

West Gippsland Catchment Management Authority



Invasive Plants and Animals Strategy

2010 - 2015



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Availability

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Summary

The purpose of this Invasive Plants and Animals (IPA) Strategy is to describe the vision, goals and priorities for the management of invasive plants and animals across West Gippsland from 2010 to 2015. It will be relevant for all land managers and service delivery agencies involved in the management of pest plants and animals. The priorities in the strategy are intended to guide investment into invasive plant and animals within the region.

This strategy is based on the biosecurity approach to managing invasive plants and animals. This new approach is being adopted across Australia. It is based on risk management principles and uses the 'generalised invasion curve' to describe four different approaches to IPAs. These four approaches are prevention, eradication, containment and asset-based protection.

Under the biosecurity approach prevention and eradication is the highest priority because it has a higher long term return on investment. Established pests are managed as part of asset-based protection.

The vision of the West Gippsland Invasive Plants and Animals Strategy is to reduce the impact of invasive plants and animals on the region's environment, economy and community. Allied with other natural resource management work in West Gippsland, this strategy aims to increase the resilience of the region's landscapes to withstand impacts from invasive plants and animals.

To deliver on this vision, four long term goals have been set. They are:

1. An aware and active community
2. Preventing new invasive plants and animals
3. Containing and reducing high risk invasive plants and animals
4. Protecting West Gippsland's assets from IPAs.

Goal 1

Effective pest management depends on working partnerships between government, industry and the community. Continuing successful IPA management in the region depends on maintaining this active and knowledgeable community. The strategy identifies a range of actions to engage and support the community including inviting community to participate in implementing the IPA strategy, including IPA management in farm planning, improving access to information on IPAs in the region particularly focussing on new landholders.

Goal 2

Prevention of new and emerging invasive plants and animals is the highest priority for all regional IPA strategies. Most of the target species for prevention and eradication in West Gippsland are set by legislative declarations. State Prohibited Weeds, Regionally Prohibited Weeds, Established Pest Animals and Restricted Pest Animals must be addressed as part of this Strategy. Two additional ways that priority high risk species will be identified for prevention and early intervention are through the detailed risk assessment processes that Victorian government land management agencies already have in place and through the region conducting its own risk assessment.

Critical to a new species establishing in an area is whether there are pathways or vectors to bring the species into the area. In West Gippsland the following vectors are considered to be of particular concern: poor management of linear tracts of land

(roadsides, railways, rivers etc.), vehicle hygiene, fodder movement, trade through local markets and the internet, tourism and home gardens.

Goal 3

Some pest species are considered to be beyond eradication, even though they are still not fully established across the state. In this scenario containment and reduction is considered the best option. Containment and reduction focuses on preventing the spread of the pest beyond the defined boundary of the current infestation. Containment and reduction programs focus on:

- defining the boundary or limit of the infestation
- targeting spread pathways to minimise movement beyond the current infestation
- eradicating satellite infestations
- reducing the abundance and density of the core infestation, particularly where this helps prevent spread

There are two ways that species targeted for containment and reduction will be identified. The first of these is through a State level nomination process. The second is that on behalf of the regional community, the CMA itself nominates them. In each case there must be identifiable core and satellite infestations, and on-ground work must focus on eradicating satellite infestations and reducing core infestations.

Goal 4

One of the important ideas in the biosecurity approach is that once a pest becomes so widespread that containment (or eradication) is not possible, focus shifts to 'asset based protection'. This means specific parts of a region (assets) are protected from the impacts of an invasive plant or animal.

Analysis of the assets in the WG CMA region, which included the assets in the Gippsland Integrated Natural Resources Forum Report Cards from 2008 and 2009, produced three categories for action.

Assets that are high value, where the risk from invasive plants or animals is immediate and will result in substantial damage, and where the on-ground actions needed are well understood are 'priorities for immediate on-ground work'. Assets in this category are Corner Inlet, Anderson Inlet, Shallow Inlet, coastal vegetation between Wilsons Promontory and Phillip Island, Ninety-mile Beach dune system, Wilsons Promontory, alpine and sub-alpine ecological communities, the Upper Thomson River, the Aberfeldy River and channel infrastructure in the Macalister Irrigation District.

Assets that are valuable but further information is needed before determining whether action can or should be taken immediately are categorised as priority for investigations or research. Assets in this category are grasslands and grassy woodlands of the Gippsland Plain, lowland forests of the Gippsland Plain, southern slopes of the Dividing Range and the Western Strzelecki Ranges.

Assets that are valuable and have known threats from invasive plants and animals, but the risk posed is not as high as in the first category are noted as priorities for monitoring for action in future. In some cases, these assets are not under immediate threat because of previous work on invasive plants and animals. This asset may not be an immediate priority for on ground action, but it is critical that those gains are preserved. Also, when priorities for action are reviewed periodically these assets need to be included in this re-assessment. Assets in this category are Gippsland Lakes, agricultural land, the eastern Strzelecki Ranges, Lake Glenmaggie, Blue Rock Dam,

Cowwarr Weir, lower Thomson River, lower Avon River, Powlett River, Lower Tarwin River, Lower Tarra River, Bruthen Creek, Hoddle Range east and Bennison Creek.

Monitoring success of this strategy will be based on measuring progress toward the strategy's four key long term goals. A monitoring and evaluation framework for this strategy has been built around these goals.

Reporting on this strategy will fit in with existing reporting on the region's NRM work. On an annual basis CMAs are required to report on progress of projects, largely focussed on investment performance and delivery of activities. These projects will increasingly be focussed on assets, so should include the invasive plant and animal work that will be done on the priority assets identified in this strategy.

A mid-term review of the strategy will be aligned to coincide with the region's three yearly reports on natural resource management. A final review of the strategy will also be aligned to the catchment condition reporting that will occur at six year intervals.

This Strategy contains 16 Strategic Actions to assist the future implementation of the Strategy, they are:

Strategic actions to build an aware and active community

STRATEGIC ACTION 1: Actively engage the West Gippsland community wherever possible in both shaping and implementing IPA management across the region.

STRATEGIC ACTION 2: Key information, like declared species lists and land manager responsibilities, is maintained and made widely available across the region.

STRATEGIC ACTION 3: Support the Gippsland Invasive Plant and Animal Forum as one means of engaging stakeholders from across the region.

STRATEGIC ACTION 4: Support local communities who are actively managing IPAs using a biosecurity approach by allocating resources to support them.

Strategic actions for preventing new IPAs in West Gippsland

Support state action to prevent the establishment of new high risk invasive species through the following strategic actions:

STRATEGIC ACTION 5: Develop and apply a process that will identify any additional high risk invasive plants and animals (using the same principles as legislative declarations) that the region wants targeted for prevention and eradication.

STRATEGIC ACTION 6: Ensure lists of high risk species (both declared and others) are widely communicated to support surveillance and reporting of these species.

STRATEGIC ACTION 7: Convene and organise the Gippsland Invasive Plant and Animal Forum with stakeholders from within the region as well as neighbouring catchment management agencies to:

- assist with coordination and communication of IPA work,
- focus on ways to prevent new invasive plants and animals from entering the region, and
- up-date the community on latest research, programs and policies in IPA management.

Strategic actions for containment of IPAs

STRATEGIC ACTION 8: Participate in State level assessments of species that could be targeted for containment.

STRATEGIC ACTION 9: Develop and conduct a regional assessment process to identify other high risk species for containment in the region.

STRATEGIC ACTION 10: Support on ground work on core and satellite infestations of species targeted for containment.

Strategic actions to protect West Gippsland's assets from IPAs

STRATEGIC ACTION 11: Support asset protection work based on the assets and actions set out in this strategy.

STRATEGIC ACTION 12: Support development of integrated asset protection plans that focus on managing IPA threats to an asset as part of overall asset protection measures.

STRATEGIC ACTION 13: Establish and implement a process for reviewing the priorities for asset protection. This process needs to be able to consider nominations of new assets, changes in knowledge about threats to assets, and knowledge about land managers around assets.

STRATEGIC ACTION 14: Develop program of work to address knowledge and information gaps highlighted in Table 2. Prioritise this work considering that work on the grassland asset is considered to be very high priority.

STRATEGIC ACTION 15: Refine and finalise criteria for guiding action on agricultural land.

Strategic actions for IPA investment

STRATEGIC ACTION 16: Using principles from the *White Paper for Land and Biodiversity*, the biosecurity approach and the goals of this strategy, a set of investment standards will be set out as minimum requirements for investment under this strategy.

Part 1 Policy and vision for IPA management

1 Introduction

1.1 Rationale and scope of this strategy

The purpose of this strategy is to describe the vision, goals and priorities for the management of invasive plants and animals (IPA) across West Gippsland from 2010 to 2015. It is relevant for all land managers and service delivery agencies involved in the management of invasive plants and animals.

As part of the new Biosecurity Strategy for Victoria, the Department of Primary Industries (DPI) and the Department of Sustainability and Environment (DSE) require all CMAs across Victoria to prepare regional invasive plant and animal strategies. The West Gippsland CMA has developed this strategy as part of our role to coordinate the development of regional natural resource management priorities. Most of the government investment and service delivery in IPA management is done by DPI and DSE.

This strategy is intended to guide that investment towards particular regional priorities. It is not an operational plan that describes day-to-day activities. As a strategy, it highlights the key goals and priorities that those day-to-day activities should work toward. The approach used to prepare this strategy, described in the next section, is based on the State Biosecurity Strategy (DPI, 2009a). The introduction of the biosecurity approach signals an important shift in the Victorian government's investment in management of invasive plants and animals. Some of the significant shifts are that priority will be given to prevention and early intervention and a risk management approach will underpin all pest management. This means that investment decisions will be influenced by measuring how likely it is that a given pest will invade and establish, and by measuring the consequence of that invasive species infestation. It will also see integrated approaches to IPA management more strongly supported, which will translate into weeds and pest animals being managed as part of overall efforts to manage land and water.

Although the biosecurity approach originates from State and National level policies, the principles are applicable at all scales of IPA planning and operation. This means that local level planning can also be based on a risk assessment approach, and apply the prevention, eradication, containment and asset protection framework that underpins the State Biosecurity Strategy.

In the past, regional pest plans have mainly focused on private land. This new strategy applies to all land tenures and includes invasive species that are, or can be, declared under the Catchment and Land Protection (CaLP) Act 1994. Species excluded from this strategy are:

- Microorganisms and invertebrates
- Marine plants and fish¹
- Species indigenous to Victoria
- Freshwater fish.

¹ For this strategy, spartina spp are not considered to be marine plants, so therefore are included.

1.2 IPA Policy in Victoria

Historically, IPA management in Victoria has been heavily focussed on widespread, declared plant and animal species. Recently, emphasis has shifted to prevention and early intervention. This means avoiding the impacts of new invasive plants and animals by preventing them from entering the State or a region, or, if they have entered, acting early and vigorously while it is still feasible to eradicate them. This new approach to managing invasive plants and animals is referred to as the 'biosecurity approach' and it is being adopted across Australia. It is based on risk management principles and uses the 'generalised invasion curve', shown in Figure 1, to establish four different approaches to IPA management. The four approaches are prevention, eradication, containment and asset-based protection.

The biosecurity approach is based on analysis that shows that the greatest return on investment across these four approaches is in the prevention and eradication stages, rather than treatment of widespread and established pests. Under the biosecurity approach, established pests are managed as part of asset based protection. This means that the focus is on reducing the damage they cause to specific important places or things (called assets). This contrasts with some previous approaches that attempted to reduce the numbers of established species across the whole region or state.

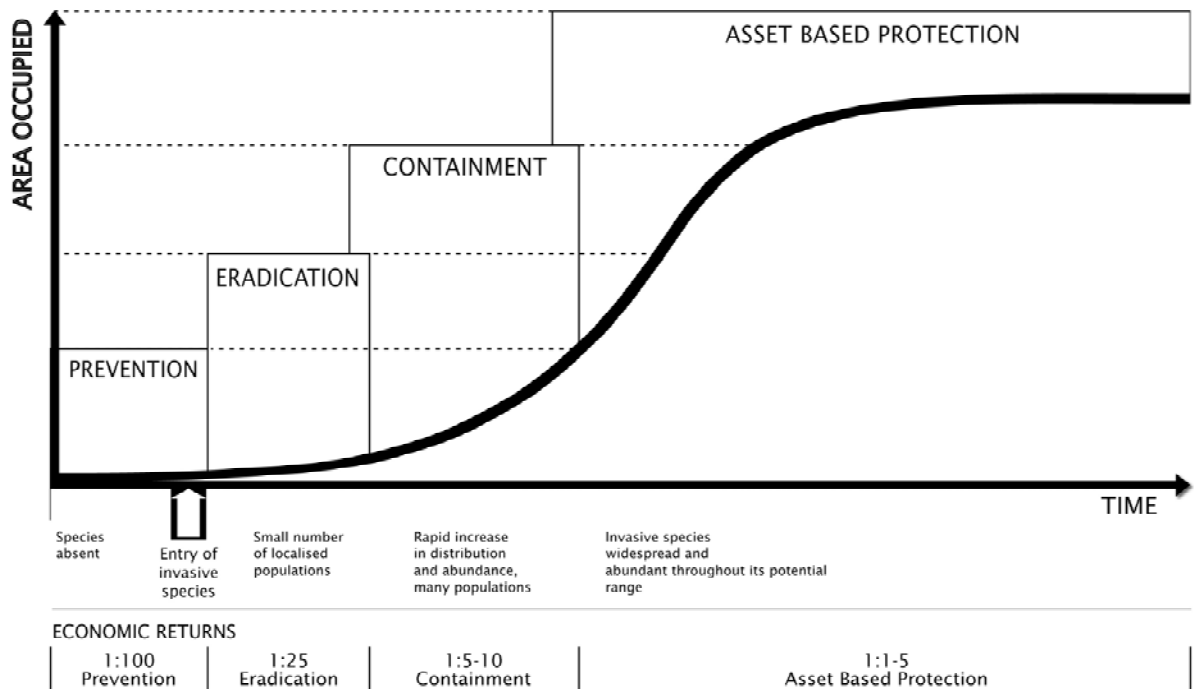


Figure 1 Generalised invasion curve for invasive plants and animals (Biosecurity Strategy for Victoria, 2009)

Implications of the biosecurity approach for some current weeds

The adoption of the biosecurity approach to managing invasive species in Victoria will affect their management in West Gippsland.

Widespread, established weed species eg Blackberry and Ragwort

In West Gippsland, ragwort (*Senecio jacobaea*) and blackberry (*Rubus fruticosus agg.*) are two established weeds that attract a lot of community interest and concern. Given that they are established weeds, the biosecurity approach determines that their management will be based on asset protection.

Weed risk assessment studies indicate that blackberry has a higher impact on economic, environmental and social values of assets than does ragwort. DPI's *Weed Risk Assessment for West Gippsland* (DPI, 2009b) ranks blackberry in the top 20 high risk species, but it ranked ragwort as 222 on the list of 246 species assessed.

In 2008 the Department of Primary Industries and the Victorian Blackberry Taskforce released the Victorian Blackberry Strategy, 2008-2013. This strategy's key aim, consistent with the biosecurity approach, is to prevent new infestations, reduce current infestations and rehabilitate infested land. One of the specific actions noted in the strategy is 'identify and map areas of high productive, environmental or social (community support) values and develop appropriate management strategies to reduce blackberry impacts in these priority areas'. It also highlights the importance of 'strategic enforcement of the *Catchment and Land Protection Act 1994* where community support exists for this approach to protect assets'. These are both actions that are consistent with an asset protection approach.

Ragwort is another widely recognized established weed in West Gippsland. It primarily threatens grazing land and therefore economic values, but does not present a major threat to environmental assets. Another factor that will influence future management of ragwort is the impact that climate change is expected to have on its distribution. The Victorian Climate Change Adaptation Program recently modelled the likely impact climate change will have on 25 weeds species, including ragwort (DPI, 2008). They found that conditions suited to the establishment and growth of ragwort declined by at least two thirds under all climate change scenarios. This finding is not a sign that management of ragwort is no longer necessary, but it does suggest that targeting populations that are likely to remain in climatically suitable areas, even after climate change, would be a prudent use of the resources available (DPI, 2008). Even so, ragwort remains listed as a noxious weed and is Regionally Controlled in West Gippsland.

Species that are not widespread in West Gippsland: Serrated tussock and Spartina

In West Gippsland, serrated tussock (*Nassella trichotoma*) and *Spartina* spp. are potentially targets for eradication from the region (the second approach from the invasion curve). Neither of these species are fully established in the region and they are both considered to be high risks (for instance, serrated tussock was ranked 26 out of 246 weeds in the *Weed Risk Assessment for West Gippsland*).

The CMA will explore whether these species should be targeted for eradication from the region. The DPI-DSE *Guidelines for the Development of Regional IPA Strategies* (DPI DSE, 2009) set out specific conditions for eradication to be possible, including things like number and size of infestations. The ultimate decision to target a species for eradication may require some research to ensure these conditions are met.

2 Invasive plants and animals in West Gippsland

Understanding the current extent of invasive plants and animals in West Gippsland is an important starting point for this strategy. To do this it is useful to consider pests in three broad categories:

5. Established and widespread invasive plants and animals
6. New and emerging invasive plants and animals
7. Those not yet found in the region but suited to the environment

A barrier to coming to a full understanding of the IPA problem in West Gippsland is that there are no comprehensive surveys of the distribution of established invasive plants and animals in the region. Across West Gippsland, the Department of Primary Industries has records of just 83 established weeds and eight established pest animals (category 1 above) mainly on private land. Parks Victoria also records where work has been done on invasive plants and animals on PV managed land. DSE records occurrences of non-indigenous plants and animals in their Flora Information System and the Victorian Fauna Display system. These systems record the occurrence of established pests and of management activities. Each different system captures only part of the whole picture of established invasive plants and animals in the region.

Information on high risk species not yet established in the region (categories 2 and 3 above) is, naturally, even more difficult to gather. The biosecurity approach shifts focus to these two categories because of potential future impact.

For weeds in Victoria, the Weed Risk Assessment (WRA) tool is used to measure this potential impact on environmental, economic and social assets. This is the risk assessment method was used in the recent noxious weeds review, which resulted in the assessment of 246 weed species for their impact, invasiveness, and current and potential distribution. These 246 species were then ranked for West Gippsland according to these criteria (DPI, 2009b).

There has not been an equivalent risk assessment approach applied to pest animals.

2.1 Impacts on the region

Invasive plants and animals directly impact on the economy and environment of West Gippsland. Their control and management impose financial costs on many of the region's industries.

West Gippsland's economy is strongly linked to primary production and particularly to the timber and livestock industries like dairy, beef and sheep. Invasive pasture weeds, like ragwort, are a constant problem for the region's pasture-based industries, and stock losses due to wild dogs and foxes are also a widespread challenge.

West Gippsland's coast features a potent example of how invasive plants and animals can interact and have far reaching impacts on the environment. Areas like Corner Inlet, Anderson Inlet and Shallow Inlet form some of the most important shorebird habitat in the nation. They also feature important, and increasingly scarce, coastal native vegetation communities. This vegetation provides habitat for many native fauna species, among them important migratory birds, penguins, short-tail shearwaters and many more.

This coast, with its friable sandy soils is very attractive to rabbits. The vegetation provides a food source and the sandy soils make for easy warren construction. The presence of rabbits draws foxes into these areas, which not only prey on rabbits but also on the shorebirds these areas are so critical for. Weeds like gorse provide harbour for both rabbits and foxes. The interactions between these weeds and pest animals add up to even greater impacts on native flora and fauna.

2.2 Current management approaches

Historically, IPA management in West Gippsland has had a strong local focus. There is a regional *Weed Action Plan* (Draft, 2000-2003), a draft *Rabbit Action Plan* (2001) and several Local Area Weed Plans. Local interest and commitment to IPA control is high with many examples of either formal partnerships or close working relationships between Landcare (or other community based groups) and State agencies and local governments across the region. Other land managers across the region have major commitments to IPA management. For instance, Parks Victoria (PV) has a strong focus on managing both weeds and pest animals on PV managed lands, often in partnership with local land managers. Local government, VicForests, private forestry companies, power and utility companies, VicRoads and VLine all have significant resources invested in IPA management on their land.

Case Study: Woodside Beach Rehabilitation Program

The Woodside Beach Rehabilitation Program is a great example of a community dealing with invasive plants and animals as part of efforts to restore a valuable community asset- in this case Woodside Beach. In the jargon of the IPA strategy, this is an asset protection approach. The community is banding together to improve their local beach, which requires treating invasive plants and animals.

Yarram Yarram Landcare Network (YYLN) is working with the Woodside Beach Surf Life Saving Club, Woodside Primary School, Wellington Shire and East Vic Workforce, to rehabilitate the dunes around the Surf Life Saving Club at Woodside beach. They want to protect the dunes from erosion caused by foot tracks and rabbits and rehabilitate the areas that have eroded.

Rabbits are a major root-cause of problems in the area. The sandy coastal soils make for easy burrowing, and they feed on the native vegetation. Rabbits attract foxes, which prey on both the rabbits and the area's native fauna. The program is taking a big picture approach by working on eradicating rabbits while also dealing with weeds (like boxthorn) and revegetating the dunes with local species.

YYLN know that success depends on working with neighbouring land managers. The main one for them is Parks Victoria, who have been linked into the program. This has been instrumental to ensuring good coordination with PV's rabbit baiting program on the adjacent land.

Complementing rabbit work is weed control and revegetation work. With support from Westpac Bank, a thousand native trees and shrubs were planted this winter. The local Coastcare program has also provided a thousand plants that were grown by Woodside Primary School.

The program seems to be developing a momentum of its own. This summer, two new viewing platforms will be built in the area. They have a dual purpose. They will help to keep people off the dunes and will be used as lookout points by the Woodside Beach Surf Life Saving Club. There will also be new signs built to share information on the local environment, its ecology, heritage and culture.

The biosecurity approach is presented as the new strategic approach to managing invasive plants and animals. Many of the key elements of the biosecurity approach have already been employed by those involved in IPA management in West Gippsland. A fundamental split within the biosecurity approach is between species-led approaches (prevention and eradication) and asset-based approaches. While this particular terminology may not have been in common use, there are many examples of both approaches operating in the region now.

Regional work on African lovegrass, bridal creeper and serrated tussock are all species-led approaches. These species are targeted for containment and, in some cases, eradication from the region, because they are not fully established and they present a serious risk to the region.

Similarly, there are many projects already underway that fit the description of 'asset based protection'. For instance, the Woodside Beach Rehabilitation program (see Case Study box) and the 'Penguins to the Prom' project (managed by the Bass Coast Landcare Network), recently funded by the Australian government. This work is focussed on coastal native vegetation and habitat for penguins and short-tailed shearwaters (the assets). Rabbit management is particularly important because this is

the single biggest threat to all three of these assets, but the project is also working on weed management and revegetation.

2.3 Drivers and future trends

In addition to understanding the current situation, any strategic approach to invasive plants and animals must consider both history and the future. The West Gippsland community is changing. Population growth has been a feature of the western part of the region, under influence from Melbourne. This is expected to continue (WGCMA, 2004; McKenzie and Frieden, 2010). This growth has resulted in small farms (those with operations valued at less than \$75,000 per annum) comprising 40-60% of all farms in the western parts of the CMA region (DPI, n.d.). These 'new' landowners are often unaware of the obligations that come with owning rural land, in particular the requirement to manage invasive plants and animals.

Across the broader agricultural landscape of West Gippsland, management of invasive plants and animals is often strongly linked to the prosperity of the farm sector. If an industry is highly competitive and profitable, then there is a very strong incentive (and capital available) for farmers to control weeds and pest animals that threaten their farm. However, this also means that the management of IPAs on much of the region's private land will vary with the fortunes of the region's agricultural industries.

A final group of drivers that affect invasive plants and animals can be described as the environmental shocks. Among these shocks are short sharp events like bushfires and floods, and longer term environmental changes like climate change. For instance, fires and floods can literally clear the way for weeds to invade.

Climate change may have a very significant influence on future invasive plants and animals in West Gippsland. Rainfall and temperature changes may mean that entirely new species arise as significant threats. In parallel, current threats may diminish because they are no longer well suited to the region.

It is not realistic to accurately predict these changes and the precise affect they will have on invasive plants and animals. However this dynamic environment re-emphasises the critical role that monitoring and surveillance has in IPA management.

3 Vision and goals for IPA management in West Gippsland

3.1 Long-term vision

The ultimate goal of the West Gippsland Invasive Plants and Animals Strategy is to reduce the impact of invasive plants and animals on the region's environment, economy and community.

Allied with other natural resource management work in West Gippsland, this strategy also aims to increase the resilience² of the region's landscapes by improving their ability to withstand invasive plants and animals.

Over time, this will mean that high-risk species have been prevented from entering the region, while those that have entered the region have been contained and prevented from fully establishing. It also means that in the long run, the impacts of IPAs on the region's many high value assets have been reduced and these assets are in the same or better condition.

Progress towards this vision will be achieved by delivering on the goals described in the next section.

3.2 Goals of the West Gippsland IPA Strategy

The four goals to achieve the vision described above are:

1. The West Gippsland community is aware of invasive plants and animals in their region and continues to be motivated and actively involved in their management.
2. New or emerging high risk species are prevented from establishing in the region and eradicated when they are found.
3. Species that, for West Gippsland, are targeted for containment are contained, reduced and prevented from spreading across the region .
4. The condition of identified high value assets in the region, under threat from IPAs, is improved or maintained.

These four strategic goals are consistent with the DPI-DSE *Guidelines for the Development of Regional IPA Strategies* (DPI DSE, 2009). According to these guidelines there are seven goals required in each regional strategy (see Appendix 1

²Resilience is an emerging term in natural resource management. The Victorian Government's *White Paper on Land and Biodiversity* defines resilience as:

"The capacity of a system to experience shocks while essentially retaining the same function, structure and feedbacks, and therefore its identity. The more resilient a system, the larger the disturbance it can absorb without shifting it to an alternative state. "For invasive plants and animals, resilience relates to the ability of an environment to retain its most important functions (eg. support native fauna or grow a crop) even when there is pressure from an invasive plant or animal. For example a resilient landscape would be one where ecological niches are occupied by native species and thereby prevent invasive species from establishing.

Goals and principles for all regional IPA strategies). The other three required goals are delivered through work on these four long term goals.

A logical framework (or theory of action) was developed based on these four goals. This logic (which details links from long term outcomes to partners and strategic actions) is provided in *Background Document 1*³. Part 2 of this strategy draws on this detailed analysis to describe how each of these four long term goals will be achieved.

3.3 Links to the West Gippsland Regional Catchment Strategy

The *West Gippsland Regional Catchment Strategy 2004-2009* sets out a series of high level themes and goals. The RCS clearly notes management of invasive plants and animals as being critical.

One of the themes in the 2004-2009 RCS is Managing Ecosystems and Biodiversity (MEB). Among the 'strategic interventions' for that theme is 'Control and limit the spread of agricultural and environmental pest plants and animals (MEB8).' The strategy then details management actions for asset classes (eg. land, biodiversity, production) across the region. These management actions include a strong theme of local action planning and supporting local IPA control efforts.

Though a new Regional Catchment Strategy (RCS) is under development, the importance of invasive plant and animal management in catchment management has already been recognised by the region, so it is likely to carry forward into the new Regional Catchment Strategy.

³ This document is available from the West Gippsland CMA.

Part 2 Goals for IPA management in West Gippsland

This part of the Strategy details the approach that will be taken for each of the four goals of the strategy described in section 3.3. In short, these goals are:

1. An aware and active community
2. Preventing new invasive plants and animals
3. Containing high risk invasive plants and animals
4. Protecting West Gippsland's assets from IPAs.

4 An aware and active community

Effective pest management depends on working partnerships between government, industry and the community. West Gippsland in particular, has a long history of strong partnerships with communities across the region. Continuing successful IPA management in the region depends on maintaining this active and knowledgeable community.

Many of the strategic actions in this strategy rely on commitment and participation by the community, particularly private landholders. There are also specific actions to encourage and support community participation:

- Inviting community to participate directly in shaping and implementing the IPA strategy
- Supporting inclusion of IPA management in farm planning across the region (eg. EBMP, Dairy SAT etc.)
- Ensuring ready access to information on IPAs in the region such as lists of State and Regionally Prohibited Weeds.
- Provision of information and assistance to new landholders, including explaining their obligations with respect to management of IPAs
- Supporting communities who are taking an active role in managing IPAs in their area, including information, education, extension and enforcement.

4.1 Responsibility for management of IPAs

The *Catchment and Land Protection (CaLP) Act* 1994, establishes that primary responsibility for management of invasive plants and animals rests with landowners. It states that all landowners must take all reasonable steps to:

- avoid causing or contributing to land degradation which causes or may cause damage to land of another land owner;
- conserve soil;
- protect water resources;
- eradicate regionally prohibited weeds;
- prevent the growth and spread of regionally controlled weeds;
- prevent the spread of, and as far as possible eradicate, established pest animals.

The Victorian Government's 2009 *White Paper for Land Health and Biodiversity* highlights the need to clarify the responsibilities that flow from this part of the *CaLP Act*. However, it is clear that a duty of care operates for all landowners in relation to management of invasive species (DPI-DSE, 2009). This means that landowners, of both public and private land, are required to manage weeds and pest animals on their land.

However, government also has a role to play. For instance, DPI and DSE have lead roles in prevention and early intervention programs. Landowners (whether private or public) have the stronger roles in containment and asset protection work. All these

approaches require partnerships between landowners, government agencies and non-government organisations to be effective. Strong community participation can also be an effective way to draw in other important land managers, particularly government agencies, which can ultimately improve coordination in IPA management.

It is also generally considered appropriate for government to intervene in situations where there is a clear public or community benefit. In situations where community led management of a high risk pest is succeeding, government may also provide support to help reinforce this success (eg. enforcement activities in local community weed programs).

4.2 Strategic actions to build an aware and active community

The following strategic actions address the issues raised in the previous sections.

STRATEGIC ACTION 1: Actively engage the West Gippsland community wherever possible in both shaping and implementing IPA management across the region.

STRATEGIC ACTION 2: Declared species lists and land manager responsibilities are maintained and made widely available across the region.

STRATEGIC ACTION 3: Support the Gippsland Invasive Plant and Animal Forum as one means of engaging stakeholders within the region.

STRATEGIC ACTION 4: Allocate resources to support local communities that are actively managing IPAs using a biosecurity approach.

5 Preventing new IPAs in West Gippsland

Preventing the establishment of new and emerging invasive plants and animals is the highest priority for all pest strategies (DPI DSE, 2009). This approach is based on the relative public benefit of preventing species from establishing versus attempting to control them once they are established (DPI, 2009a).

Lead responsibility for prevention of IPAs lies with the Department of Primary Industries and the Department of Sustainability and Environment. The next sections identify key regional actions that will complement State programs to prevent and eradicate new high risk species.

5.1 Assessing the risk of new IPAs

Work on invasive plants over many years has resulted in a well-articulated peer-reviewed method of assessing the risks that weeds pose. The recent review of noxious weeds listings is an example of the application of this process. While this process was used specifically for weed risk assessment, the principles it is based on -invasiveness, distribution and impact- apply to all invasive plants and animals.

These principles are:

1. **Invasiveness:** how invasive it is, i.e., how fast can the species spread? Generally this relates to the intrinsic biological features of the species (i.e. dispersal, reproductive and competitive rate) but also includes environmental features that can create opportunities for invasive species.
2. **Distribution:** the present and potential extent of the species.
3. **Impact:** what are the social, environmental, and economic impacts the species has and the value of the things that are impacted upon.

The Weed Risk Assessment (WRA) developed by the Biosciences Research Division of the Department of Primary Industries, Victoria (DPI, 2009b), uses data on each of these factors to calculate the weed risk score:

Weed risk score = α (Invasiveness score) + β (Present:Potential Distribution) + δ (Impact)
(where α , β and δ are weightings)

5.2 Invasive processes and pathways of spread

Three factors guide whether a pest becomes established. There must be a place for the pest to occur, it must be able to reach that place, and it must have a competitive advantage over other species.

Invasive plants can spread naturally by wind and water, or attach themselves to animals and other plants. Pests such as rabbits can also move into new areas and through ingestion, they can bring some weeds (such as blackberries) with them when they move.

Human activity can spread invasive plants and animals intentionally or unintentionally due to transport, recreation, industry or entertainment. They can be moved by air, water or land transportation by attaching to humans or machinery. They can be moved via shipping containers or packaging materials. Tourism and recreation can spread

plants and animals on vehicles, clothing and equipment. Industry can be another significant vector by bringing in plants from outside an area, or through plant trade in the region's nurseries or markets. Even entertainment events like plant and garden shows can bring in invasive plants or animals.

The following human based pathways are seen as particularly significant in West Gippsland:

Inappropriate management of linear tracts of land (roadsides, railways, rivers)

Management practices that do not include consideration of the high potential for spread of invasive plants and animals along these linear tracts of land can be very important. For instance, roadsides can be poorly managed, sometimes because responsibility for their management is uncertain or contested. Even when they are managed, the use of machinery such as slashers, provides a means for the distribution of seeds from one area to another both within the region or from outside.

Vehicle hygiene

Machinery contractors working in a range of settings present a significant threat, given they may not be subject to the same levels of control that can be applied to operators engaged by various levels of government. This includes earth-moving equipment used in new residential areas, for management of roadsides, or fire management activities.

Fodder movement within and from outside the region

Fodder is a significant risk, particularly when it is moved quickly as a result of fire, floods or other disaster responses. In these circumstances, movement restrictions or checks on fodder from outside or within the state can become a low priority when faced with the urgency of feeding stock.

Movement of stock within and from outside the region

The movement of stock poses a risk, particularly when stock are hauled over long distances. Fur and wool on stock provide a suitable vector for many weed seeds which are often difficult to observe during the process of loading and unloading of animals.

Trade through local markets and the internet

Trading of plants and animals at farmers and community markets, as well as the internet, can be a source of spread. The large number of these outlets and a low level of awareness of the threats that invasive species can present make this risk complex and potentially widespread.

Tourism

Given West Gippsland's close proximity to Melbourne and its many outdoor attractions, many people are drawn to the area. Among the activities undertaken are fishing, camping, 4WD, motor biking and hunting, with the potential for invasive plants in particular to spread by attaching to vehicles.

Home gardens

West Gippsland's growing urban population means that the risk posed by garden plants that become problems for farming or natural areas is also growing. Due to their lack of familiarity with invasive plants in the region, new residents can be a particular concern.

5.3 Target species for prevention and eradication in West Gippsland

Most of the target species for prevention and eradication in West Gippsland are set by legislative declarations. State Prohibited Weeds, Regionally Prohibited Weeds, Weed Alert species, and Restricted Pest Animals⁴ must be addressed as part of this Strategy⁵. To support early intervention for weed control, the State government publishes the Victorian Alert Weeds list (see www.dpi.vic.gov.au). This list includes State Prohibited Weeds and Victorian Alert Weeds.

However, this is not the only source of priorities for species-led management in West Gippsland. Each region has the option of nominating priority high risk species for eradication, that are not currently listed under legislation. This option is available for two reasons:

- The listing process can take a long time and it may be critical to take action immediately rather than waiting for the listing process to be completed.
- A species may pose such a high risk to one region, but not to others, that action must be taken, regardless of its legislative status.

To deal with the situation just described, there are two additional ways for priority high risk species to be identified for regional IPA work. The first of these is through the detailed risk assessment processes that Victorian government land management agencies already have in place. These include processes like Parks Victoria's weed management planning, DSE's advisory lists of environmental weeds for each bioregion (DSE, 2008; DSE 2009a) and data from past Weed Risk Assessments conducted by DPI. Because these processes are based on the principles listed in the previous section, they can generate additional candidates for regional priorities for prevention and eradication.

The second additional method for high risk species to be identified is through the region conducting its own risk assessment. This assessment must be conducted according to the principles laid out in the previous section using the best available information and expertise. This information and expertise would include what is already collected and used by land managers in the region like DSE and Parks Victoria. This regional assessment, lead by the CMA, will be part of the implementation of this Strategy.

⁴ Restricted Pest Animals includes Prohibited, Controlled and Regulated categories of pest animals as declared under the *CaLP Act*.

⁵ Lists of the weeds species can be found in the Victorian Government Gazette G.10 6 March 2008 p.446.

Lists of the animal species can be found in the Victorian Government Gazette G.6 13 February 1997 p. 340.

5.4 Working with stakeholders and neighbouring regions

Preventing new invasive plants and animals from establishing in the region is heavily dependent upon surveillance and early detection.

New pests will often move into the region from its immediate neighbours. Establishing regular interaction with neighbouring regions is a key step in surveillance and early detection, ie. Port Phillip and Westernport, East Gippsland and Goulburn Broken CMA regions. The focus of cross-regional interaction, to be led by the Gippsland Invasive Plant and Animals Forum annually, will be high risk species and management of vectors to prevent their movement between regions. This process will enable information on the particular IPAs that each region is targeting to be shared and surveillance efforts extended beyond regional boundaries.

Depending on the potential vectors and distribution mechanisms of an invasive plant species, working from the 'top of the catchment- down' can be a cost effective approach. It can be used as an early intervention to prevent spread throughout a catchment and can also be a good way to reduce reinfestation of treated sites.

5.5 Strategic actions for preventing new IPAs in West Gippsland

The following strategic actions, drawn from the issues raised in the previous sections, aim to support state action to prevent the establishment of new high risk invasive species:

STRATEGIC ACTION 5: Develop and apply a process to identify additional high risk invasive plants and animals (using the same principles as legislative declarations) for the region to target for prevention and eradication.

STRATEGIC ACTION 6: Ensure lists of high risk species (both declared and others) are widely communicated to support surveillance and reporting of these species.

STRATEGIC ACTION 7: Convene and organise the Gippsland Invasive Plant and Animal Forum with stakeholders from within the region as well as neighbouring catchment management agencies to:

- Assist with coordination and communication of IPA work,
- Focus on ways to prevent new invasive plants and animals from entering the region
- up-date the community on latest research, programs and policies in IPA management.

6 Containing high risk IPAs

Some pest species are considered to be beyond eradication, even though they are still not fully established across the state. In this scenario containment and reduction is considered the best option. Containment and reduction focuses on preventing the spread of the pest beyond the defined boundary of the current infestation. From the statewide perspective, both Regionally Controlled Weeds and Regionally Prohibited Weeds can fall into this category (no pest animals are currently considered as being appropriate for this category).

Containment and reduction programs focus on:

- Defining the boundary or limit of the infestation
- Targeting spread pathways to minimise movement beyond the current infestation
- Eradicating satellite infestations
- Reducing the abundance and density of the core infestation where this helps prevent further spread.

6.1 Identifying target species for containment

There are two ways that species that are targeted for containment and reduction will be identified. The first of these is through a state level nomination process. This process is lead by DPI and is under development at the moment. Species will be subject to an assessment process to establish whether they are suitable for containment programs. The species that are being assessed for this approach will typically have a clearly definable core infestation, as well as satellite infestations.

The second way for a containment target species to be nominated is that on behalf of the regional community, the CMA nominates them. This process needs to be based on the same principles as the State process, namely the species must represent a high risk to the region, there must be identifiable core and satellite infestations, and on-ground work must focus on eradicating satellite infestations and reducing core infestations.

6.2 Strategic actions for containment of IPAs

The following strategic actions are drawn from the issues raised in the previous sections.

STRATEGIC ACTION 8: Participate in state level assessments of species that could be targeted for containment.

STRATEGIC ACTION 9: Develop and conduct a regional assessment process to identify other high risk species for containment in the region.

STRATEGIC ACTION 10: Support on ground work on core and satellite infestations of species targeted for containment.

7 Protecting West Gippsland's assets from IPAs

One of the important ideas in the biosecurity approach is that once a pest becomes so widespread that containment (or eradication) is not possible, focus must shift to protecting specific parts of a region from the impacts of a pest plant or animal. The term used to describe this is 'asset based protection'. Priority-setting of this type is always contentious because, by definition, it results in some things being considered more important than others. There is no detailed prescription of how this priority-setting should be done, and there is no single 'right' way. The basic steps in the process, shown below, are drawn from the asset-based approach described in the *White Paper for Land and Biodiversity* (DSE, 2009b, p.30).

1. Nominate an asset
 - Draw from existing asset lists (Eg. Gippsland Natural Resource Assets report card)
 - Show the asset on a map.
2. Describe the value of the asset
 - Who is it valuable to? Why? (quantitative and qualitative measures)
3. Describe the IPA threat to the asset
 - What are the specific IPA threats to this asset? What impacts are the IPAs having on the asset?
4. Establish the feasibility of managing IPA threats to that asset
 - Can the threat be reduced or eliminated?
 - Will the land managers involved take the actions needed?

This basic approach was used as an initial guide for the asset prioritisation process. Each step had to be developed in much greater detail. This detail is described in Background Document 2⁶. The results of this analysis are shown in section 7.4.

7.1 Assets at risk from IPAs

The aim of this part of the strategy is to identify assets that are most at risk from invasive plants and animals. West Gippsland's important assets have been identified many times in other planning processes.

The Regional Catchment Strategy highlights regional assets. Other strategies and plans identify specific assets. The region's Biodiversity Action Plans list 'natural assets' for each bioregion, the *West Gippsland River Health Strategy* lists sub-catchments by environmental, social and economic value, and the *West Gippsland Salinity Management Plan 2005* lists the assets at risk from salinity.

Other natural resource management agencies in the region have also identified assets. For example, Parks Victoria have two processes for setting priorities for land that they manage- Levels of Protection (LOP) for biodiversity values, and Levels of Service (LOS) for management of visitor services.

⁶ Background document 2 *The asset protection prioritisation method* is available from the West Gippsland CMA.

One of the highly regarded reports produced each year for Gippsland is the *Gippsland Natural Resources Report Card*⁷. The two CMAs in the region (in partnership with the Gippsland Integrated Natural Resources Forum, GINRF) produce a report card each year, which presents 'an assessment of the environmental condition and stewardship of 18 key natural assets' from across the region. This list (excluding those assets that are primarily found in East Gippsland) was used as a starting point for the asset prioritisation for this Strategy because it is one of the only lists of assets that takes a comprehensive view of the region's assets. This is critical for the strategy because the impact of invasive plants and animals is so widespread.

The GINRF assets in West Gippsland used in the 2008 report card are:

- Macalister Irrigation District
- Thomson River
- Latrobe River
- Non-irrigated dairy farming (Warragul, Drouin, Leongatha, Korumburra, Mirboo North, Thorpdale and Meeniyar)
- Strzelecki Ranges
- Corner Inlet
- Wilsons Promontory
- Alpine National Park
- Gippsland Lakes
- Ninety Mile Beach

In the 2009 report two more assets were added:

- Bunurong Marine National Park
- Red Gum Plains

With these assets as a starting point, we invited regional stakeholders to either clarify these assets (eg. which parts of the Thomson River) or nominate other assets that have been identified through their own planning or strategies. Stakeholders consulted at this stage of the process included local government, DSE, DPI, Parks Victoria, VicRoads, Landcare, primary industry organisations, Water Authorities, and the CMA. In all, this process identified 27 assets that were analysed in further detail. Details of the method used at this stage and summaries of the results can be found in Background Documents 2 and 3 (available from the West Gippsland CMA).

7.2 Dealing with a dynamic system

The challenge of creating a set of priorities in any area of natural resource management is that the environment is rarely static. Much of the information used to create a set of priorities will change over time as the natural environment, community views, economic conditions, and knowledge changes.

Any enduring strategy must allow for these changes. In the context of this strategy this means that there needs to be allowance for asset priorities to change. The list of asset

⁷ Copies of the Report Cards can be accessed from the West Gippsland CMA web-site: www.wgcma.vic.gov.au

priorities created for this strategy will be reviewed and revised as part of the monitoring and evaluation framework for the strategy. As with most strategies, re-assessment of priorities can and should be done on an as needs basis when new issues arise.

7.3 Actions for asset protection

The analysis described at the beginning of this section produced information for each asset- their value to the community, IPA threats and feasibility to address the threat. Rather than rank assets simply from highest to lowest, the results pointed to three groupings of assets, each with a different action. These groups are:

- A. **Priority for immediate on-ground action.** Assets in this category are valuable, the required on-ground actions are well understood and immediate on-ground work is required to maintain their condition.

ACTION: Support IPA management actions to protect these assets as part of overall asset protection work.

- B. **Priority for investigations or research.** Assets in this group are valuable but further information is needed before determining whether action can or should be taken immediately. These information gaps include cases where the IPA risk is not well enough understood, cases where it is unclear whether actions will protect the asset in the long run, and cases where it is not known whether the land managers involved are likely to take the actions required.

ACTION: Support work to address information gaps and then re-assess these assets to determine their priority for immediate action.

- C. **Monitor for action in future and maintain previous gains.** Assets in this group are valuable and have known threats from IPAs, but the value of the asset and/or the risk IPAs currently pose to them is not as high as in category A. In some cases, assets are not under immediate threat because of previous work on invasive plants and animals. This asset may not be an immediate priority for on ground action, but it is critical that those gains are preserved.

ACTION 1: Systematic monitoring so that any change in conditions (eg. the threat changes or more resources are available) is detected quickly. When priorities for action are reviewed periodically these assets need to be included in this re-assessment.

ACTION 2: Support and re-enforce gains already made in managing IPA threats to these assets.

Section 7.4 describes the assets that fit into each of these categories.

7.3.1 Investigations and research category

Classifying an asset as 'priority for investigations and research' should be considered a temporary or interim step to deciding whether the asset is a priority for immediate action or not. This means that once the critical information gap(s) have been addressed, assets in this category need to be allocated to either the immediate action or the monitoring category (Figure 2).

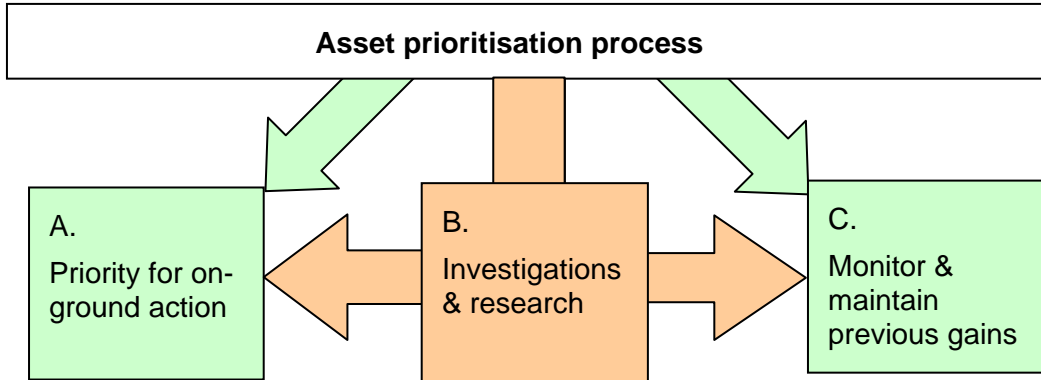


Figure 2: Diagram of the asset prioritisation categories showing that assets in group B and ultimately allocated to categories A or C.

7.3.2 Resourcing asset protection work

This strategy has identified assets in three groups, with specific actions for each. The challenge for the region is to balance the use of the available resources across the three categories just described.

Assets classed as high priority for immediate action should attract resources from the relevant stakeholders because this classification points to a need for urgent action. These resources should be used for on ground actions to treat priority IPA threats to these assets but only as part of an overall asset protection approach.

However, resources should also be directed to assets in the other two groups. The second group, those where more information is required, is particularly important. Once the information gaps are addressed these assets could turn out to be extremely high priorities for immediate action.

7.4 Priority assets for protection from IPAs in West Gippsland

7.4.1 Assets that are a priority for immediate on-ground action

Assets that have been identified as high priority for immediate on-ground action are described in Table 1 (and in more detail in Background Document 3). These assets are also shown on Figure 3. Asset significance, also shown in Table 1, is one of the critical pieces of information used in this prioritisation process. The measure of asset significance- exceptional, very high or high- was based on the following criteria:

- **Exceptional:** the asset is nationally or internationally recognised (formally) as extremely important. This might include Ramsar listed wetlands, nationally listed vegetation communities and species or priorities under national programs. A good example of an exceptional asset is the Gippsland Lakes.
- **Very High:** the asset is very important at the State or regional level and may be listed as a priority for State or regional programs (though not national).
- **High:** the asset is important and may be noted in regional and local strategies and plans.

Table 1 Assets identified for immediate on-ground action

Asset name and description	Justification	Asset significance
Corner Inlet – coastal native vegetation, habitat for migratory birds and other native fauna, marine areas and the marine biodiversity. It includes Nooramunga Marine and Coastal Park and Corner Inlet Marine and Coastal Park	This is an exceptionally high value asset. It is the subject of four international agreements for its critical bird habitat and is a flagship asset under the Land and Biodiversity White Paper. This combined with the estimate that IPA threats (both weeds and pest animals) could be extremely damaging in the near future, makes it a very high priority for action.	Exceptional
Wilson's Promontory	This exceptionally high value asset is a declared Biosphere Reserve under the UNESCO Man and the Environment program, is on the National Estate registry and is a flagship asset under the Land and Biodiversity White Paper. Terrestrial weeds threaten the quality of native vegetation, while pest animals like wild dogs, cats and foxes prey on the native fauna in this area.	Exceptional
Alpine and sub-alpine ecological communities – including alpine sphagnum bogs and fens that occur within the Baw Baw and Alpine National Parks, but also on other alpine areas outside these parks	These communities are nationally recognised as endangered and are included in the Land and Biodiversity White Paper's flagship assets (Central Highlands). Invasive weeds have potential to severely damage these areas. Climate change is likely to add to pressures on these communities, with potential damage from invasive plants increasing even further.	Exceptional

Asset name and description	Justification	Asset significance
Upper Thomson River – from the headwaters to Cowwarr Weir- in-stream biodiversity as well as riparian vegetation and fauna	This part of the Thomson River is considered a ‘Priority High Conservation Value Aquatic Ecosystem’ (HCVAE) by the Victorian and Australian governments. The Thomson is also a heritage river. This exceptionally high value, combined with significant weed threats, makes this a high priority for immediate action. This area is already part of State and national level projects.	Exceptional
Aberfeldy River	The Aberfeldy River is considered a ‘Priority High Conservation Value Aquatic Ecosystem’ (HCVAE) by the Victorian and Australian governments. This exceptionally high value, combined with significant weed threats, makes this a high priority for immediate action.	Exceptional
Anderson Inlet – including the associated terrestrial native vegetation and habitat for migratory birds and native species	The wetlands in these areas are of national and international importance, and part of international agreements to protect migratory birds. Invasive weeds pose extremely high risks to these areas. Rabbits and foxes also present direct threats to native flora and fauna.	Very high
Shallow Inlet – including the associated terrestrial native vegetation and habitat for migratory birds and native species	The wetlands in these areas are of national and international importance, and part of international agreements to protect migratory birds. Invasive weeds pose extremely high risks to these areas. Rabbits and foxes also present direct threats to native flora and fauna.	Very high
Coastal native vegetation – from Wilsons Promontory and Phillip Island	This is a very high value asset because of the scarcity of this vegetation and also because it provides habitat for state and nationally listed species. The potential impact from foxes and rabbits is estimated as high to very high.	Very high
Ninety-mile beach dune system – including public land from Corner Inlet to Gippsland Lakes, Jack Smith Lake Wild Life Reserve, McLoughlins Beach, Seaspray Coastal Reserve, Freshwater Swamp, and Woodside Beach Wildlife Reserve	This is a very high value asset because of the increasing scarcity of coastal vegetation and the risk from weeds and pest animals, like rabbits and foxes, is estimated as high.	Very high

Asset name and description	Justification	Asset significance
Channel infrastructure in the Macalister Irrigation District (MID)	This very high value asset consists of 660 kilometres of supply channels and 490 kilometres of drainage channels. The 53,000 hectares of farmland serviced by the system are a major economic driver for West Gippsland. The potential for aquatic weeds to threaten the viability of the irrigation district make this asset a priority. Actions will most likely take the form of supporting Southern Rural Water to continue their weed management programs.	Very high

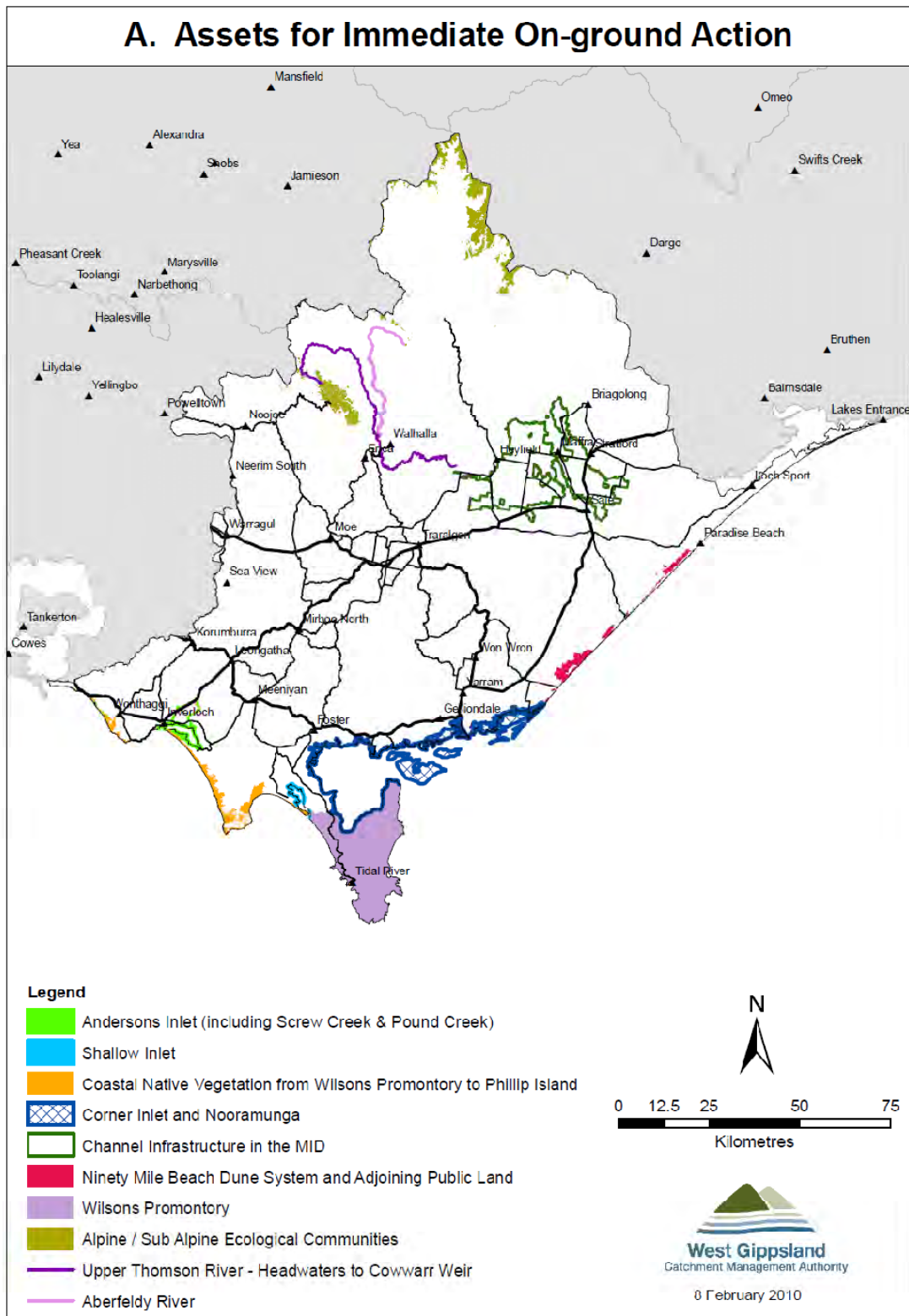


Figure 3: Map showing assets that are priority for immediate on-ground action

7.4.2 Assets that are priorities for investigations or research

For some assets further information is required in order to determine whether the asset should be a priority for immediate action. The assets that currently fit this category are described in Table 2. These assets are also shown in Figure 4.

Table 2 Assets that are priorities for investigations or research

Asset name and description	Justification and knowledge gaps	Asset significance
<p>Grassland and Grassy Woodlands of the Gippsland Plains – includes the Central Gippsland Plains Grassland Community, Forest Red Gum Grassy Woodland Community and Plains Grassland. The ‘Gippsland Red Gum Grassy Woodland and Associated Native Grassland’ is listed as Critically Endangered under the <i>EPBC Act</i>. These grasslands are more severely depleted than any other ecological community in Victoria and are extremely poorly reserved</p>	<p>The very high risk to grasslands in particular, could make this asset a priority. However, much of this remnant vegetation occurs on private land and the level of recognition of the importance of these grassland communities is not high. Work on these grasslands is particularly complicated by the fact that a major threat is from pasture grasses. Work is required to assess community awareness and interest to gauge whether IPA work on this asset would be adopted and supported by the community.</p> <p>Because of the scarcity and importance of this vegetation community this work is considered to be one of the highest priorities for the strategy.</p>	Very high
<p>Forests of the southern slopes of the Dividing Range – including Baw Baw National Park and parts of the Alpine National Park</p>	<p>The alpine and sub-alpine ecosystems in this area makes this is a very high value asset. Much of this area is included in the Land and Biodiversity White Paper flagship asset, Central Highlands. The main knowledge gap here is to develop detailed understandings of the weed threats to these forests.</p>	Very high
<p>Western Strzelecki Ranges – includes fragmented patches of remnant native vegetation on both private and public land. Also includes Mount Worth State Park and Mirboo North Regional Park</p>	<p>This asset includes endangered EVCs (warm temperate and cool temperate rainforest, and damp forest). Fragmentation of native vegetation in this area means that it is particularly at risk from weeds, however, it is unclear whether the many land managers across this large area can be engaged in IPA work.</p>	Very high

Asset name and description	Justification and knowledge gaps	Asset significance
<p>Lowland forests of the Gippsland Plain – the area includes Holey Plains State Park, Won Wron State Forest, Flora and Fauna and Bushland Reserves, and Mullungdung State Forest and Flora and Fauna Reserve as well as other similar remnant native vegetation on both public and private land</p>	<p>This remnant native vegetation forms a major part of the Gippsland biolink highlighted in the Land and Biodiversity White Paper, and is significant habitat for West Gippsland's large forest owls. Foxes are a particular threat to the local native fauna. However, because of the many different land managers around this asset, and because the threat posed by other invasive animals (eg. pigs) is not well understood, more analysis of this asset is required.</p>	<p>High</p>

B. Assets where further information on the IPA s is required

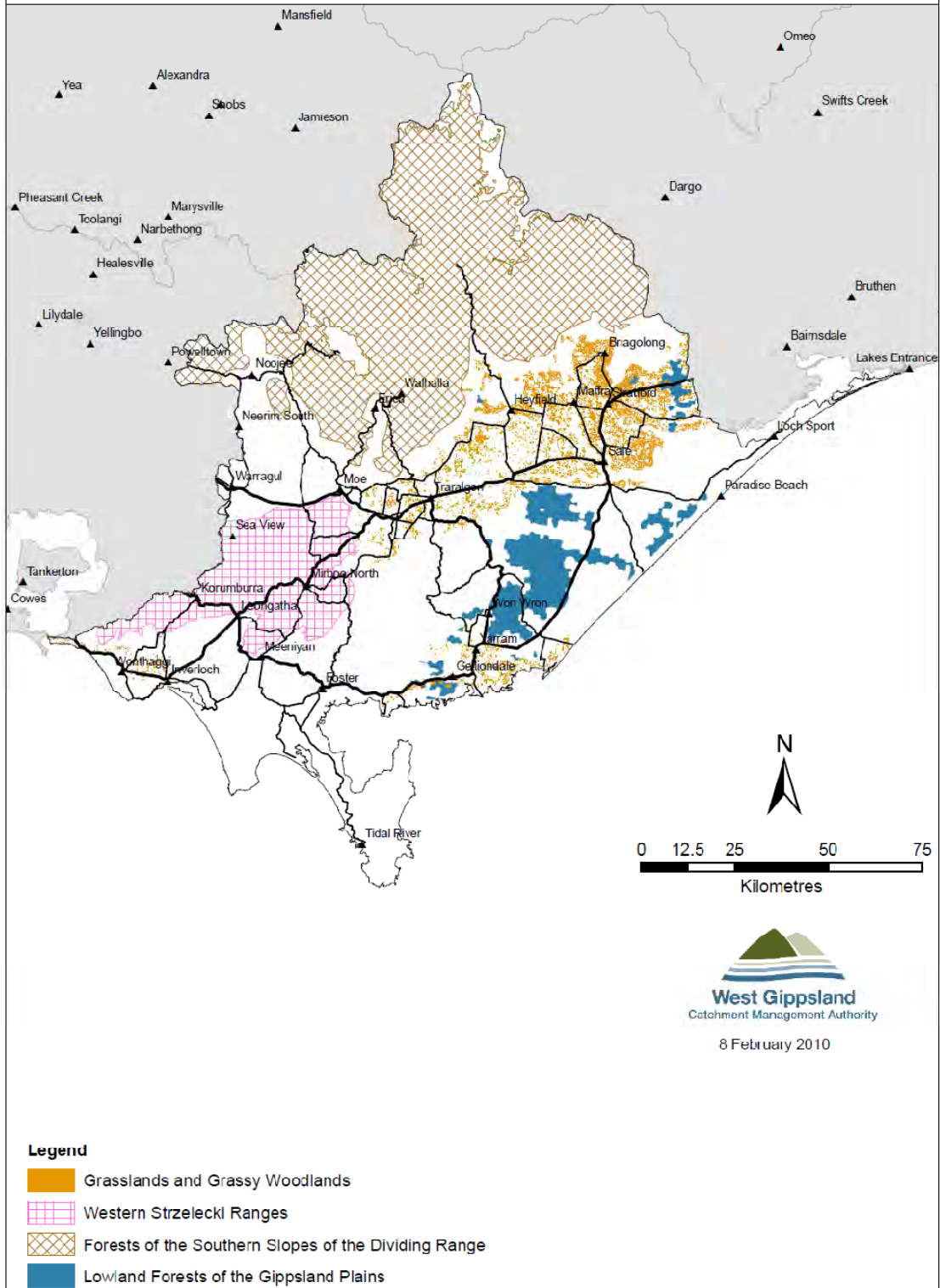


Figure 4: Map showing assets that are priorities for investigations or research

7.4.3 Monitoring for future action and maintaining previous gains

Some assets, though they are high value and there are known threats to them from invasive plants and animals, were not considered to be at high immediate risk. For some assets in this category, this status reflects a strong history of successful management of invasive plants and animals. Even so, this situation can change rapidly so these assets need to be monitored closely to detect any important changes. The assets that fit into this category are described in Table 3. These assets are also shown in Figure 5.

Table 3 Assets that are to be monitored for future action and to maintain previous gains in IPA control

Asset name and description	Justification	Asset significance
Gippsland Lakes – including both the lake area and associated native vegetation (about 60,000ha). The Gippsland Lakes Coastal Park is also included	The Gippsland Lakes are recognised nationally and internationally (Ramsar listed) for their conservation significance. The area supports more than 540 native plant and 300 native animals. The Lakes are a priority in the Australian government’s NRM programs. They also have very high recreation and tourism values. While this asset is extremely high value, the threat posed by invasive plants is not considered to be the biggest threat to the values of the Lakes.	Exceptional
Agricultural land – dryland and irrigated agriculture across the region (see also Section 7.5)	This large asset is very valuable to the community and there are risks from IPAs. However, the level and urgency of these threats is not as high as for other assets in the region. This may reflect the history of work on weeds and pest animals. Focus for this asset will be on preserving the gains made over recent years in controlling threats like ragwort and other established weeds and pests.	Very high
Eastern Strzelecki Ranges – includes cool and warm temperate rainforests on private and public land in the Gonyah, Wonyip, and Balook areas. Tarra Bulga National Park and Gonyah Rainforest Scenic Reserve also fall within this asset. The damp forests include habitat for regionally significant populations of Strzelecki koalas	This is a high value (EPBC and FFG listed species particularly those associated with rainforest) but the impact of IPAs is estimated as medium. Other threats include incremental habitat loss.	Very high
Lake Glenmaggie – on the Macalister River. The dam supplies water to the Macalister Irrigation District which has over 500 farms	This is a high value asset particularly for the irrigation sector, but the risk from IPAs is not considered to be very high.	Very high

Asset name and description	Justification	Asset significance
Blue Rock Dam – located on the Tanjil River, augments other water supplies to the Latrobe Valley for power generation, industrial, urban and private irrigation	This is a high value asset but the risk from IPAs is not considered to be very high.	Very high
Lower Thomson River – from confluence with the Macalister River to the Latrobe River south of Sale	This is considered an important river at the regional and state level however the upper reaches of the Thomson are at greater risk from IPAs.	Very high
Lower Avon River – from Knob Reserve to Lake Wellington	This is an important river, particularly because of its connection to the Gippsland Lakes, but the risk of damage from IPAs is not as high as for other rivers.	Very high
Powlett River – downstream of Lance Creek (includes Lance Creek).	This is an important river, but the risk of damage from IPAs is not as high as for other rivers.	Very high
Lower Tarwin River – downstream of A Brownes Road. The Tarwin River flows into Anderson Inlet	This is an important river, but treatment of threats at Anderson Inlet, which this river flows into, is considered a higher priority.	Very high
Lower Tarra River – downstream of South Gippsland Highway. This river flows into Nooramunga Marine and Coastal Park	This is an important river, but treatment of threats to Nooramunga Marine and Coastal Park, which this river flows into, are considered a higher priority.	Very high
Bruthen Creek and Giffard Plain – from Woodside to Mcloughlin’s Beach. This asset is linked to Corner Inlet, includes significant wetlands and recreation areas	This is an important river, but the risk of damage from IPAs is not as high as for other rivers.	Very high
Hoddle Range east and Bennison Creek – includes Silver Creek, Poor Fellow Me Creek, Golden Creek, Old Hat Creek all of which flow into Corner Inlet	This is an important river, but the risk of damage from IPAs is not as high as for other rivers.	Very high
Cowwarr Weir – located at the head of Rainbow Creek, 10 kilometres west of Heyfield	This is a high value asset because of its role in managing water supplies to the MID and for its recreational uses. The risk from IPAs is not considered to be very high.	High

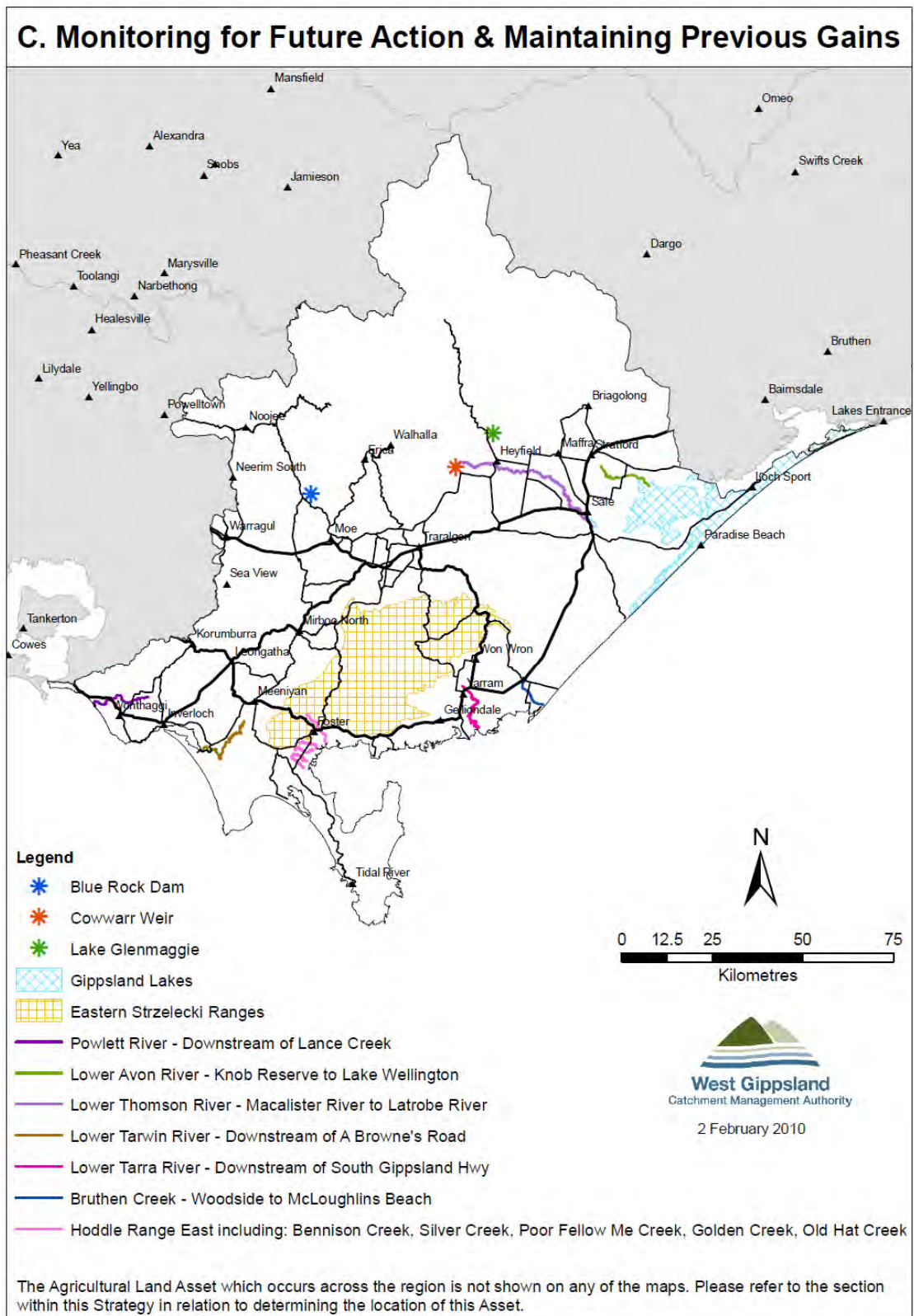


Figure 5: Map showing assets that are to be monitored for future action and to maintain previous gains.

7.5 Primary production land

Primary production is a very important part of the West Gippsland region's economy. Farming and forestry across the region has always had to deal with invasive plants and animals so, naturally, primary production land was highlighted as an important asset that is threatened by invasive plants and animals. However, unlike many of the other assets highlighted in this strategy, primary production is found across the length and breadth of the region, no two areas are the same, and the IPA issues vary accordingly.

This long standing experience means that the region's farmers and foresters (in partnership with government) have a long history of working on invasive plants and animals. This work has been successful. So successful that the assessment of the risk that IPAs currently pose to the region's primary production, done as part of this strategy, estimated it as relatively low. This does not mean there is no risk, but it reflects that previous efforts and the relatively high value of primary production land in the region, have ensured that most landowners have controlled their invasive plants and animals.

Given this situation, it is very important that this strategy both acknowledges and preserves these valuable gains.

To achieve this, a set of criteria will be developed to guide when support for IPA work on the agricultural and forestry assets is warranted. These criteria would be based on the same risk management principles that the biosecurity approach uses. They should include measures of potential economic impact (reduction in agricultural or timber production), actions already taken by local groups (eg. Landcare group, forestry company), invasiveness of the IPA, and risks to other valuable assets. These criteria, once refined and confirmed, would be applied to primary production land as part of regular monitoring or when concerns are raised with the CMA, DPI or DSE.

7.6 Strategic actions to protect West Gippsland's assets from IPAs

The following strategic actions are drawn from issues raised in the previous sections.

STRATEGIC ACTION 11: Support asset protection work based on the assets and actions set out in this strategy.

STRATEGIC ACTION 12: Support development of integrated asset protection plans that focus on managing IPA threats to an asset as part of overall asset protection measures.

STRATEGIC ACTION 13: Establish and implement a process for reviewing the priorities for asset protection. This process needs to be able to consider nominations of new assets, changes in knowledge about threats to assets, and knowledge about land managers around assets.

STRATEGIC ACTION 14: Develop program of work to address knowledge and information gaps highlighted in Table 2. Prioritise this work considering that work on the grassland asset is considered to be very high priority.

STRATEGIC ACTION 15: Refine and finalise criteria for guiding action on agricultural land.

8 IPA investment

The purpose of the regional invasive plant and animal strategies is to guide investment, from all investors, in IPA related programs and projects within the catchment. The strategy is also required to take a whole of catchment approach, focusing on those pest management issues where the government investment maximizes community benefit.

Given these requirements, it is important that the strategy articulates investment principles and standards that are clear to both those implementing the strategy and those seeking funding under the strategy. The biosecurity approach, the Victorian government's new White Paper on Land and Biodiversity and the goals of the strategy all provide clear leads for investment principles and standards.

The biosecurity approach gives clear guidance on whether a species-led approach or an asset protection approach is required.

The Victorian government recently released its new land and biodiversity policy titled 'Securing our natural future: A white paper for land and biodiversity at a time of climate change.' (DSE, 2009b) This document includes a set of principles that will guide future government investment in natural resource management. They are:

1. State investment will focus on providing public, rather than private benefit.
2. Investment will be more likely where projects can show:
 - Cost effectiveness which includes urgency of action, feasibility and potential side benefits
 - Measurable improvements in both symptoms and causes
 - An adaptive approach that changes as information changes
 - Strong support from local and regional communities
 - A strong evidence base that justifies the investment.

These principles are readily applicable to government investment in invasive plant and animal management. The principles set out under point two above are could be particularly useful as a set of standards to guide investment under this strategy.

Finally, the DPI DSE Guidelines for Preparing Regional Pest Strategies includes the following goal: 'Integrate invasive plant and animal management with sustainable agriculture and other natural resource management activities.'

This means that bids for investment under this strategy need to show how the management of invasive plants and animals is linked into management of other threats to that same asset. This will ensure that investment in invasive plant and animal management is part of overall asset protection and improvement.

STRATEGIC ACTION 16: Using principles from the White Paper for Land and Biodiversity, the biosecurity approach and the goals of this strategy, a set of investment standards will be set out as minimum requirements for investment under this strategy.

Part 3 Monitoring success of the Strategy

9 Monitoring success

9.1 Monitoring and evaluation plan

The purpose of monitoring and evaluating a strategy is to know whether the strategy is being implemented and whether it is successful. In the case of this strategy, progress against the four goals discussed in Sections 4, 5, 6 and 7 are the major determinants of success. They are:

1. An aware and active community
2. Preventing new invasive plants and animals
3. Containing high risk invasive plants and animals
4. Protecting West Gippsland's assets from IPAs.

A monitoring and evaluation framework for this strategy has been built around these four areas. For each one, key evaluation questions have been identified and data or evidence sources suggested. This detailed framework is shown in Appendix 2: Evaluation framework.

9.2 Reporting on the Strategy

Reporting on this strategy needs to fit with existing reporting on the region's NRM work. CMAs are required to report annually to State Government and their own communities on progress of projects, largely focussed on investment performance and delivery of activities. These projects will increasingly be focussed on assets, so should include the invasive plant and animal work that will be done on the priority assets identified in this strategy.

To complement this annual project-based reporting, the Regional IPA Forum will conduct an annual 'check-up' on the strategy. This would involve sharing of information on IPA work being done by Forum members, identification of shared interests and of opportunities for better cooperation and coordination. It can also use the monitoring and evaluation framework to structure an assessment of progress of the strategy.

The *White Paper for Land Health and Biodiversity* establishes a new reporting arrangement for CMAs. In addition to annual project reporting, there will be three and six year reporting on natural resource management performance. The three yearly reports will link performance measures and resource condition. This will feed into State of the Environment and catchment condition reporting which will be at six year intervals (instead of the current five years).

For this strategy, this means that a mid-term review of the strategy will be aligned to coincide with the region's three yearly reports on natural resource management. A final review of the strategy will also be aligned to the catchment condition reporting that will occur at six year intervals. This three and six year reporting will be based on the evaluation framework described in the previous section.

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Appendix 1 Goals and principles for all regional IPA strategies

The DPI/DSE guidelines for the development of regional IPA strategies (DPI DSE, 2009) stipulate that the biosecurity principles outlined in the state's policy framework should be followed. Key among those principles is that:

..regional pest plans must be aligned with Regional Catchment Strategies (RCS) and the Victorian Invasive Plants and Animals (IPA) Policy Framework. They should also seek to align with other relevant state policies and current national strategies for pest management.

The guidelines also require that the processes used to develop the regional strategies are transparent, scientific, and evidence-based. Solutions set out in the strategies need to address both causes and symptoms of pest invasion, and they must take a 'whole of landscape approach' to ensure coordinated action.

On the question of goals and priorities, the guidelines state:

The prevention of new and emerging pests will be the highest priority identified for management in the new Regional Pest Plans. Generally, priority will be given to programs that prevent introduction or eradicate newly establishing species, over containment and programs to reduce the impact of established species on priority assets, as this approach provides the greatest public benefit.

The same high level goals are required in all regional strategies. These goals are:

1. Support state action to prevent introduction of new weeds and pest animals into the state.
2. Support state action to eradicate:
 - a. Infestations of State Prohibited Weeds and other new and emerging high risk weeds within the state.
 - b. Prohibited, controlled and regulated pest animals within the state.
3. Contain:
 - a. High risk established weeds to prevent further spread within the region.
 - b. Invasive animals currently restricted in distribution but with potential to expand across the region.
4. Protect high value regional assets from the impact of invasive plants and animals.
5. Integrate invasive plant and animal management with sustainable agriculture and other natural resource management activities.
6. Improve coordination of invasive plant and animal management across land tenures through increased community capacity and effective partnerships.
7. Continuous improvement in invasive plant and animal management in the region through effective monitoring, evaluation and reporting.

Appendix 2: Evaluation framework

1. The West Gippsland community is aware of invasive plants and animals in their region and continues to be motivated and actively involved in their management.	
	<i>Evidence, data or information required</i>
<i>Evaluation questions:</i>	
1.1 To what extent is the community aware of and accepting their roles and responsibilities in IPA management?	Longitudinal community surveys and stakeholder surveys.
1.2 To what extent does the program give community the opportunity to participate in development and implementation of work under the strategy?	Review projects and identify opportunities offered and the responses.
1.3 What are the levels of community participation in IPA projects around the region and how has this changed over the life of the strategy?	Longitudinal community surveys and stakeholder surveys.
2. New or emerging high risk species are prevented from establishing in the region and eradicated when they are found.	
<i>Evaluation questions:</i>	
2.1 To what extent are the local surveillance systems detecting new or emerging species in the region?	Detection of SPW, RPW and other high risk species. Extent and coverage of the surveillance network. Time taken to detect new IPAs.
2.2 How have high risk new and emerging species been managed for eradication? Includes: <ul style="list-style-type: none"> • SPWs and RPWs • Other nominated high risk species. 	Number of actions to eradicate high risk species. Change in area of high risk species. Species (number and type) with eradication plans.
2.3 To what extent has there been increased cooperation and coordination between this region and its neighbours in preventing new IPAs from entering the region?	Establishment of a Forum with neighbouring CMAs and LGAs. Frequency and attendance at meetings of this group.
3. Species that, for West Gippsland, are targeted for containment are contained and prevented from spreading across the region.	
<i>Evaluation questions:</i>	
3.1 Are the species targeted for containment being contained? Have the infestations of these species increased, decreased or remained constant?	Measures of infestations over time. On-ground work – frequency, timing, etc.

<p>3.2 To what extent have core infestations been managed and prevented from spreading?</p>	<p>Changes in the spatial extent of the boundary of core infestations. Number of spread pathways under active management.</p>
<p>3.3 To what extent have satellite infestations been eradicated?</p>	<p>Number of satellite infestation sites; satellite infestations under active treatment; infestations eradicated.</p>
<p>4. The condition of identified high value assets in the region, under threat from IPAs, is improved or maintained.</p>	
<p>Evaluation questions: 4.1 To what extent have IPA impacts on priority assets been reduced or contained?</p>	<p>Distribution and abundance of invasive species per priority asset. Measures of impact of IPAs reduce- such as wild dog attacks, fox attacks, rabbit numbers, area of weeds etc. Funding involved in managing that asset.</p>
<p>4.2 How do management plans for priority assets include management of IPAs?</p>	<p>Examples of management plans that include IPAs. Management plans covering the priority assets identified in this strategy.</p>
<p>4.3 To what extent have the land managers around those priority assets participated in management of the IPA threats to those assets?</p>	<p>Data on landholder participation.</p>
<p>4.4 How are asset priorities reviewed? Frequency, process. If knowledge about the urgency of a threat to an asset changes, how is that reflected in priorities?</p>	<p>Formal process to review priorities is documented. Reviews have occurred as needed, particularly as information gaps are addressed.</p>
<p>4.5 How have the knowledge gaps relating to some assets been addressed?</p>	<p>Reports from investigations and analyses.</p>

Appendix 3: Strategic actions

Strategic actions to build an aware and active community

STRATEGIC ACTION 1: Actively engage the West Gippsland community wherever possible in both shaping and implementing IPA management across the region.

STRATEGIC ACTION 2: Key information, like declared species lists and land manager responsibilities, is maintained and made widely available across the region.

STRATEGIC ACTION 3: Support the Gippsland Invasive Plant and Animal Forum as one means of engaging stakeholders from across the region.

STRATEGIC ACTION 4: Support local communities who are actively managing IPAs using a biosecurity approach by allocating resources to support them.

Strategic actions for preventing new IPAs in West Gippsland

Support state action to prevent the establishment of new high risk invasive species through the following strategic actions:

STRATEGIC ACTION 5: Develop and apply a process that will identify any additional high risk invasive plants and animals (using the same principles as legislative declarations) that the region wants targeted for prevention and eradication.

STRATEGIC ACTION 6: Ensure lists of high risk species (both declared and others) are widely communicated to support surveillance and reporting of these species.

STRATEGIC ACTION 7: Convene and organise the Gippsland Invasive Plant and Animal Forum with stakeholders from within the region as well as neighbouring catchment management agencies to:

- assist with coordination and communication of IPA work,
- focus on ways to prevent new invasive plants and animals from entering the region
- up-date the community on latest research, programs and policies in IPA management.

Strategic actions for containment of IPAs

STRATEGIC ACTION 8: Participate in State level assessments of species that could be targeted for containment.

STRATEGIC ACTION 9: Develop and conduct a regional assessment process to identify other high risk species for containment in the region.

STRATEGIC ACTION 10: Support on ground work on core and satellite infestations of species targeted for containment.

Actions to protect West Gippsland's assets from IPAs

STRATEGIC ACTION 11: Support asset protection work based on the assets and actions set out in this strategy.

STRATEGIC ACTION 12: Support development of integrated asset protection plans that focus on managing IPA threats to an asset as part of overall asset protection measures.

STRATEGIC ACTION 13: Establish and implement a process for reviewing the priorities for asset protection. This process needs to be able to consider nominations of new assets, changes in knowledge about threats to assets, and knowledge about land managers around assets.

STRATEGIC ACTION 14: Develop program of work to address knowledge and information gaps highlighted in Table 2. Prioritise this work considering that work on the grassland asset is considered to be very high priority.

STRATEGIC ACTION 15: Refine and finalise criteria for guiding action on agricultural land.

Strategic actions for IPA investment

STRATEGIC ACTION 16: Using principles from the White Paper for Land and Biodiversity, the biosecurity approach and the goals of this strategy, a set of investment standards will be set out as minimum requirements for investment under this strategy.

Shortened forms

CaLP Act	<i>Catchment and Land Protection Act 1994</i>
CMA	Catchment Management Authority
DPI	Department of Primary Industries
DSE	Department of Sustainability and Environment
EBMP	Environmental Best Management Practices program
EPBC Act	<i>Environment Protection and Biodiversity Act 1999</i>
FFG Act	<i>Flora and Fauna Guarantee Act 1988</i>
IPA	Invasive plants and animals
MID	Macalister Irrigation District
NRM	Natural resource management



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