

# NATIONAL ESTABLISHED WEED PRIORITIES – TOWARDS A NATIONAL FRAMEWORK



Bridal creeper before/after biological control, Yanchep National Park. Photo: CSIRO

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## Executive summary

Weeds of National Significance or WoNS, was a national initiative that began in 1999 with the aim of reducing the impact of widespread weeds. This report, commissioned by the Australian Government, provides for the first time a complete summary of the first 20 years of the initiative.

**Section 1** details the structure and governance arrangements of the WoNS initiative, as well as the achievements, lessons learnt and legacy. National coordination has increased capacity and capability to manage weeds through increased understanding of the weeds' biology and ecology; national partnerships that leveraged support and resources; and the provision of best practice information and tools. The initiative provides a proven example of how weed management can be a shared responsibility amongst landholders, community, industry and government.

Section 1 provides analysis of the principles of the WoNS initiative and the nomination and assessment process, concluding that it aligns strongly to of the *National Framework for the Management of Established Pests and Diseases of National Significance* (EPDNS). The EPDNS framework provides the principle national policy direction for the management of established pests and diseases.

In light of the need to align with the EPDNS framework, **Section 2** proposes that a re-invigorated established weed initiative (National Established Weeds Priorities or NEWP), based on WoNS and including a return to national coordination, would provide a logical, adaptable and proven model on which to deliver a mechanism for the weeds component of the EPDNS framework. The NEWP initiative offers a cohesive and effective delivery mechanism for established weeds, which includes a:

- Proven model with existing networks and support
- Well recognised and highly valued branding within the community
- Detailed, risk-based assessment process that can be modified/applied to new species and is consistent with the EPDNS framework
- Collaborative, cross-jurisdictional approach to national coordination, with an emphasis on community and industry participation and leadership
- Strong return on investment with funds leveraged from all stakeholders.

In 2019, the Environment and Invasives Committee (EIC) endorsed the development of a WoNS Framework and communication plan to outline the future direction for WoNS. **Section 2** provides detailed information that will assist the Weeds Working Group (WWG) to develop a framework whose scope can be broadened to deliver more integrated management options at the landscape scale. This includes the steps required to manage the existing 32 WoNS; future WoNS nominations; the identification of Weed Issues of National Significance (WINS) and national coordination under the EPDNS framework. It is envisaged that section 2 will form the basis of a NEWP Framework to be progressed through the WWG.

## Introduction

Weeds of National Significance was a national initiative that began in 1999 with the aim of reducing the impact of widespread weeds. With national coordination, the initiative increased capacity and capability to manage weeds. It achieved this through an increased understanding of the weeds' biology and ecology; national partnerships that leveraged support and resources; and the development and dissemination of best practice management information and control tools. As a result, WoNS became a well-known brand, with WoNS embedded in the on-ground works and priorities of land managers nationally.

In 2013 formal national coordination of WoNS ceased, though management efforts continue through state and territory governments, regional bodies, industry, and community. This continued action represents the legacy of the WoNS initiative, where initial investment in coordinated, collaborative efforts results in a lasting capacity and information capital.

Despite this legacy, the need to manage other nationally significant weed species as they arise continues, evidenced by the development of the National Biosecurity Committee's Established Pests and Diseases of National Significance (EPDNS) Framework in 2016. Realisation of the EPDNS framework requires the development of a process to nominate, assess and manage species, along with the governance structures to support implementation.

A refreshed WoNS initiative provides an opportunity to deliver on the EPDNS framework using an effective and tested model that allows Australia to move beyond the current 32 WoNS so that benefits can be further realised through determining other nationally significant established weeds under the EPDNS framework.

## Purpose

This summary report has been commissioned by the Australian Government to assist the Environment and Invasives Committee (EIC) to deliver a revised WoNS list under the EPDNS framework.

The WoNS Framework includes the current status and a proposed way forward for the 32 existing WoNS, and an outline of proposed processes and structures for future WoNS nominations under the EPDNS framework.

The summary report is supported by a draft Weeds of National Significance Framework consultation paper for consideration by the EIC.

## How to use this report

Section 1 documents the first 20 years of the WoNS initiative, from its structure and governance arrangements, through to the achievements, lessons learnt and legacy. This provides, for the first time, a complete summary of the initiative to date, allowing for a common understanding by all stakeholders of the initiative's intent and the mechanisms used to achieve this intent.

Section 2 proposes a new process for managing established weeds – the National Established Weed Priorities (NEWP Initiative). This includes the existing 32 WoNS, future WoNS nominations, the identification of Weed Issues of National Significance (WINS) and national coordination under the EPDNS framework. Where relevant, the report notes existing work that should be revisited when developing the NEWP Framework. This report does not provide detailed methodology for the assessment of new WoNS.

The report will form the basis of developing the NEWP Framework and will be further expanded upon by the EIC WWG.

## Section 1 – The WoNS initiative 1999-2019

WoNS is an internationally recognised initiative that has delivered strategic and collaborative management of established weeds that impact Australia’s environmental, social, and agricultural values. The initiative was launched in 1999 to address Goal 2 of the Australian Weeds Strategy, which identified actions to minimise the impact of established weeds (Invasive Plants and Animals Committee 2016). Leveraging effort from the local to the national level, the initiative brought together community, industry, and government to reduce the impacts and minimise the spread of widespread weeds by:

- Identifying shared national priority actions,
- Building knowledge, tools, and capacity for best practice control, and
- Supporting, encouraging, and facilitating on-ground action.

The achievements realised under the WoNS initiative are many, ranging from research and development outputs, best practice management tools and training to extension advice, changes to policy, national collaboration and on-ground control. A summary of the broad benefits is provided in Box 1.

### **Box 1 - The WoNS initiative has benefited Australia by:**

- Raising the community profile of WoNS and increasing awareness of their impacts.
- Developing best practice guidelines and promoting their uptake.
- Developing and implementing national, strategic approaches for the prevention and management of WoNS, including:
  - Identifying strategic priority areas for management of WoNS, based on robust national distribution mapping;
  - Encouraging a collaborative, national approach to controlling outlier infestations and reducing the spread of core infestations; and
  - Encouraging cross-tenure and community participation in holistic weed management.
- Fostering the development of new control tools, including biological controls and improved herbicide use.
- Collaboration from local to national levels, to increase the accessibility and sharing of weed information, experiences and resources, and fostering regulatory consistency.
- Improving linkages between research and on-ground practitioners to improve the effectiveness of weed management strategies.
- Encouraging strategic and shared use of resources for weed management from federal, state, and local government, industry, and community.



## Structure

WoNS has been a joint initiative of the Australian, State and Territory governments since 1999. Historically, funding for national coordination was provided by the Australian Government, with in-kind contributions by States and Territories to host national coordinators. In-kind support was also provided by community, industry, and research institutions through their participation in national management groups or task forces. These task forces were established for each WoNS species, chaired independently, and provided a mechanism for stakeholder involvement in the initiative.

This structural arrangement allowed for ownership of the initiative from the ground up and facilitated the development of strong collaborations in strategic planning, research and on ground management. Each WoNS task force was required to develop and oversee the implementation of a national strategic plan for their WoNS. The key goals of these strategic plans were to coordinate national action to:

1. Prevent new infestations from becoming established;
2. Undertake strategic management to reduce the impact of existing infestations; and
3. Increase individual and institutional capability and willingness to manage WoNS.

The delivery of strategic activities was achieved with competitive funds made available by the Australian, State and Territory governments and through regional bodies such as NRM organisations. Government funds leveraged extensive community and industry co-contributions to deliver on-ground outcomes and other achievements.

## National coordinators

Implementation of the WoNS strategic plans was a key role of national coordinators. Coordinators therefore cultivated a broad, national network of stakeholders and acted as a conduit to information and resources for many in their network. The coordinators were also a means by which land managers could receive recognition and support for the work they were undertaking locally. Being connected to a national network also motivated land managers to continue their work.

The advantages of national coordinators have been summarised as (i) overcoming fragmentation of funding; (ii) sharing knowledge of different approaches to weed control; and (iii) providing more effective links to national research objectives, e.g. biocontrol (Beatentrack Group 2008).

## Stakeholders

The WoNS initiative was founded on a collaboration between community, industry and government. Partners included:

- Agriculture and Environment departments from Australian, State and Territory governments
- Local governments
- Regional NRM Bodies
- Research providers and educators/trainers
- Landcare/Coastcare, Indigenous and other community groups
- Land managers
- NGOs
- Industry.

## WoNS eligibility

Through formal assessment processes, WoNS status was applied to a small set of established weeds that satisfied the following criteria:

- Weeds that have a high impact on Australia's environmental, economic and/or social and cultural values in several states/territories.
- Weeds that are widespread, yet have not reached their full national range, with a strong potential for further spread.
- Weeds that will benefit from national coordination. E.g. national coordination is likely to increase land manager capacity and participation, which will result in spread minimisation and impact reduction.
- The impacts are understood and there is support, willingness and motivation amongst community and stakeholders to act.
- Species with knowledge gaps that, once addressed, will improve our capacity to manage the weed and bring about a reduction in impacts and further spread. E.g. Information on biology, ecology or best practice management, either through research, sharing collective knowledge etc.

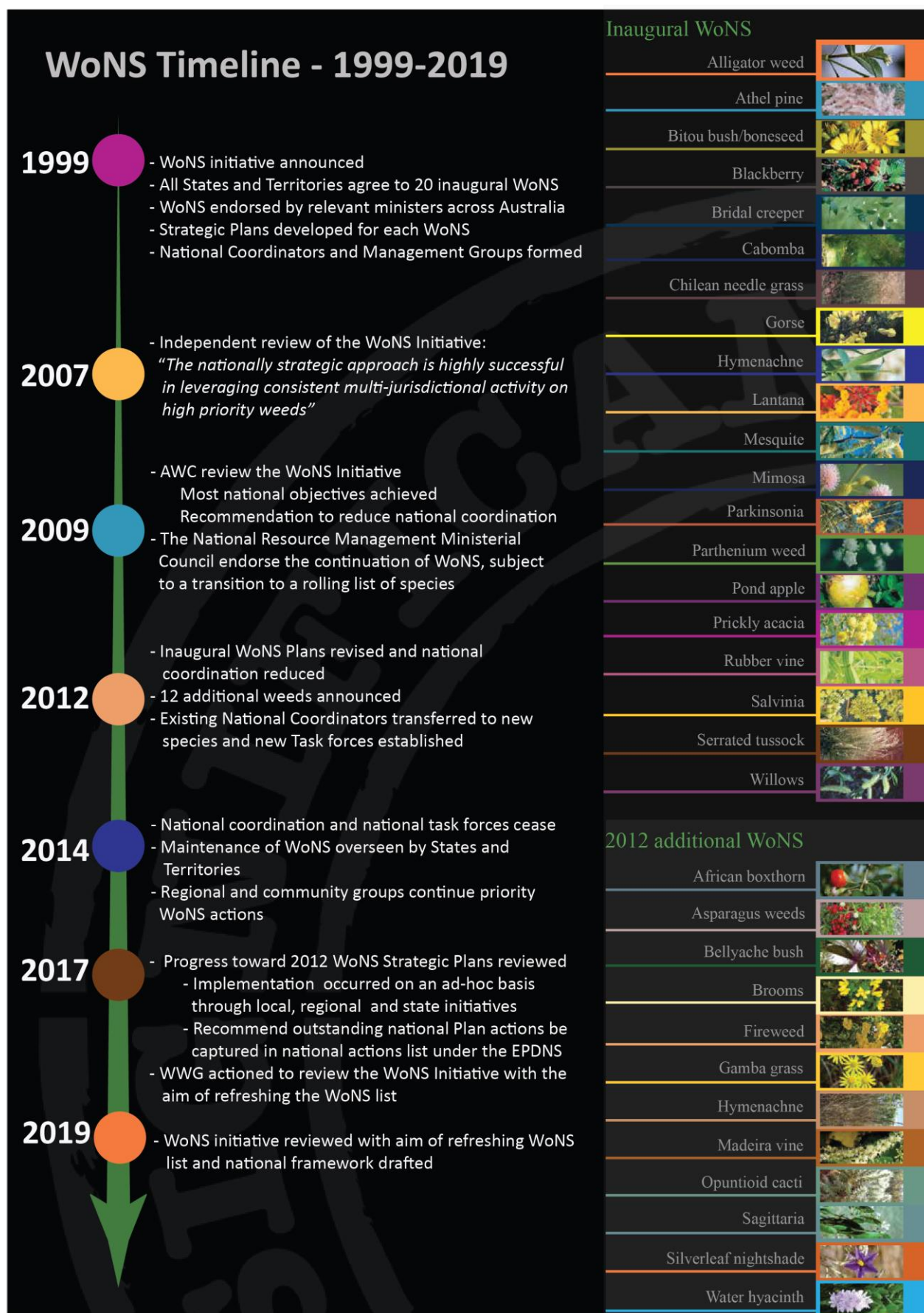
The original assessment process was subsequently reviewed prior to the declaration of 12 new WoNS in 2012 (refer to *The addition of new WoNS in 2012* section below). The proposed process for WoNS 2020 is outlined in Section 2.

### What the WoNS initiative is not

There have been several misconceptions about the WoNS initiative that should be noted:

1. **WoNS do NOT come with a dedicated funding stream** for on-ground control or research. Whilst Commonwealth, State and regional funding was at times directed towards WoNS, investment was never promised nor guaranteed. The development of a strategic plan for each WoNS identified priorities and where investment was required. The plans, along with coordination and collaboration, provided a strategic base to leverage funds, either through grants, in-kind contributions or other investment from government, industry and the community.
2. **WoNS are NOT the only priority weeds.** Other priorities include national eradication targets, the national priority list of exotic environmental pests and diseases, state/territory declared weeds and regionally/locally significant weeds. WoNS provided the tools to manage a suite of weeds that suited the criteria outlined above, and these approaches have provided broader reaching applications to a range of other weeds.
3. **WoNS does NOT provide a prescriptive approach to weed management.** The initiative focused on developing best practice guidelines based on research, trials and experiences, requiring adaptation to the range of situations nationally and adherence to broader biosecurity frameworks under which the initiative operated.
4. **WoNS is NOT a silver bullet.** WoNS status does not mean the weed will be eradicated. These are established, sometimes intractable weeds that will continue to exist in and impact upon the landscape. WoNS status allows the development of tools and approaches to enable land owners/managers, industry and community to reduce their ongoing impacts and prevent further spread, facilitating and harnessing collective action to do so.

Whilst these misconceptions have not prevented the achievement of outcomes, they have occasionally caused concern amongst stakeholders and supporters of the initiative. It is recommended that, where possible, these issues are addressed through the communication strategy outlined in Section 2.





## The inaugural WoNS

The WoNS initiative began in 1999 with the nomination of 71 species, using criteria that was required to:

- be robust and easily understood;
- be relatively simple;
- not require large amounts of data;
- be sufficiently objective as to be clearly defensible;
- treat agricultural, forestry and environmental weeds equally; and
- allow ranking of weed species, preferably with a single index or score.

(Thorp and Lynch 2000).

A detailed description of the process and methodology used can be found in *The Determination of Weeds of National Significance* (Thorp and Lynch 2000).

Following an assessment of the nominated species, a group of 20 species were endorsed as WoNS by the relevant Ministerial Councils.

In addition to the broad achievements of the program (Box 1), significant species-specific outcomes were achieved (Appendix 1) that can broadly be categorised as:

1. New WoNS incursions have been rapidly detected and prevented from establishing.
2. Strategic high priority and outlier WoNS infestations are prioritised for eradication.
3. Strategic infestations of WoNS are being contained to prevent spread into new areas.
4. Management of core infestations of WoNS is directed to areas of highest priority.
5. Knowledge of and ability to manage WoNS has increased.
6. Best practice management tools are available to manage WoNS.
7. Key stakeholders have been influenced to enable cultural shifts to occur in weed management.

## Review of progress against national strategic plans

An independent review of the initiative (at the time referred to as a 'program') was commissioned by the Australian Government in 2007. The purpose of the review was to (i) assess progress against the national strategies of seven of the WoNS; (ii) assess the significance and contribution of national coordination in achieving strategic outcomes; and (iii) make recommendations on the future management of the seven focus species.

A number of key findings were made, as highlighted in Table 1 below (Beatentrack Group 2008)

Table 1 - *Review of the Management of Weeds of National Significance – Final Report* key findings

<b>Achievements</b>	All seven WoNS programs examined have a national perspective and have made significant contributions to the delivery areas outlined in the strategic plans developed for their management.
	All programs established effective collaborations with state agencies, local government, industry and research groups and have produced significant documents and other material to raise awareness.
	The areas of the programs that worked well include: <ul style="list-style-type: none"> <li>• The establishment of management advisory committees and co-ordination at the national level</li> <li>• Establishing working relationships and on-the-ground actions with state bodies, local governments, and research bodies</li> <li>• Transferring project knowledge across WoNS through joint workshops.</li> </ul>
<b>Areas requiring improvement</b>	Evidence-based analyses of the ecological and economic benefits of weed management.
	Clear performance measures coupled with further improvements in monitoring the impacts of management actions.
	Reporting, especially as it relates to the use of performance indicators.
<b>Recommendations</b>	14 recommendations made in the areas of: <b>Governance</b> – updating national strategies; developing performance indicators for assessing achievement against strategies; tiered funding model; re-prioritisation of WoNS; listing WoNS as Key Threatening Processes. <b>Knowledge base</b> – cost/benefit analysis of WoNS activities; quantifying the cost of weeds; quantifying weed impacts on biodiversity; promoting research needs. <b>Program Management</b> – enabling, developing and retaining high performing coordinators (refer Box 3) <b>On-ground actions</b> – improved information products; long term monitoring of the impacts of weed management. <b>Communications</b> – access to data.

A key recommendation was to adopt a ‘tiered funding model’ which would allocate resources to species based on their level of need. This would include three tiers:

- Tier 1 – an initial phase that included setting broad objectives, gaining acceptance and prioritising on-ground works;
- Tier 2 – a mature phase that included adoption, monitoring, reaping the benefits; and
- Tier 3 – a windup phase that included a watching brief with a reduced level of coordination.

(Beatentrack Group 2008).

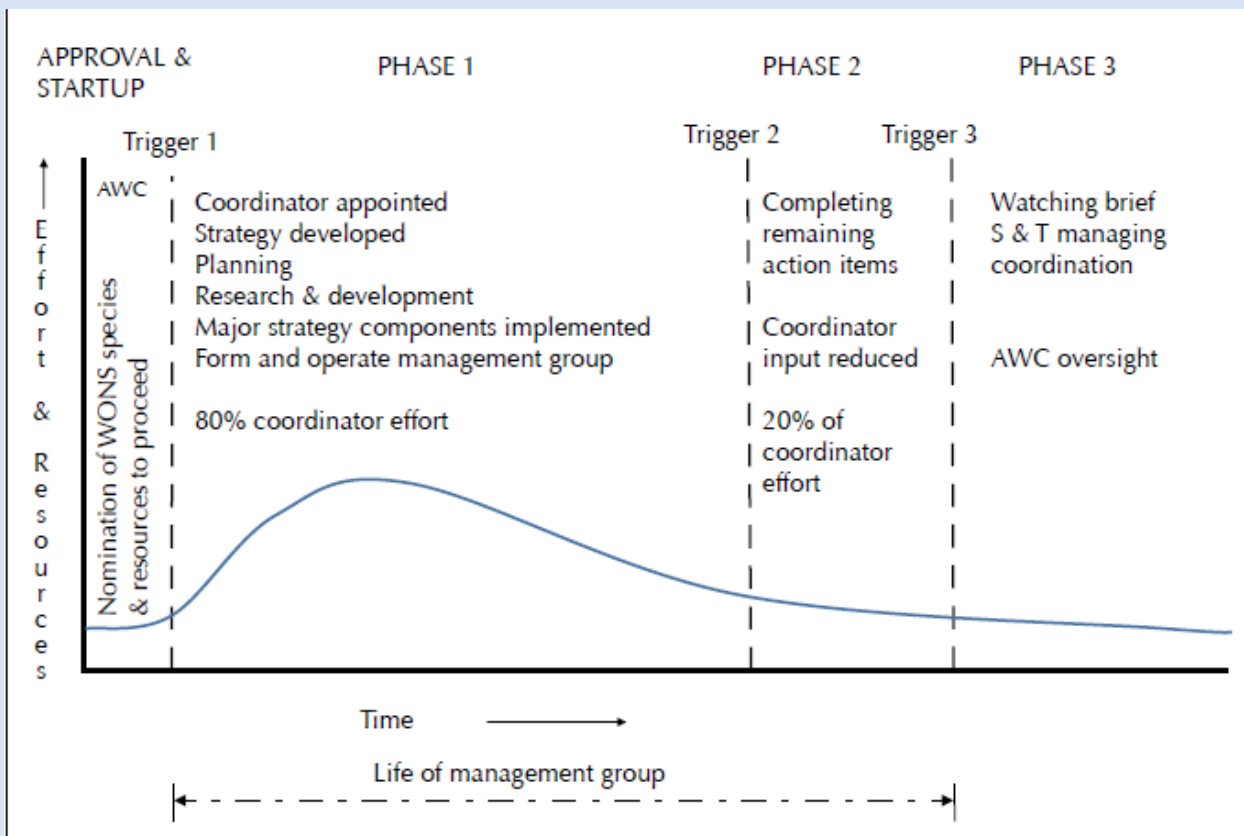
The continuation of the WoNS initiative was endorsed by the National Resource Management Ministerial Council in 2009 subject to “a rolling, rather than static list of species”. This required a process that would allow for national coordination of existing WoNS to be wound down, thus providing opportunities for new species to benefit from the initiative.

In 2009 additional reviews were undertaken of the remaining 13 WoNS, involving national coordinators, task forces and Australian Weeds Committee (AWC) members. This, along with the recommendation from the 2007 review, paved the way for the nomination of new species in 2012. Further detail on this process can be found in Box 2.

### Box 2 – A phased approach

Following the 2009 review, the NRM Ministerial Council endorsed a three-phased approach to the national coordination of WoNS. This approach aimed to provide the most cost-effective use of limited national coordination resources. As more of the strategic actions of the inaugural WoNS were complete, the level of national coordination could be reduced.

WoNS species move through three phases (Figure 1) as their national strategic plans are implemented, reviewed, and revised to ensure substantial improvement in the management of the weeds by governments, industries, communities and landowners.



**Phases 1 and 2** are considered the 'start up' and 'ongoing' phases, where a large amount of effort is expended to develop foundational materials, establish strategic, coordinated control programs and establish and support a national network of committed partners to deliver the national strategic plan.

**Phase 3** is a period of continued maintenance for WoNS actions, where the majority of nationally coordinated work has been undertaken. Oversight reverts to States and Territories for the coordinated implementation of a revised national WoNS strategic plans within their respective jurisdiction.

(Source Weeds of National Significance Black Book – 2012. Australian Government.)

### Box 3 – Maintaining effective national coordinators

The 2007 independent review of WoNS made specific recommendations for “Enabling, developing and retaining high performing coordinators”. It was suggested that the Australian Weed Committee resolve issues that were impinging on the effectiveness of coordinators, namely that:

- National Coordinators have, and are able to fully exercise, a national perspective on weed management priorities that conforms to specific Terms of Reference
- The relevant states (host agencies) recognize that the National Coordinators exercise a national role and that they therefore need to provide additional human and financial resources for add-on activities
- High priority is given to the development of skills required for networking and coordinating and the ability to delegate project management responsibilities
- Workloads and working arrangements do not militate against the retention of competent coordinators.

(Beatentrack Group 2008).

### The addition of new WoNS in 2012

The nomination and assessment process developed in 2012 differed from the approach for the inaugural WoNS nomination. The selection of the additional 12 WoNS was subject to technical and policy considerations in a process managed by the Australian Weeds Committee (AWC), summarised as follows:

- The Bureau of Rural Sciences (now the Australian Bureau of Agricultural and Resource Economics and Sciences – ABARES) reviewed best practice weed risk assessment, resulting in the report *Methodology to prioritise Weeds of National Significance (WoNS) candidates* (Lizzio et al. 2010). AWC endorsed this report for use in assessing new WoNS candidates.
- In recognition of ongoing resource commitments, the AWC considered fewer nominations for formal assessment than were considered in 1999. AWC jurisdictions consulted with their respective weed experts and nominated a total of 16 species as candidates for new WoNS.
- The AWC agreed that, where a genus or several species within a genus were nominated, only one representative species was required to be comprehensively assessed in that nomination.
- ABARES undertook a technical assessment (which was later peer-reviewed by a national panel of weed risk assessment technical experts) of the 16 nominations, using scientific information and data provided by nominating jurisdictions.
- The model selected by AWC to rank species was:  $\text{Ranking} = (\text{Invasiveness} + \text{Potential for Spread}) \times (\text{Impacts} + \text{Socioeconomic \& Environmental Values})$ , with equal weighting given to these criteria.
- The AWC also subjected the 16 nominations to a further qualitative analysis of feasibility of control, using criteria derived from the National Environmental Biosecurity Response Agreement (NEBRA).

Finally, the AWC agreed that some candidate WoNS should be grouped for national coordination where efficiencies could be realised, such as common stakeholders or management approaches. This included species of closely related taxa (e.g. opuntoid cacti, brooms, asparagus weeds) or unrelated taxa under shared national coordination (e.g. aquatic WoNS or vine WoNS) (Australian Weeds Committee 2011).

## WoNS 2019 Status review

In addition to the comprehensive reviews of the inaugural 20 WoNS strategic plans (C. 2007 - 2010), a further peer-reviewed assessment of the implementation of the 32 national strategies was undertaken by members of the Environment and Invasives Committee's Weeds Working Group (EIC WWG) in 2019. The review found that implementation of strategic plan actions was complete for most species (refer to Appendix 2), with the exception of several key national strategic actions for some species.

The review used a "traffic light" system to assess each WoNS against the following 8 action categories:

1. Prevent spread
2. Detect/map
3. Control
4. Biocontrol
5. Awareness
6. National Actions
7. Legislation
8. Capability

An outcome statement was provided for each category. An example for the "prevent spread" category is given below:

*'We have developed the knowledge, tools, mechanisms and awareness needed to **reduce or prevent the species' spread** to new areas (e.g. state-border movement controls, national containment lines, knowledge of dispersal pathways, species' ecology, etc)'*

The assessors were required to assign green, amber or red ranking, based on evidence available to support the statement (see Table 2 below). All individual WoNS assessments were then compiled to produce an overall status report for all 32 WoNS.

Table 2 - 'Traffic light' rankings key

Green	<b>Evidence exists</b> to support this statement
Orange	<b>Some evidence exists</b> to support this statement, but uncertainty exists, <b>or</b> the situation is mixed (e.g. true in some jurisdictions but not others). Please add notes and justifications to explain uncertainty/situation, explain how criteria are lacking/not achieved, etc.
Red	<b>Little or no evidence</b> to support this statement Please add notes or comments as to the national gaps/actions remaining.

## Final 2019 status assessment results

Appendix 2 combines the information from all WoNS status assessments to identify potential outstanding national actions (as highlighted by assessors).

## Managing outstanding actions

The EIC WWG suggested in 2019 that outstanding national actions for the 32 WoNS could be managed through a national priority action list. This list would capture the key remaining national priorities from the 32 strategic plans to enable future coordinated action. Further interrogation of the individual species reviews is needed to clearly identify which national priority actions remain incomplete. Section 2 provides more detail (refer [National Established Weeds Priority Action List section](#)).



## WoNS Legacy

The purpose of the WoNS initiative was to deliver targeted, strategic and nationally coordinated action to reduce the impact of established weeds. The collaborative and coordinated WoNS approach has facilitated efficiencies and long-standing outcomes from the local to the national level.

Although national coordination is currently much reduced (the EIC WWG is still providing a level of national coordination) the benefits and investment in WoNS continue at all levels. Examples include:

- **Delivery/uptake of best practice information and training** - Silverleaf nightshade best practice manual 2018; Opuntoid cacti best practice manual 2018; Identification and control training sessions for local government and Landcare groups (NSW, Qld) and state weed programs (Vic) – 2018/19.
- **Strategic control programs, particularly at the local and regional level** - Bitou bush containment in NSW, gorse and bitou bush eradication in WA, Chilean needle grass containment in Tas.; strategic riparian corridor protection from cat's claw creeper in QLD.
- **Research into biological control** - WoNS were a focus of the Commonwealth funded Rural R&D for Profit biocontrol project to fast-track and maximise long lasting benefits for productivity (parkinsonia, parthenium, blackberry, silverleaf nightshade, *Cylindropuntia*, gorse). There has also been mass rearing and release of agents for cat's claw creeper and Madeira vine agents; agent surveys for gamba grass and African boxthorn - ongoing.
- **Research into ecology/biology, population dynamics and restoration responses to control** - impact research into cat's claw creeper and Madeira vine, and invasive grasses such as serrated tussock and Chilean needle grass.
- **State/Territory legislation** continues to prohibit the sale of all WoNS nationally.
- **WoNS status and national management maps continue to influence weed prioritisation** and planning at regional and local government levels in jurisdictions (Qld, NSW, SA).
- **Community led programs for WoNS** (blackberry, gorse, serrated tussock in Victoria; fireweed in NSW) draw heavily on materials, information and engagement models facilitated by the WoNS initiative.
- **Promoting WoNS-free status** - for pastoral property sales in Queensland.
- **Use of WoNS research and extension materials by State/Territory conservation agencies** in the development of response to Key Threatening Processes (e.g. garden escapes, vines and scramblers, perennial grasses in NSW) and Threatened Ecological Communities.

## Lessons learnt for future implementation

Many operational lessons and improvements were made during implementation of the WoNS initiative. The key lessons learnt over the 20 years of the initiative primarily relate to the structural and governance arrangements, as these form the foundation for an effective, national approach to delivering outcomes. Several key lessons have been identified.

### Successful elements that worked and should be continued:

1. WoNS worked because **it addressed species that impacted priority assets in local areas**, a motivation for local communities to act. The WoNS initiative supported these actions and through national coordination, aligned priorities from the local to the national level. This has resulted in ownership, leadership and lasting, strategic, self-sustaining outcomes at local levels.
2. **National coordination (through coordinators) provided a consistent approach** to weed research, management and reporting, whilst recognising that situations and requirements differ across stakeholders and landscapes.

3. The initiative **provided practical and accessible solutions** to weed problems and broke complex processes down to more manageable (and less overwhelming) steps. Providing guidance and connectivity to other people in similar situations has helped sustain long term and effective action.
4. The initiative **provided a network** not only for weed managers, researchers and land managers to discuss and help solve problems, but also as a national repository for weed information, acting as a point of reference or truth.
5. With dedicated national coordination, **strategic actions can be achieved within a 3-5 year period**. This was supported by the NRM Ministerial Council when endorsing the continuation of the initiative in 2009 (NRM Ministerial Council 2009).
6. **Grouping of species**, which occurred in the 2012 listing process (e.g. opuntoid cacti, brooms and asparagus weeds), **achieved efficiencies** both in coordination towards national priority actions, but also in the use of stakeholder time and knowledge.

#### Elements that could be improved on:

1. **A single species approach doesn't necessarily lead to ecosystem recovery.** Focussing on management of individual species, rather than all threats to an asset can result in secondary invasions and does not always lead to an increase in native species recovery. There is limited data to support the idea that management of a single, dominant weed species leads to changes in plant communities or the recovery of ecosystems (Reid et al. 2009). This was addressed to some extent in the declaration of the new WoNS in 2012 but could be further considered in any new nomination/assessment process.
2. **The idea of 'delisting' species or removing their WoNS status is not supported.** Stakeholders that continue to prioritise and manage WoNS felt this undermined the value of their work and the Australian Weed Committee (and subsequently the EIC) expected that species would retain their WoNS status (EIC 2019; Raphael et al. 2010). This report advocates for two categories of WoNS – those with national coordination and those without (see Section 2 for details).
3. **The initiative should be supported by, but not driven by, Governments.** The inclusive nature of the initiative, where multiple stakeholders were engaged in implementation and strategic decision making (e.g. as task force members) helped expand the reach, impact and longevity of actions.
4. The historical **processes for reviewing WoNS status should be reviewed.** Several review processes have occurred and any new system should consider the pros/cons of all previous approaches.
5. **Varying hosting arrangements.** Different policies, priorities and management approaches existed within the State and Territory agencies that hosted national coordinators. As a result, inconsistent job classification, varying levels of autonomy to work nationally, and that a majority of coordinators were hosted in agriculture departments (rather than a mix of agriculture and environment) were some of the key issues over the life of the initiative. Having consistent and equitable arrangements, including Terms of Reference, consistent position descriptions and salaries would address many of these issues.
6. The **governance model, whilst imperfect, is generally effective.** Efforts are best spent resolving key issues, rather than creating a new/alternative model (refer Grosvenor Management Consulting 2012; WoNS Chairs 2010). Establishing and agreeing on a clear, detailed governance model at the outset of the new initiative that addresses difficulties encountered previously, will set the initiative on solid foundations for success.
7. **WoNS are not the only priority weeds.** As previously noted, there is a misconception that WoNS are the primary weed species for management. Some stakeholders believe the use of a 'list' of priority species is problematic if used to direct funding as it may not reflect local priorities (Raphael et al. 2010). This may be best addressed through targeted actions in a communication plan for future WoNS.

Section 2 outlines how these challenges and opportunities can be best managed.

### Project management support

A range of project management tools and systems should be used to support consistency across a future initiative. Tools are needed at a range of levels, including those that support national coordinators, WoNS species, national task forces and the broader initiative. These include:

- Work plans
- Monitoring, Evaluation, Reporting and Improvement (MERI) plans
- Communication plans
- Contracts and operating budgets for national coordinators
- Terms of Reference for task forces
- A process for reviewing the status of WoNS
- Stakeholder networks

A number of these tools were developed over the last 20 years and can be reviewed and updated.

## Section 2 – Managing established weeds in 2020 and beyond

### Current status and governance of WoNS

All the existing 32 WoNS are now considered ‘Phase 3’, whereby “maintenance is overseen by States and Territories and management predominantly the responsibility of landholders” (Invasive Plants and Animals Committee 2016). There are currently no national coordinators or task forces.

The current governance arrangements relating to the WoNS initiative are shown Figure 1. In recent years, oversight for the initiative has been managed by the Weeds Working Group (WWG), an advisory group to the Environment and Invasives Committee (EIC). The WWG provides technical and policy advice to the EIC. Through the WWG’s workplan, members are periodically tasked with progressing WoNS agenda items, such as reviewing the implementation status of individual WoNS (see WoNS timeline for further details).



Figure 1 – Current governance arrangements relating to the WoNS initiative.

### Policy Overview

The Intergovernmental Agreement on Biosecurity (IGAB) sets out the overarching national biosecurity goals and objectives of the Australian, State and Territory Governments. The IGAB defines the roles and responsibilities of governments and outlines the priority areas for collaboration to minimise the entry, spread and impact of pests and diseases on Australia’s economy, environment and community. As shown in Figure 2 there are two key national documents derived from IGAB that provide direction to the WoNS initiative:

#### 1. The Australian Weeds Strategy (AWS)

Overseen by the EIC, the AWS translates higher level policies and strategies into nationally agreed principles, goals and priorities to guide weed management. The WoNS initiative directly addresses Goal 2 of the AWS: *Minimise the impact of established weeds*, whilst also contributing to the Goal 3: *Enhance Australia’s capacity and commitment to weed management*.

The WoNS initiative remains the primary means through which Goal 2 of the AWS is implemented. In 2009, the NRM Ministerial Council noted that *Non-continuation of the WoNS program would negate the operational elements of the AWS and make it difficult for all governments to meet their obligations under this agreed national strategy*.

## 2. The National Framework for the Management of Established Pests and Diseases of National Significance (EPDNS Framework)

Endorsed by the National Biosecurity Committee (NBC) in 2016, the EPDNS framework outlines “a strategic, consistent, scientific and risk-based approach to managing the impacts of EPDNS”, including established weeds. The framework addresses IGAB clauses 34b (Commonwealth providing national leadership for...management of nationally significant established pests and diseases) and 35e (States and Territories supporting landholders and the community to manage established pests and diseases). The EPDNS framework provides strategic, risk-based policy direction for the management of established pests and diseases of national significance. Implementation occurs via relevant sectoral committees (the EIC in the case of WoNS).

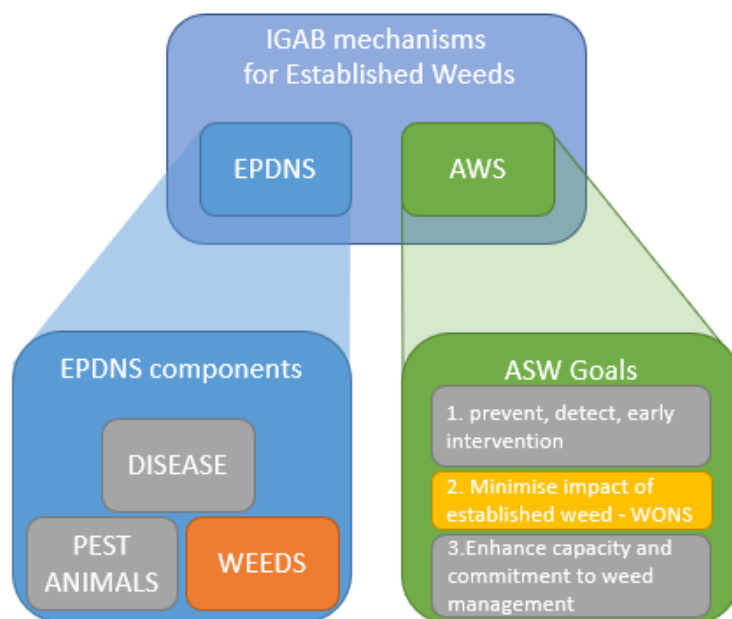


Figure 2 – The key national strategic documents concerned with established weeds: EPDNS framework and the AWS. The blow-out diagrams show the components that relate to established weeds.

### Established weed management under the EPDNS Framework

The EPDNS framework sets high level criteria for assessing and listing (or de-listing) established pests and diseases of national significance. The criteria are:

- Impact
- Feasibility of management intervention
- Benefits from national coordination.

In essence, the first criteria equates to a ‘national significance’ test, while criteria two and three combine to form a ‘national interest’ test (NBC 2016). The EPDNS framework also sets out seven policy principals (Box 4). Of particular note is Principle 2, which states that industry and community should drive the selection of EPDNS and the development of strategic plans and their implementation.

The assessment criteria and principles are strongly aligned with those used to develop and implement the WoNS initiative since 1999 (refer to Section 1). The WoNS initiative has a track record of successful cross-tenure partnerships and facilitating community and industry ownership of the management of established weeds.



#### **Box 4 - EPNDS Policy Principles**

1. Established pests and diseases of national significance are a particular part of the biosecurity continuum.
2. The management of EPNDS is a shared responsibility amongst landholders, community, industry, and government.
3. To achieve asset-based protection, government will give priority to supporting industry/community leadership and actions.
4. Government will work with stakeholders to support research and development for more effective pest and disease management.
5. Enforcement intervention should be kept to the minimum necessary to achieve the desired outcome.
6. Established pests and diseases assessed as nationally significant will have an associated national management plan or strategy.
7. The list of established pests and diseases that are deemed nationally significant must be regularly reviewed against the assessment criteria and principles.

#### **Current national established weed management priorities**

The EPNDS framework provides an opportunity to identify and manage nationally significant established weeds, but there are no clearly articulated or agreed national priorities for these weeds currently. WoNS presents a logical solution by providing an established, tested and successful model that can deliver the weeds components of the EPNDS framework, as well as Goal 2 of the AWS.

Despite this, WoNS are not the only natural resource management priority, nor the only established weed priority. NRM agencies, organisations, community and industry groups have competing demands to address other big-picture issues such as climate change, bushfire preparedness and recovery and drought, of which established weeds are a contributing factor.

What WoNS does offer is a model that can be applied to these other priorities, bringing benefits through national coordination. As per WoNS, this model can also add value by connecting and coordinating fragmented research and management efforts to achieve strategic national outcomes.

Identifying a nationally agreed list of priorities would help to focus efforts and provides a logical base to which national coordination can be applied.

## A proposed approach for managing National Established Weed Priorities (NEWP)

In 2019, the EIC endorsed the development of a WoNS framework and communication plan that would outline the future direction for WoNS (EIC 2019). This report supports the development of a framework that goes beyond WoNS to encompass a suite of National Established Weed Priorities (NEWP) that consist of the following components:

1. Weeds of National Significance (**WoNS**)
2. Weed Issues of National Significance (**WINS**)
3. National Established Weeds Action List (**NEWAL**).

The WoNS model, which centres on national coordination, provides a logical, adaptable, proven and accepted approach to established weed management. Its extension across the NEWP components will result in a more integrated approach at a landscape scale.

This new approach provides the opportunity to retain the essence of the original initiative (through the WoNS component), enhances outcomes by addressing landscape scale management issues for established weeds more broadly (WINS), whilst offering continued management of discrete national priority actions where required (NEWAL). Importantly the NEWAL acknowledges that priority species and/or issues are managed for a finite period of time, allowing for new priorities to be resourced and addressed.

NEWP addresses the single-species focus of WoNS, which was identified as a limitation of the initiative (see lessons learned in Section 1). The components of NEWP utilise the strengths of the WoNS initiative by applying them to broader land management issues where it can be demonstrated that there is a benefit to nationally coordinated management of establish weeds. These components (seen in figure 3) are further discuss in the following sections.

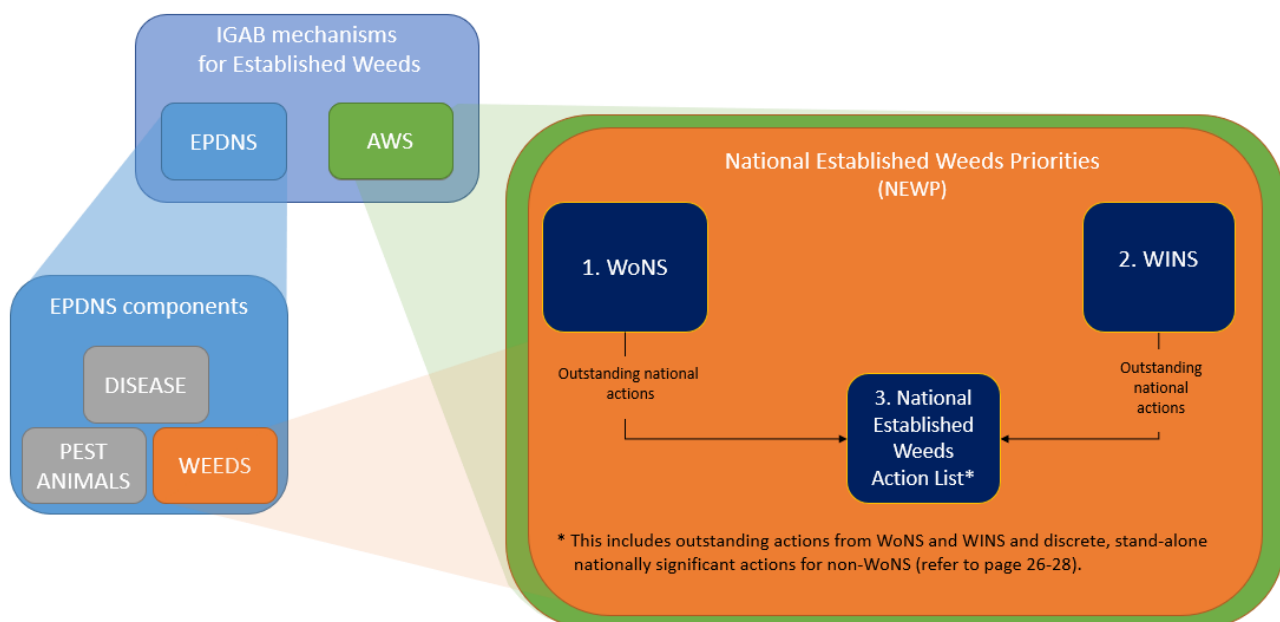


Figure 3: Suggested approach to manage established weeds under the EPDNS framework through the development of National Established Weed Priorities (NEWP).

### Foundational activities

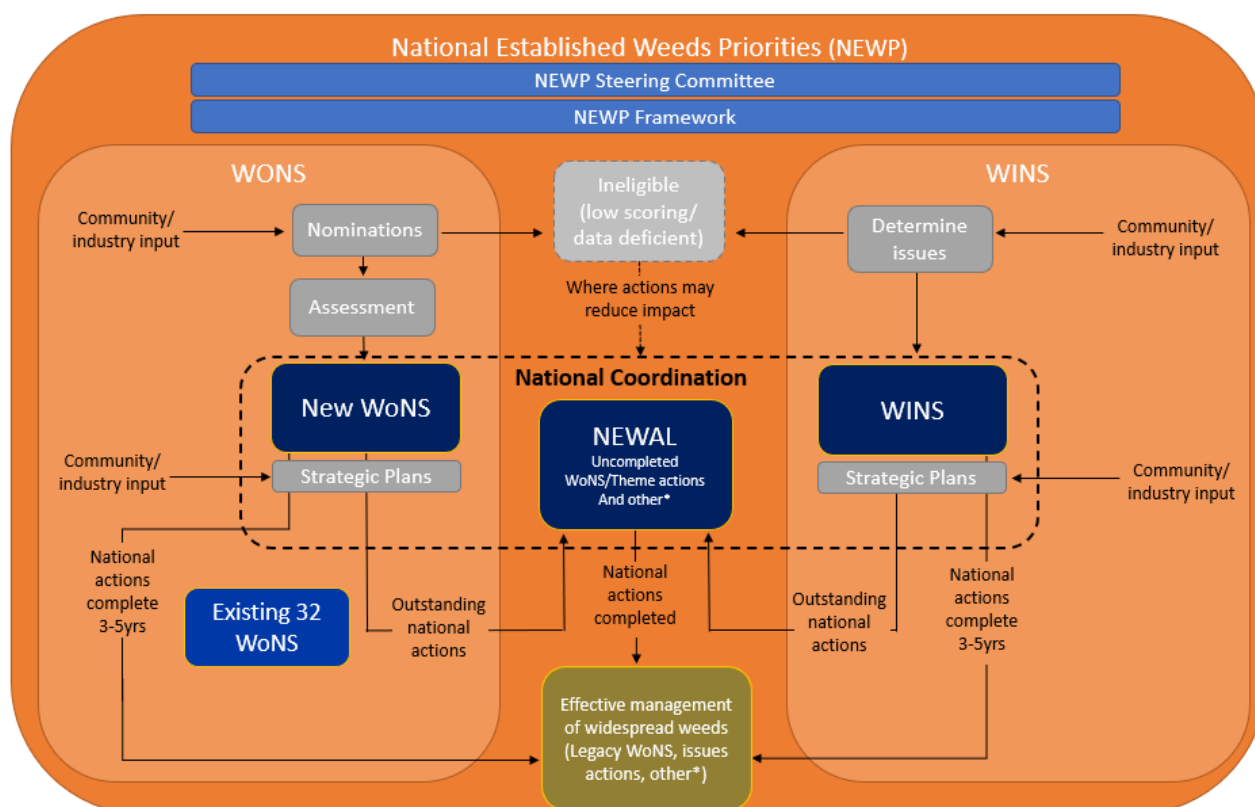
Establishing a NEWP Steering Committee is the first step in implementing the new initiative, the structure of which is described in figure 4. The committee's role would include:

1. **Developing a NEWP Framework** that will guide the initiative, from nomination of species and issues of national significance through to national coordination. The Framework should also document principles, governance arrangements and monitoring and evaluation requirements.
2. **Acting as champions for established weed management**, which may include encouraging support and engagement in the initiative and promoting the need for community, industry and government involvement.
3. **Guiding the nomination process for new WoNS and identifying key issues of national significance (WINS)**, ensuring community and industry contribution. Agreement would need to be reached on the mechanisms and timeframes associated with these processes.
4. **Identify roles and responsibilities of the committee and those involved in the initiative.** The EPDNS framework outlines key roles and responsibilities of government, industry, community, landholders and 'risk creators'. It is suggested that the steering committee review these and align the NEWP framework to these where reasonable.

The committee should feature an independent chair and may include representatives from the following organisations:

- Government (Australian, State/Territory)
- Natural Resources Management
- Landcare
- Invasive Species Council
- Indigenous groups
- Universities and research institutions
- Industry groups (e.g. Meat and Livestock Australia, Grains Research and Development Corporation).

The committee would receive guidance from the WWG and report through them to the EIC.



\* This includes delivery of discrete, stand-alone nationally significant actions for non-WoNS (refer to page 26-28).

Figure 4 – NEWP processes for effective management of established weeds under EPDNS and AWS.

The following sections describe the steps and processes involved in developing and implementing the initiative based on the model summarised in figures 3 and 4, and provides information that can form the basis of the NEWP Framework.

### National Coordination

As per the phased approach used for the existing WoNS (Section 1), this model suggests levels of national coordination, including (i) primary coordination, (ii) secondary coordination, and (iii) no coordination.

#### Primary coordination

An intensive level of national coordination would apply to new WoNS and WINS, including activities such as development of a strategic plan, identifying research priorities, establishment of networks, encouragement of strategic on-ground action and the production of best practice material. This period would last between 3-5 years. After this time, if some national priority actions remained the WoNS/WINS would move to phase 2 (secondary coordination). If all national priority actions were complete, the WoNS/WINS would move to phase 3 (no national coordination).

#### Secondary coordination - National Established Weeds Priority Action List

The National Established Weeds Action List (NEWAL) provides an opportunity to complete any outstanding WoNS/WINS actions that are of a very high priority. Actions could be managed by coordinators attached to the new WoNS/WINS. For example, a coordinator may be actively managing one (or more) new WoNS and a small number of NEWAL priority actions for several WoNS that no longer require a dedicated coordination resource. Alternatively, there could be a dedicated NEWAL coordinator that may, for example, support the NEWP Steering Committee as well as NEWAL and other relevant weed-related initiatives under the EPDNS framework.

#### Moving beyond national coordination - Legacy WoNS

When any remaining priority actions for a WoNS have been implemented (i.e. those WoNS actions included in the NEWAL) national coordination for that species is no longer required. In effect all WoNS will retain their official WoNS status (refer lessons learnt), but they are either supported by national coordination or not (but best practice tools and extension material remain accessible as an ongoing legacy). Consideration of any potential conflict regarding this approach is required, given that the EPDNS framework provides the option for species to be removed from the nationally significant list.

### Weeds of National Significance (WoNS)

The benefits of using the WoNS initiative as catalyst for a more cohesive and effective delivery mechanism for established weeds are many. WoNS offers a:

- Proven model with existing networks and support
- Well recognised and highly valued brand within the community
- Detailed, risk-based assessment process that can be modified/applied to new species and is consistent with the EPDNS framework
- Collaborative, cross-jurisdictional approach to national coordination, with an emphasis on community and industry
- Strong return on investment with funds leveraged from all stakeholders.

Figure 5 outlines a proposed process for determining new WoNS, whereby species are nominated, assessed and categorised for national coordination and management. Further details are provided in the following sections.

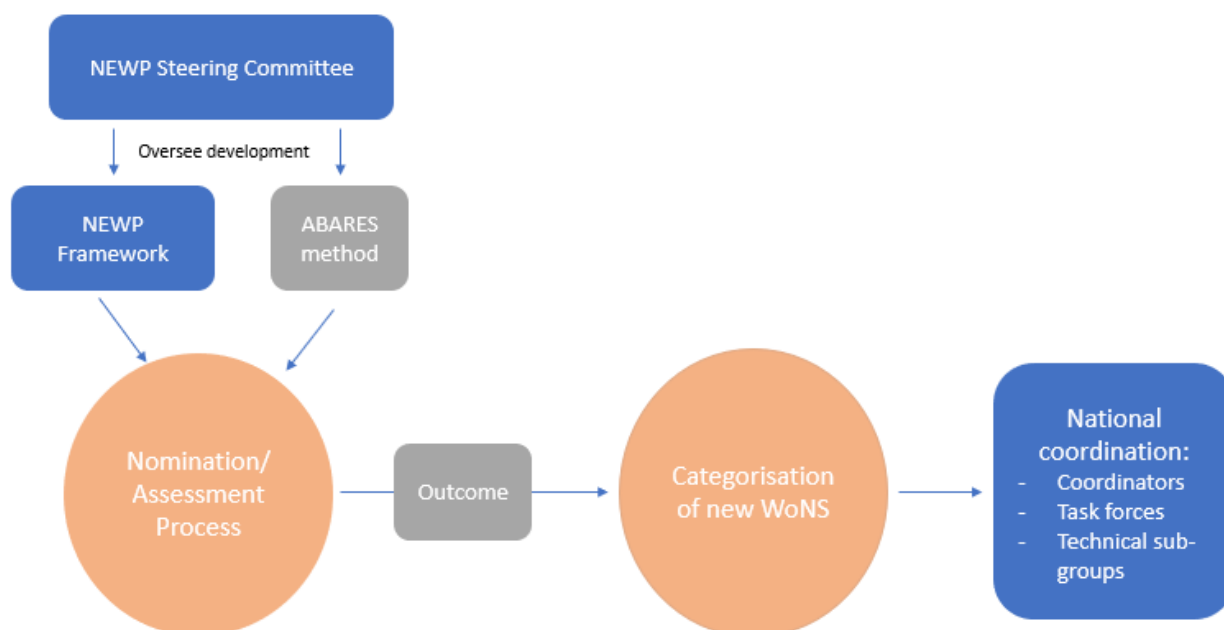


Figure 5 – Suggested process of a continued WoNS initiative, and the steps from species nomination through to national coordination.

#### Nomination process

Previous WoNS processes gave responsibility for nomination to State and Territory governments, with little to no opportunity for direct input from industry or the community. The EPDNS framework now provides the opportunity for nominations from industry or community and indicates the responsibility for such assessments would come from the relevant sectoral committee (in the case of weeds, this would be the EIC). Given that these stakeholders have invested significantly in the WoNS initiative, any nomination process should maximise communication and engagement and broker collaboration where possible.

A simple, staged process that would allow for community and industry stakeholders to engage, alongside government, via an online portal is illustrated in Figure 6. The portal would enable all stakeholders to test a species' potential eligibility for nomination. One of the benefits of this approach is that it gives stakeholders license to put forward species they see as significant, providing a highly consultative engagement mechanism which would increase ownership during the implementation phase.



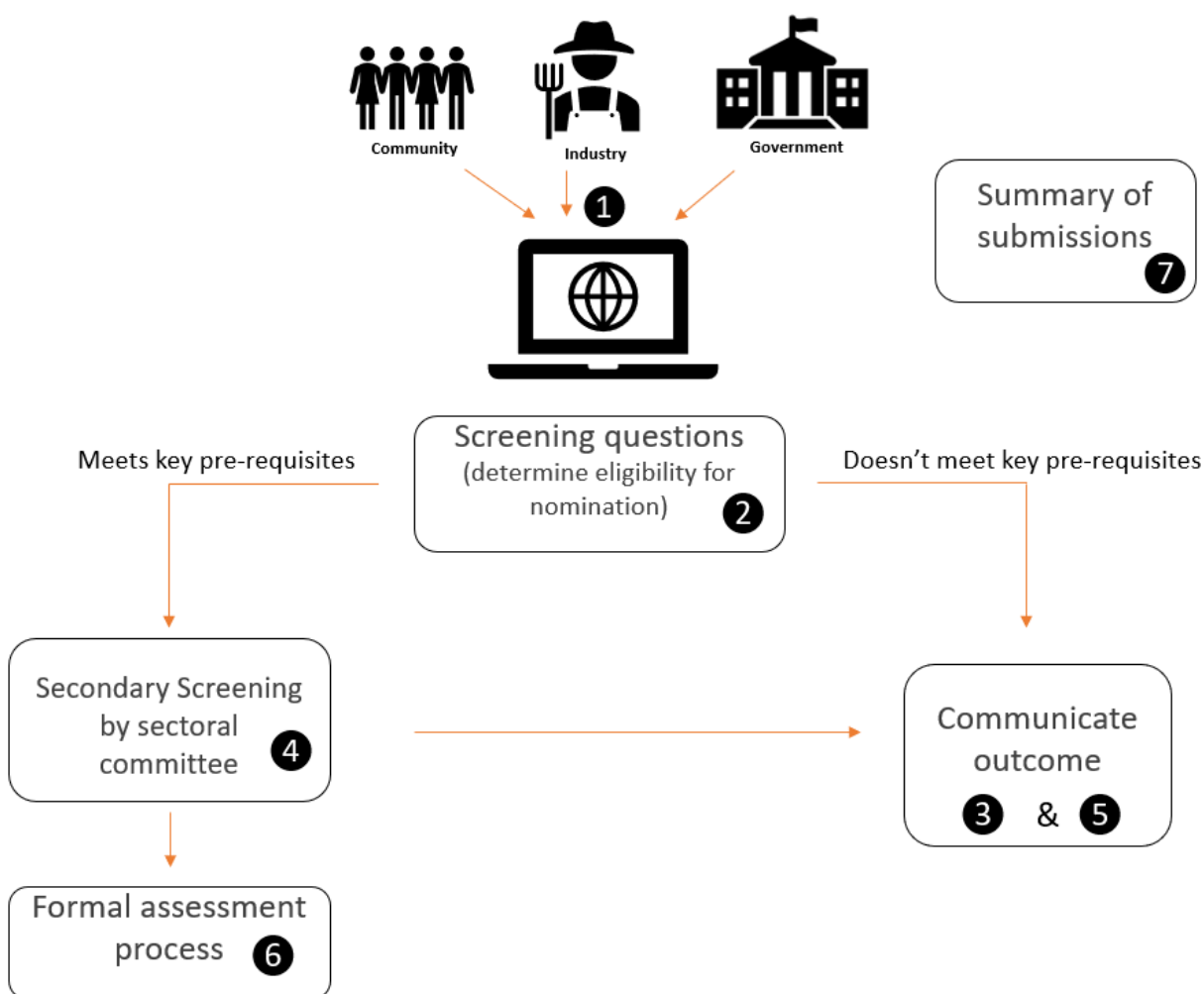


Figure 6 – Rapid screening tool and processes for WoNS nominations.

- ① An open call would be made and stakeholders would access the portal to begin the rapid screening process. This may act similarly to the stop/go criteria in the Australian Priority Marine Pest List Report.
- ② The portal would prompt them to answer a short series of questions related to the formal assessment criteria. This may require development of a decision matrix that would deliver a result based on the inputs provided. This could be developed concurrently with the assessment methodology. Questions may look at the species, how it impacts on one or more State/Territory, whether there is social/political will to manage the species, etc.
- ③ If the species does not pass these screening questions, a careful communication of its ineligibility is provided and the user is referred to (i) the broader assessment criteria (and what a successful candidate species may 'look like') and (ii) contact details of their State/Territory weed agencies for further information.
- ④ If a species does pass the screening questions, the user is notified of its progress to the next step - a secondary screening by the sectoral committee. This could include verification of the answers that allowed the species to pass through the first round of screening questions and may ask the applicant to provide documentation/evidence to substantiate their nomination.

5 Users would be notified of the outcome of step 4 - which would either be (i) for the sectoral committee to proceed with the assessment or (ii) that the species is not eligible for formal assessment (and reasons why).

6 Any submissions that pass the secondary screening in step 4 would proceed to formal assessment. The formal assessment process has not been developed for this report and the methodology and mechanisms to undertake it form part of a separate body of work.

7 The portal would also provide access to a list of species assessed by the rapid screening tool, along with the associated outcome and reasons. This would help community and industry to determine whether their species of interest had already been accepted or rejected for further screening. The portal could also indicate where/who else had nominated species so that future collaboration could be investigated. The portal could also serve as a useful repository for information on species, that while not meeting national significance criteria, may have considerable State/Territory or regional-level importance and could be candidates for community weed models.

The steering committee would oversee this process, with direction from the EIC Weeds Working Group. Consideration should be given to how any industry/community nominations will be resourced. Funds may need to be sourced to support formal assessments of industry or community nominations, as well as to develop and run the nomination portal. This mechanism is important as it provides an equitable platform from which all stakeholders can participate in the process.

Development, housing and maintenance of the portal will also need to be resolved. The portal could be managed by ABARES as part of the formal assessment process. Options for housing include the ABARES, Weeds Australia (once fully operational) or Atlas of Living Australia websites.

#### Single species or group nominations

As per the 2012 process, nominations could comprise single species or groups of closely related species (or species with similar impacts/life forms). Stakeholders could nominate a “flagship” species and other similar species (where there may be less information available but likely to have the same level of impact) could be included as part of a suite of species.

As noted in the Chilean Needle Grass case study in the EPDNS framework, there are benefits in including species with similar impacts and/or management requirements (e.g. control methods, identification tools) in nominations and any subsequent national management. This may include (i) groups of species within the same genus (e.g. Opuntoid cacti, Asparagus species); (ii) groups of species from different genera that have similar impacts/management needs (e.g. brooms); or (iii) groups of species that may co-occur or invade areas when other species are removed from the landscape (e.g. Asparagus weeds following bitou bush removal). This reduces inconsistency in how species are classified, prioritised and managed.

#### Assessment methodology

Two key factors should be considered when determining an appropriate assessment process for WoNS - (i) the process used in 1999 and 2012 to determine the current WoNS and (ii) EPDNS criteria for pests and diseases to be assessed and listed as nationally significant.

It is proposed that the 2012 assessment approach be adopted and modified to:

1. Refine assessment weighting criteria for species that impact on nationally important assets that are geographically restricted (e.g. world heritage areas, prime agricultural lands, coastal ecosystems).
2. Align with the EPDNS framework, including consideration of the national priority list.

A detailed review of these methodologies will need to occur ahead of a nomination call and will be managed through a separate process to this Framework. The Australian Priority Marine Pest List Report process may provide useful guidance.

#### **Criticisms/shortcomings of the assessment process (2012)**

While the process for assessing species was considered best practice and scientifically sound, there were some criticisms of both the process and the subsequent WoNS that were endorsed:

- The initial process for nominating species was not considered sufficiently transparent or accessible for all stakeholders to contribute.
- Assessment costs per species were high. This may have restricted the number of nominations made by Government agencies (insufficient budgets to nominate more than a few species).
- High costs may also have precluded agencies nominating weeds on behalf of industry or community groups.
- A weakness of the assessment process was that it was biased against species that had high impact and invasiveness, yet only occurred in land uses that were geographically restricted. For example, sea spurge has the potential to impact on almost 100% of sandy coastal vegetation community in 6 states, yet those vegetation communities collectively account for less than 5% of Australia: Thus the impact was not recognized as significant in the assessment process.
- There was concern that some of the filters and considerations overlaid on species following assessment were not overly transparent, leading to confusion and mistrust regarding the assessment process.

These concerns should be revisited during the review of assessment methodology. Consideration should also be given to transparent communication of any final assessment process, including effective stakeholder engagement during the process.

#### **WoNS Categorisation**

Following a formal assessment of nominations, species will be categorised and assigned to national coordination. The number of new WoNS and associated coordinators is unknown and is likely to be determined by government based on resourcing capacity.

The coordination arrangements for the 20 inaugural WoNS comprised of a coordinator for each species (with the exception of aquatic and prickly bush species). This differed from the 12 additional WoNS, where species were grouped into closely related taxa or species that were managed holistically in the landscape (e.g. vines). Grouping species was found to have advantages in that:

- There were efficiencies gained in having fewer coordinators than weeds
- Grouping WoNS was sensible where common stakeholders were involved in their management
- Having grouped species encouraged and necessitated holistic and integrated management of species or landscapes.

The following groups could be considered:

1. Geographic location – weed that occur in a similar location (e.g. north/south)
2. Affected landscapes (e.g. coastal, rangelands etc)
3. Species within the same genus
4. Closely related taxa, but within the same functional group (e.g. brooms or opuntoid cacti).

WoNS categorisation will be a process of negotiation that considers available resources and the best likely management outcomes for individual WoNS. To avoid influencing the species' selection process, recommendations on grouping WoNS and assigning to coordinators should be made to the EIC by the steering committee (with the assistance of species experts where required) after the assessment and selection process is complete.

## Governance

To support the processes described above, figure 7 outlines a suggested structure and governance for WoNS 2020 and beyond. The right side of the diagram shows the strategy and reporting setting that guides the initiative and links it to policy (IGAB, EPDNS framework and the AWS). The left side shows the operational elements that will progress the strategies, enable reporting and address the policy setting.

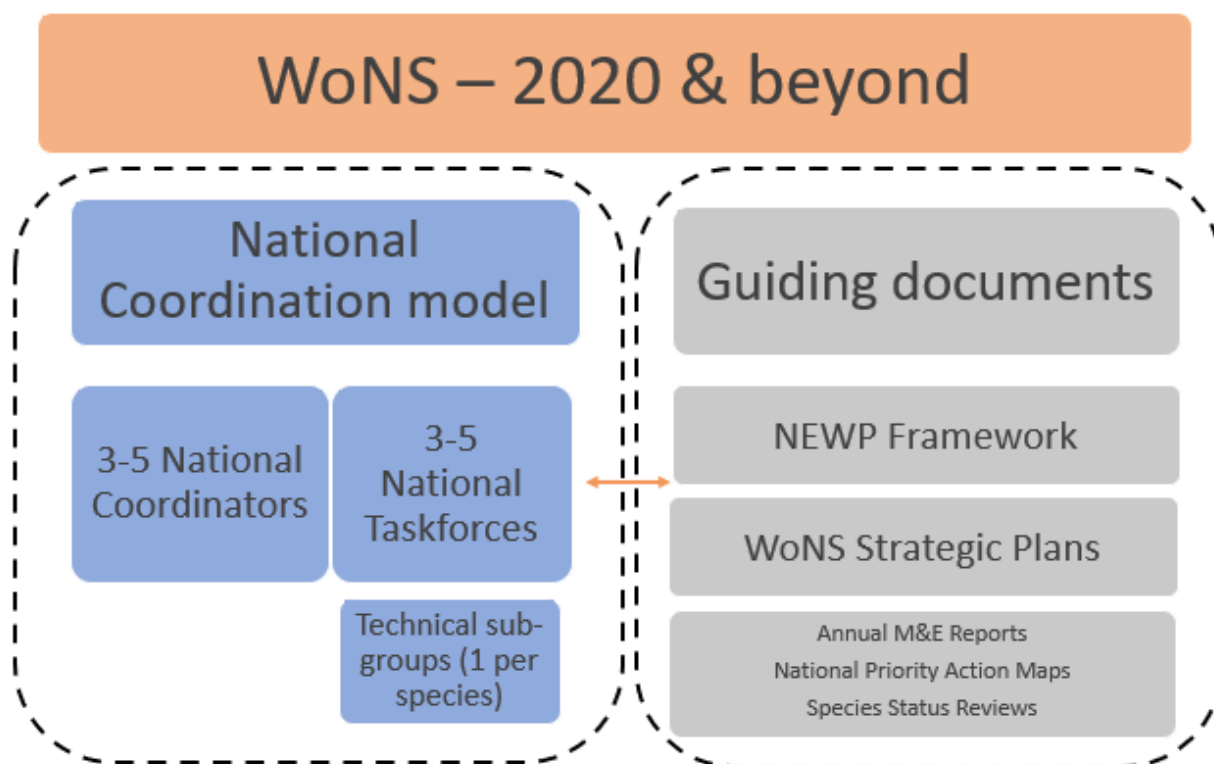


Figure 7 – proposed governance structure for WoNS.

The NEWP steering committee, having coordinated the nomination and assessment process, could either be retained to provide high level support or the expertise be transferred to the **national WoNS task forces**. In addition to coordinators, national task forces would be responsible for the implementation of national strategies for each species.

Like coordinators, task forces may also work across multiple species, and hence require the support of **technical sub-groups**. The sub-groups would comprise of some task force members and additional members with species-specific expertise to assist in the development of **national strategies** for each WoNS. The technical sub-groups would assist in reducing the workload of the task forces.

Future work is required to establish Terms of Reference, including membership, for the NEWP Steering Committee, national task forces and technical sub-groups. Much of this work can be informed by existing WoNS documentation (refer Section 1).

Each strategic plan would be supported by a range of tools for annual implementation; monitoring and evaluation; and communication. National priority action maps and a process to undertake formal reviews of strategic plan achievements would also support the initiative.

Any outstanding priority actions added to the NEWAL would also be subject to annual review and reporting and could use similar tools to those designed/implemented for new WoNS and WINS.

### Weed Issues of National Significance (WINS)

A strength of the WoNS Initiative is in promoting strategic, integrated weed management at a landscape scale. However, a criticism of the first 20 years of WoNS has been the overall focus on a single-species approach. The introduction of 'issues' of national significance, to sit alongside WoNS, addresses this by taking an holistic view that includes other key threatening process and considers the collective threats posed to landscapes. With this lens, key national actions for established weeds can be identified and targeted to achieve long-term landscape-scale impact reduction.

Identifying nationally significant weed issues allows for coordinated action on established weeds at the landscape scale in the context of issues that influence, and are influenced by, established weeds. These issues need to be clearly defined and could include climate change, habitat degradation, herbicide resistance, drought or bushfire preparedness and recovery, as well as other potential landscape scale issues that necessitate integrated weed management.

All levels of government have a desire and responsibility to assist landholders to manage landscape scale threats holistically and temporally, together with reducing the impacts of established weeds. An issues-based approach would allow flexibility for national coordination to be adapted and applied to the greatest needs, as those needs arise.

### Governance

WINS could adapt or adopt several of the proposed WoNS elements (figure 7), but in broad terms it is anticipated WINS would allow for:

- **A process to determine issues of national significance.** This may include the development of a short list of issues, informed by national and jurisdictional government priorities. Consultation (targeted towards key industry and community groups) would help refine the final list of priority issues. Issues should seek alignment with relevant EPDNS framework criteria where possible.
- **Strategic actions plans should be developed,** outlining implementation priorities, as per the WoNS strategic plans.
- **Taskforces or reference groups can provide strategic, cross-discipline guidance,** whilst also facilitating networking and engagement with researchers and other NRM professionals.
- **Consideration of how long an issue would receive national focus and coordination.** As with WoNS, term limits need to be agreed on, include trigger points for moving issues (or subsidiary actions) to the NEWAL.

Details associated with the above points should be considered by the NEWP steering committee and captured in the NEWP Framework.

### National Established Weeds Action List (NEWAL)

The National Established Weeds Action List (NEWAL) concept was proposed by the EIC WWG in 2019 to manage and complete outstanding national actions of the 32 WoNS through coordinated action. The concept of NEWAL has been expanded here to form a significant component of the proposed NEWP initiative (refer to figures 3 and 4), to allow for completion of national actions and a rolling list of WoNS and WINS.



NEWAL is proposed as a mechanism for:

1. **Completing outstanding national actions of the existing 32 WoNS and transitioning them to “Legacy WoNS” Status.**

One of the first steps in implementing the NEWP Framework will be managing the transition of the 32 existing WoNS into to “Legacy WoNS” Status. The 2019 status reviews will go some way to inform this, and a summary of the national actions yet to be completed from the review is provided in Table 3. Appendix 2 provides complete comments on outstanding actions from assessors. Further interrogation of the 2019 individual status reports are required, and this could be progressed by the WWG. This will enable the 32 WoNS to either be (i) moved to Legacy WoNS status (if all national actions are complete) or (ii) have outstanding national actions added to the NEWAL.

2. **Completing outstanding national actions of new WoNS for their transition to “Legacy WoNS”.**

This is for new WoNS (post 2020) following 3-5 years of dedicated coordination and the completion of most national actions in the Strategic Plans.

3. **Completing outstanding national actions of WINS.** As per WoNS there an issue may be largely addressed, with the exception of a small number of priority actions that require continued coordination.

4. **Delivering discrete, stand-alone nationally significant actions for non-WoNS.**

As shown in Figure 4, some species nominated for WoNS/WINS will be unsuccessful. However, the process may identify species where community or industry capacity to manage them could be enhanced through a discrete national action (e.g. biocontrol research). Alternatively, some weeds/issues may be unsuccessful because there is insufficient knowledge to complete an assessment. A discrete nationally coordinated action addressing data deficiencies may lead to a better understanding of the species, leading to better management, or enabling assessment in future nomination processes.

Work is required to determine what actions will be significant enough to be included in the NEWAL. It is anticipated that actions that could be progressed under the NEWAL would be limited to **critical national actions** that require coordination for their completion. This could include progressing biological control research and release, the development of new control options (e.g. herbicide registration) or development/completion and distribution of best practice manuals or materials.

#### Recommendations to progress outstanding actions for 32 WoNS

Some actions on the NEWAL will include outstanding actions of the 32 WoNS. The steering committee may need to consider developing specific criteria to determine which outstanding actions are critical to address. Table 3 compiles the outstanding actions that were identified in the 2019 status reviews. This provides a guide to the types of actions that could be addressed through the NEWAL, noting that the rigour to which species were assessed in relation to outstanding actions varied. It may be necessary to put in place a process to validate the list of actions in table 3 against strategic plans for each WoNS in case critical actions have been omitted. In addition to those actions listed in table 3, the following overarching actions may also need to be added to the list:

- maintain both the currency of best practice management tools and the strategic direction required to maintain land manager capacity to reduce impacts of legacy WoNS. For example, updating best practice management manual/tools, management action maps, critical monitoring activities etc.
- maintain WoNS declaration status in all states and territories.

Table 3: Initial summary of remaining actions from the existing 32 WoNS requiring national coordination, as identified in the WoNS 2019 status reviews\*

Proposed remaining national actions for 32 WoNS to be added to NEWAL (from 2019 status reviews)	Species actions relate to
Progress best practice control research	Madeira vine; sagittaria, Cat's claw creeper
Develop best practice management manuals/tools	Madeira vine, sagittaria, Cat's claw creeper boxthorn (manual update to align with other WoNS manuals)
Biological control progression for some species where there is no agent or ineffective agents and possibilities are not exhausted	Opuntoid cacti (some species)
Development/maintenance of central database for housing best practice material, identification material and mapping data etc.	Identified specifically for brooms and asparagus weed but noted as being relevant for all WoNS.
National engagement with specific sectors/stakeholders to overcome key impediments to reducing impacts of WoNS	E.g. Ornamental plant industry for asparagus weeds and brooms; aquarium groups and within Peri Urban areas for water hyacinth; Fireweed. This action could be relevant to all WoNS (opportunistic or targeted awareness/engagement).

\*This table has been completed from status reviews completed in 2019. Validation of actions will be required as detailed in this document.

## National Coordinators

National coordination is the foundation of the NEWP initiative, however any proposed model must consider how this can be achieved efficiently. The number of coordinators appointed will be a decision for government but will likely reflect the number of new WoNS and WINS and any decision to manage WoNS and WINS collectively. It is suggested that up to ten new WoNS and three to five coordinators for WoNS, and two to three WINS and around 2 coordinators for WINS, could be a suitable model.

As per lessons learnt (and Box 3), a review of hosting arrangements will help determine the most suitable coordinator model. Arrangements should include the ability to exercise a truly national focus; to operate with a degree of independence from host organisations; and consistent workplans & budgets.

Options to house coordinators may include engagement through:

- **State/Territory agencies** – whilst some issues have limited the effectiveness of this model historically, there are also benefits to this arrangement such as ready access to government information and systems for project delivery. Changes could be made to improve effectiveness.
- **Commonwealth agencies** – as per the Australian government facilitators, who are employed directly by Commonwealth agencies, but housed within State/Territory agencies. This would emphasise the national focus of these roles, ensure consistent remuneration across coordinators and avoid non WoNS-related jurisdictional duties (e.g. redeployment to emergency management situations).
- **Regional bodies** – such as NRM, CMA or Local Land Services regions.
- **Non-government organisations** – such as conservation organisations or peak industry groups. Industry hosting of national coordinators has worked well for vertebrate pests (e.g. wild dogs and pigs), however, consideration should be given to how this might work for a WoNS that has both industry and environmental impacts and a need for cross-tenure interactions.
- **State/Territory and National hybrid** - as previously modelled in South Australia, coordinators would be state-based, performing the role of national coordinator for one (or more) WoNS, but also assisting in the delivery of local actions for other WoNS in that state.

Additional guidance should be provided in the form of:

- Coordinator Terms of Reference – including roles and reporting arrangements (e.g. the role of the EIC Weeds Working Group), classification levels etc.
- Support beyond host organisation – this may include initiative-wide issues such as promotion, communication, work across multiple species, printing of best practice manuals; coordinator meetings etc.

A review of the pros and cons of these models should be made by the steering committee to identify a suitable option, which should be broadly consistent without losing flexibility. The review could draw on previous work that summarised and analysed coordination models and hosting arrangements (refer Beatentrack Group 2008; Grosvenor Management Consulting 2012; WoNS Chairs 2010).

Ultimately, agreement to host national coordinators must be negotiated with all relevant stakeholders, who will all have a range of competing interests and demands on their resources. Consideration should also be given to changing/competing priorities of any host organisation over the life of the hosting agreement. Terms of Reference and contractual arrangements could act as the mechanism for managing any issues associated with hosting arrangements.

### Term limits for National Established Weed Priorities

Based on lessons learnt from pre 2020 WoNS, it has been demonstrated that with adequately resourced national coordination, key strategic actions can generally be implemented (either completed or significantly progressed) within 2-3 years. Thus, it is proposed that new WoNS and WINS be:

- Reviewed at 3 years, allowing prioritisation of remaining actions to determine if the species requires further national coordination,
- Actively coordinated for up to a maximum of 5 years.

Within this 3-5 year timeframe it is expected that WoNS and WINS would have:

- A National Strategic Plan outlining priority national actions
- An established task force and technical sub-group
- A national management action map (may not be relevant for WINS)
- Delivered key outcomes
- A gap analysis and research initiated to address key knowledge gaps
- Developed best practice management tools (e.g. a control manual or other extension material), or be progressing knowledge to develop these tools in the near future)
- Monitoring and evaluation to support progress.

The NEWP steering committee should develop detailed methodology to review national strategic plans (refer [lessons learnt](#) and [MERI](#) sections for more detail) for completion.

### Monitoring, Evaluation, Reporting and Improvement

The NEWP steering committee would ideally play a lead role in developing guidelines for the review of progress towards Strategic Plans. This could draw from the strengths of processes used previously for both the inaugural 20 WoNS and the additional 12. The review process must balance ease of collecting and analysing information with being sufficiently robust to inform progress nationally.

Development of program logics and MERI plans for new WoNS and WINS may assist in ensuring that coordinators, task forces and partners can establish a baseline to report against annually. Existing

templates and previous logic models and plans would be the best starting point. They align to the AWS but a review should check alignment with the EPDNS framework (as they predate this).

Requirements may differ for NEWAL and consideration should be given to the criteria used to determine priority actions and how long an action remains on the list.

### Reporting schedule

A schedule detailing the reporting frequency, type of reporting and audience should be included in MERI templates/plans. Consideration should be given to how:

- Annual reviews are conducted
- 3 year reviews are conducted
- End of term reviews are conducted
- Reporting occurs.

Details on what triggers a move from primary coordination to secondary coordination to no national coordination should be determined and incorporated into review methodology. Additionally, reporting methodology should be developed for WoNS no longer under national coordination. Annual reporting was conducted for phase 3 WoNS between 2012 – 2019 and could be reviewed/refined to suit.

### Investment opportunities/strategies

Historically, government funding was provided for national coordination (both for coordinators and national task forces). As indicated in Section 1, funds for managing WoNS were never guaranteed, however significant resources were provided for this purpose during the first decade or so of the initiative. These funds, typically provided through the Australian Government, leveraged an equally significant amount of resources (funding and in-kind) from State/Territory and regional/local sources.

As stakeholder engagement and WoNS momentum grew, so too did the range of funding sources. When Australian Government funding was redirected to new and emerging weeds, funding for WoNS from these other sources continued, as WoNS were embedded as local/regional/state priorities in policies, plans and funding programs.

Despite the reduction in Australian government funds available to manage the additional 2012 WoNS, there was sufficient momentum and support for progress to occur. As a result, eight out of twelve 2012 WoNS are now considered to have all national priority actions completed.

Consideration now should be given to how to regain this momentum. It may be that a modest amount of 'seed' funding upfront will provide a high return on investment. This could include funding for WoNS tools, such as best practice manuals, or high priority research actions. It may also include dedicated funding streams for on ground control to achieve national priorities (e.g. threatened species or national asset protection) in national grant programs.

Though many stakeholders remain strongly linked and committed to WoNS, some will need to be re-engaged. The challenge will be communicating the new approach with stakeholders. Some may need convincing that success is possible within the current funding landscape. These critical conversations should form part of a communication strategy and stakeholders should be engaged early in the co-design of the program.

### Communication

A communication strategy and action plan should be developed and include a staged approach that focusses efforts on (i) refining and seeking agreement on the final structure and governance of NEWP, and

(ii) promoting and communicating the outcome of this to stakeholders and, using the NEWP Framework to highlight the history and future possibilities of the initiative.

The first stage of the strategy should consider the meaningful engagement of community and industry and their role in co-designing the NEWP initiative. It should focus on:

- Stakeholder mapping to identify key stakeholders; the level of engagement required to address their interest and influence in the development of the NEWP approach; and appropriate options to meet the level of engagement identified.
- Providing a period of consultation on the NEWP Framework allowing for stakeholder feedback
- Roles and responsibilities of those implementing the communication strategy.
- A process to establish the NEWP Steering Committee, e.g. outline if this will be run by the EIC WWG, if there be a public call for members; etc.
- Review of previous WoNS communication tools:
  - Communication plans (e.g. *A Communication Strategy for Nationally Significant Weeds 2012-2017 - Draft August 2012*)
  - Social media accounts (e.g. Twitter, Instagram etc.)
- A section that details the nomination process and how this will be promoted and managed.

The second stage of the communication strategy should provide detail on key messages to all stakeholders regarding the final design/format of the NEWP initiative, including:

- The structure
- How it will be managed
- Opportunities for involvement (e.g. in taskforces)
- New WoNS and WINS
- Project development and/or funding opportunities (if available).

An activity plan, mapping out activities, dates, events and other key communication and engagement deliverables, will be an essential tool for the EIC WWG and the NEWP Steering Committee.

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## Appendix 1 - Weeds of National Significance Program – Key Achievements and Outcomes 2003–2009.

### Background

In its first seven years, the Weeds of National Significance (WoNS) program has clearly demonstrated that it has the capacity to bring governments, agencies, land managers, communities and individuals together to achieve a common and consistent approach to weed management. This approach is effective and efficient with a legacy already in place that encourages greater participation in weed management into the future.

The following documents key achievements and outcomes that are a direct result of the WoNS Program over seven years. The achievements listed highlight only a small portion of what the WoNS program has been able to achieve during its seven years of operation.

### Outcomes and key achievements

#### 1. New WoNS incursions have been rapidly detected and prevented from establishing

- 1.1. Early detection protocols, identification aids and identification training have led to the discovery of 18 new outlier infestations of alligator weed, more than half the number of total outlier infestations.
- 1.2. Rapid response and early detection protocols and identification aids are supporting eradication of new and isolated outlier infestations of parthenium weed.
- 1.3. Aquatic plants weed risk assessment project has identified a range of other weedy aquarium species that should be removed from sale – ensuring that WoNS such as cabomba will not be replaced in the market by other aquarium species posing similar weed risk.
- 1.4. National sales bans have removed the primary vector (aquarium trade) for cabomba.
- 1.5. 88% of Australia's Mitchell grass downs has been protected from invasion by prickly acacia.
- 1.6. National coordinated action has prevented parthenium weed from spreading outside Queensland and prevented it from invading other States and Territories. Construction or upgrade of 19 washdown facilities across Queensland and New South Wales have assisted in this achievement.
- 1.7. Early detection, identification training and surveillance have prevented the establishment of *Mimosa pigra* in any new catchments in the last 8 years.
- 1.8. Early detection protocols and awareness of the weed risk are supporting eradication of new and outlier infestations of athel pine.

#### 2. Strategic high priority and outlier WoNS infestations are priority for eradication

- 2.1. Strategic cabomba outlier sites in Northern Territory and Victoria are under treatment for eradication.
- 2.2. Successful eradication of priority salvinia outlier infestations has occurred in New South Wales and Western Australia. Results from these programs indicate that some infestations previously thought to be not eradicable could be eradicated.



- 2.3. Parkinsonia eradication programs have commenced to protect high conservation wetlands from invasion in the lower Lake Eyre Basin and Cape York.
- 2.4. All known outlier infestations of prickly acacia are under active control in South Australia, Northern Territory and Western Australia, with an eventual goal of eradication.
- 2.5. Eradication of outlier sites of rubber vine in western Queensland and New South Wales.
- 2.6. Rubber vine control in Western Australia remains on target for eradication completion in 2015.
- 2.7. National outlier bridal creeper infestations are under treatment for eradication and/or containment including Tasmania, Queensland, Lord Howe Island and the Western Cape form of bridal creeper.
- 2.8. Substantial progress has been made towards eradication of blackberry within key isolated and outlier infestations in Queensland, Western Australia, South Australia and Tasmania.
- 2.9. National communication and networking has triggered voluntary uptake of 25 year Memorandum of Understanding/s to eradicate outlying gorse infestations. 220,000km<sup>2</sup> across Western Australia, South Australia and New South Wales is under active treatment and surveillance for 25 years.
- 2.10. Two thirds of the most significant infestation of athel pine in Australia (along 630kms of the Finke River) has successfully been treated. Identification of priorities for athel pine eradication has resulted in substantial progress towards eradication of athel pine in other outlier areas of the Northern Territory.
- 2.11. An active eradication program for the only infestation of Mimosa pigra outside the Northern Territory, near Proserpine in Queensland, has been successful with active annual control of seedlings.

### **3. Strategic infestations of WoNS are being containment to prevent spread into new areas.**

- 3.1. Priority outlier infestations of alligator weed are contained to the Murray Darling Basin
- 3.2. Threat of mesquite spreading is reduced through containment and progressive reduction of infestation sites at Pilbara in Western Australia and Hughenden in Queensland.
- 3.3. An area of 1 million km<sup>2</sup> is on its way to being safeguarded from prickly acacia invasion, through buffer zone development and control in the lower lake Eyre Basin and Gulf of Carpentaria region.
- 3.4. Successful mesquite control programs at McKinlay and Quilpie in Queensland have now had their core infestation status removed, and strategic containment has become the primary goal.
- 3.5. All known parkinsonia sites in South Australia and New South Wales are under active control for containment.
- 3.6. Rubber vine is being contained to prevent spread outside Queensland through integration of best practice management methods and increased coordination, commitment and significant support of Key NRM stakeholders.
- 3.7. Gorse containment lines have shifted: east by 1700 km from Western Australia to Clare Valley in South Australia; west by 300 km from Victorian border to Mt Lofty Ranges in South Australia; and south by 600 km from Queensland border to Sydney.



3.8. Priority infestations of athel pine in Queensland, New South Wales, South Australia and Western Australia are being treated using best practice methods with strategic containment or eradication as a primary goal.

3.9. 90% of Mimosa pigra infestations in the Northern Territory are under active management and control. Only 1 new catchment has been affected in the NT by Mimosa in the past 12 years where this weed has since been controlled and monitored annually.

#### **4. Management of core infestations of WoNS is directed to areas of highest priority**

4.1. Alligator weed core infestations have been prioritised for treatment based on their risk to key ecological assets and risk of further spread

4.2. The area and impact of bitou bush in core areas is being reduced through biological control agents and the use of best practice management by stakeholders, including over 600 community groups.

4.3. Natural biodiversity assets are being protected from bitou bush in accordance with priorities identified through a Threat Abatement Plan.

4.4. Priorities have been developed to guide targeted investment in bitou bush and boneseed management, which has increased significantly based largely on attracting a five-fold matching of funds from Australian Government programs.

4.5. Community-based strategic control of mesquite at about 150 sites across Australia leading to the management of infestations totalling over 500,000ha

4.6. Impacts of parkinsonia being reduced through control of over 100,000 hectares of infestation annually through community based projects. This includes catchment scale approaches in the NT and Qld.

4.7. Impacts of prickly acacia reduced through active management of 2.5 million hectares of prickly acacia in the core infestation area and surrounding areas of Queensland.

4.8. The Chilean needle grass program has taken a holistic rather than a species specific approach to the issue of stipoid weed management and asset protection.

4.9. A sound evidence-based process has been developed to enable water and land managers to set priorities for willow management in areas where the greatest benefit can be achieved.

4.10. National Mapping data compiled has directed and informed strategic gorse management.

4.11. Strategic integrated catchment management of Mimosa pigra has been aided by good baseline mapping information for all infestations.

4.12. Regional and national scale strategic planning tools have been developed for lantana to ensure limited resources are targeted to highest priority areas. These include satellite-based remote sensing mapping at a grid scale of 100m<sup>2</sup> and the Plan to Protect Environmental Assets from Lantana – a national framework for the identification and prioritisation of management sites for the protection of threatened biodiversity.

#### **5. Knowledge of and ability to manage WoNS has increased.**

##### *Increased recognition and understanding of the problem*

5.1. Education and awareness programs, in particular with the aquarium and pond plant trade have reinforced salvinia's weed status.



- 5.2. Increased recognition of the impacts of other *Asparagus* weeds, including declaration in some states and considerable efforts implemented to control.
- 5.3. National management mapping/ predictive modelling for *Hymenachne* and pond apple have enabled management to be strategic, including identification of and action on outlier infestations.
- 5.4. Broad-based national mapping of serrated tussock has enabled efficient prioritisation of activities and funding that can be strategically directed to outlier populations, containment lines, and core areas of infestation.
- 5.5. Greater understanding of the potential distribution of blackberry within Australia as a result of more accurate climate change mapping technology.
- 5.6. Understanding of the areas 35 willows (including non-naturalised cultivated willows) potentially threaten has improved through more accurately mapping their potential extent according to climate.
- 5.7. Effective mapping has allowed a better understanding of the threat of bitou bush & boneseed and allowed stakeholders to gauge the success of bitou bush programs (e.g. from 2001 to 2008, the density of bitou bush nationally in the 'heavy' class (>40%) has decreased 39.5%).
- 5.8. Risk assessment, mapping and subsequent understanding of the threat posed by athel pine and other *Tamarix* species has resulted in increased national recognition and identification leading to direct control activity.
- 5.9. Effective awareness programs have prevented *Mimosa pigra* becoming established in new areas.

*Capacity to manage WoNS has increased through training and education:*

- 5.10. Understanding of willow impacts, capacity to identify willows and understanding of successful management programs has increased dramatically since program inception.
- 5.11. Education initiatives, such as the bitou bush Weeds Attack!, fulfil and exceed stakeholder needs and have perpetuated development of further such resources.
- 5.12. Increased community awareness and improved knowledge of parthenium and best management practices in core infestation areas has assisted in management of parthenium.
- 5.13. The capacity of weed managers to identify Chilean needle grass, an inherently difficult species to ID, has increased through the development of extension materials and ID training activities.
- 5.14. Enhanced knowledge of species identification and appropriate integrated management techniques for varying blackberry species through workshops and technical field tours.
- 5.15. Capacity has improved to a point where a wide range of government and community bodies are engaged in and committed to best practice management of bridal creeper (and other *Asparagus* weeds).

*New knowledge has been obtained and applied through research:*

- 5.16. Research on seed germination and longevity of pond apple has occurred to determine long term management requirements.



- 5.17. An improved understanding of the conservation and agricultural impacts of Chilean needle grass through extensive research which has resulted in the development of a range of integrated best practice management options.
- 5.18. Improved understanding of the impacts of bridal creeper on native ecosystems and the barriers to restoration of sites post control.
- 5.19. Pond apple control confidence has been built to a high level and is achieving constant kill rates of 99%.
- 5.20. Improved management strategies for control of alligator weed have been identified, including new herbicides.
- 5.21. Major advances in integrating control methods for salvinia have occurred, which lead to minimisation of impacts and greater chance of eradication.
- 5.22. Trials have led to increased understanding of the most effective methods to control athel pine.

## **6. Best practice management tools are available to manage WoNS**

- 6.1. Tools available to appease the complexities and demonstrate how to achieve successful willow management in the broader NRM context (through a willow management guide and DVD).
- 6.2. Best practice material has increased community and stakeholder capability to manage bitou bush and boneseed and allowed for better identification and control.
- 6.3. Serrated tussock management tools have been developed, promoted and incorporated into broad-based extension activities to improve uptake integrated management and effective long-term management.
- 6.4. A range of extension material on best practice management of hymenachne and pond apple has been developed and distributed.
- 6.5. Completion of ecological and control studies providing knowledge and tools to better manage parkinsonia from property to national scales.
- 6.6. Draft national management framework developed for Hymenachne, is hoped to aid effective progression of management and gain greater support from grazing industry.
- 6.7. Community awareness and management of rubber vine across Northern Australia has improved through the development and national distribution of rubber vine awareness products, screening of rubber vine television infomercials and implementation of best practice management. (A recent survey in Queensland indicated that 79% of people believed they could now identify rubber vine).
- 6.8. Provision of best practice management information has increased the capacity of all stakeholders to manage athel pine and other Tamarix species throughout Australia.
- 6.9. Ongoing community, industry and agency support for lantana biological control research and establishment programs, resulting in the establishment of two new agents, with a third awaiting final approval for release.

## **7. Key stakeholders have been influenced to enable cultural shifts to occur in weed management**



- 7.1. Strong links developed with the nursery industry through the national willows program along with legislation changes have lead to nurseries no longer selling willows and a greater support for managing the willow problem by this industry.
- 7.2. Engagement and key projects with the aquarium industry mean the industry no longer recognise cabomba as an aquarium plant, with this emphasised through a DVD produced by the industry on handling of aquatic plants.
- 7.3. The bitou bush & boneseed program has been a catalyst for developing cooperative action. NRM regions and state agencies have an increased commitment and there has been a behavioural and institutional shift to better management, including an increase in voluntary contribution (i.e. community groups).
- 7.4. Coloration, planning and engagement of regional NRM groups, local government and others has increased significantly to collaboratively address the mesquite threat.
- 7.5. Partnerships with the APVMA have ensured that herbicide application permits are available to enable hymenachne control in aquatic situations.
- 7.6. An increased social engagement in biodiversity protection has occurred along with a greater awareness of weed impacts to biodiversity. Demonstrated through institutional changes that mean stakeholders are managing bitou bush in an holistic manner to protect biodiversity assets.
- 7.7. State weed agencies have accepted the significance of the risks associated with athel pine spread over the last decade leading to declaration and active control.
- 7.8. The pastoral industry and Aboriginal Ranger Groups have played a key role in coordinated programs to manage Mimosa pigra.





## Appendix 2 - WoNS status – Outstanding national actions based on peer-reviewed assessments (at July 2019)

	National Actions	Notes in status reports (relating to outstanding actions/coordination)
Original 20 WoNS	✓	<i>'remaining actions could be jointly coordinated'</i> Some actions areas show a ! against them. These require requiring checking
African boxthorn	!	Updating of the Best Practice Manual, community re-engagement with the Manual, and a limited print run for distribution to certain stakeholders (e.g. limited internet access locations / stakeholders).  Further research into starling – boxthorn interactions to improve pathway knowledge and management (starlings have not established in WA).
Asparagus weeds	!	Engage with gardening groups and the Ornamental Plant Industry to remove/raise awareness/assess risk of asparagus species; some of this is being progressed as part of the Plant Sure project, which is supported by the National Weeds Working Group  Collating and maintaining a central database and developing national weed info and mapping systems (e.g. ALA); promoting and assessing adoption of best practice tools; maintaining national networks to encourage jurisdictional uptake of national WONS actions in S/T regional and local plans; maintaining research networks to encourage WoNS research; communication planning and delivery including national awareness and management initiatives; social and behavioural research.
Bellyache bush	✓	Approval for release and the subsequent mass-rearing and spread of the leaf-mining moth still required.
Brooms	!	Gaps include: collating and maintaining central database and developing national weed info and mapping systems (e.g. ALA); promoting and assessing adoption of best practice tools; maintaining national networks to encourage jurisdictional uptake of national WONS actions in S/T regional and local plans; communication planning and delivery including national awareness and management initiatives; developing priority research frameworks; social and behavioural research. While these were not completed under the Brooms strategy, they could be integrated into a 'whole of WoNS' strategy and done holistically w/the other species.  A key action in the Brooms plan around engaging with the Ornamental Plant Industry to risk assess other brooms species, in particular hybrids and cultivars, is being progressed as part of the Plant Sure project, which is supported by the National Weeds Working Group.
Cat's claw creeper	!	Many actions still need completion, however many could be combined with other species and done together (e.g. with Madeira vine and asparagus weeds).  Further research is needed into integrated control and the value of selective, residual herbicides, including a cost/benefit analysis of the benefits of cat's claw control vs the potential off-target impacts of herbicides before a best practice manual could be produced.  Best Practice management manual
Fireweed	!	The National program is now complete. Incidental opportunities may emerge for biological control and other treatments. The goals from the National strategy remain relevant; the States and territories need to maintain their own programs and ensure that they are applied to regions and localities.  Ongoing efforts to extend clear advice to landholders could still make a difference to the presence and extent of this widespread weed.
Gamba grass	!	No Comments provided – further investigation required
Hymenachne	✓	No relevant comments provided – further investigation required.
Madeira vine	!	1. Integrated control techniques research needs to be undertaken, to enable 2. A national best practice manual/guide could be produced.
Opuntoid cacti	✓	Biological control agent research still for SOME widely established opuntoid species currently without known effective agents *** requires clarification

		<p>Develop additional control options (including integration strategies, hydrological manipulation and effective management strategies in varied habitats. A national Management Manual has not been developed, however some work has progressed in assessing currently available best practice (DEDJTR and see Murray Darling Basin Aquatic Weeds website sagittaria page</p>
Sagittaria	!	<p>Many actions from the National Sagittaria Strategy remain incomplete, however most could be achieved in a joint manner (e.g. coordinated together) with outstanding actions from other 2012 WoNS strategies. For example: investigating the use of aerial detection technology for mapping and management (note work by NBC in this area); investigate use of smartphone data collection and citizen science initiatives; establishing criteria for feasibility of eradication; produce national management maps with nationally relevant actions; collating and maintaining central database and developing national weed info and mapping systems (e.g. ALA); maintaining national networks to encourage jurisdictional uptake of national WONS actions in S/T regional and local plans; communication planning and delivery including national awareness and management initiatives; and developing priority research plan. While these were not completed under the Sagittaria strategy, they could be integrated into a 'whole of WoNS' strategy and done holistically w/the other species.</p>
Silverleaf nightshade	!	<p>Three of the key actions stand out to be addressed: 3.1.1. Collect state and regional SLN distribution data and collate into a national database 3.2.1. Draft a national communication plan to guide information dissemination 2.3.1. Identify opportunities for progress towards biological control.</p>
Water hyacinth	✓	<ul style="list-style-type: none"> <li>- Further communication and awareness on the availability of the best practice modules is needed,</li> <li>- Investigate additional biological control options [Yet to confirm feasibility/need for this – is this possible or are all avenues explored/exhausted?]</li> <li>- Increased awareness within aquarium groups and within Peri Urban areas to try and prevent the spread of plants.</li> </ul>

## Legend

	Rankings of assessment categories in individual WoNS assessments (links to table below)
✓	<p>Evidence exists that national coordination has achieved key actions identified in the national strategy for the species Actions in this category have been complete/ have achieved outcomes</p>
!	<p>Continued national coordination of actions for discrete activities could enable land managers to more effectively manage the weeds and lead to no national coordination being required.</p>

