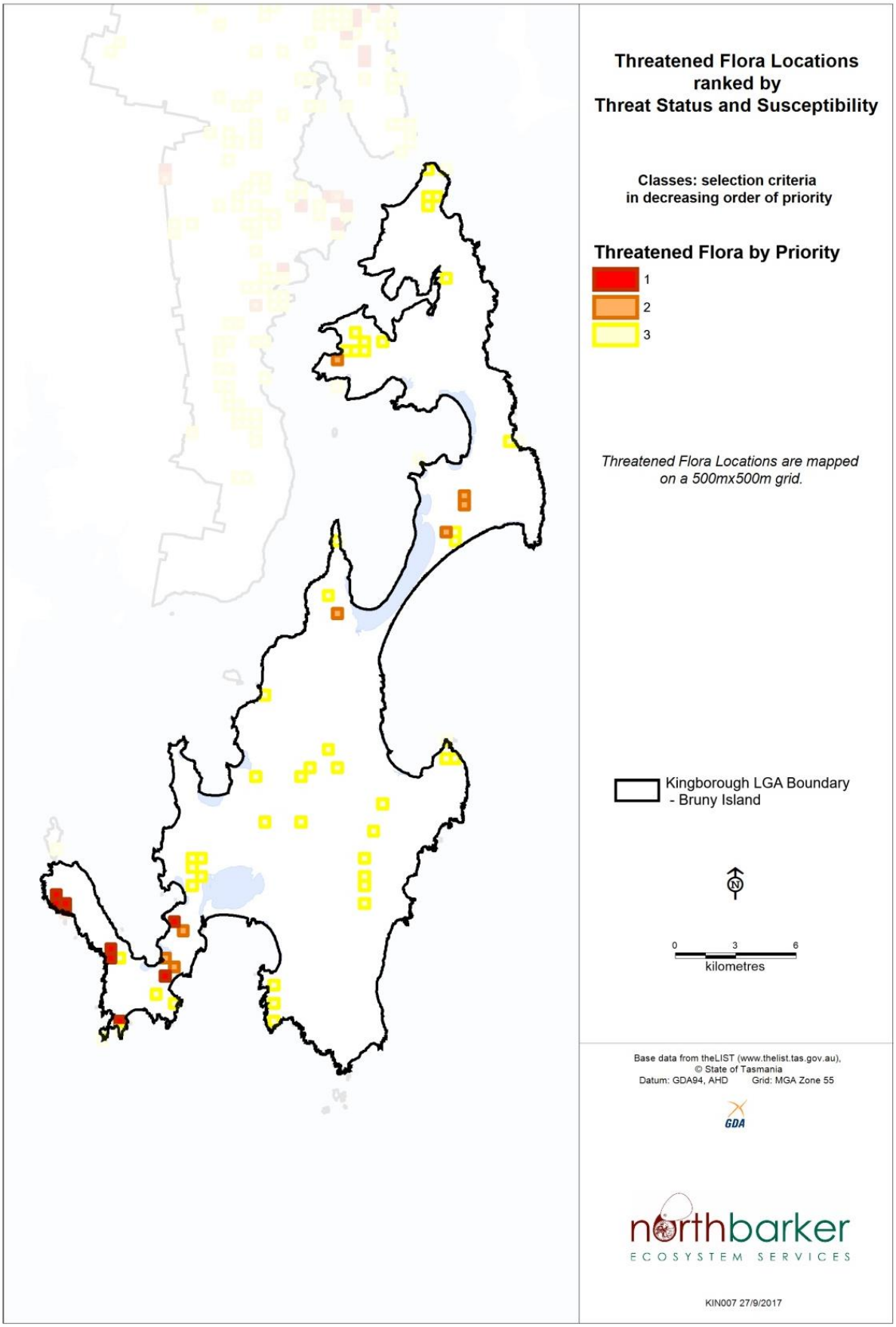

Figure 8: Bruny Island Threatened Vegetation