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19 JUL 2006

Dr John Williams
Commissioner
Natural Resources Commission
Level 10, 15 Castlereagh St
SYDNEY NSW 2000

Dear Dr Williams

In light of the recent correspondence by Dr Denis Saunders, Chair of the Invasive Native Scrub (INS) Review Group, dated 4 July, I would like to formally request that the Natural Resources Commission 'road test' the recommendations contained within the draft report as soon as can be arranged. I feel that if the draft report can be trialled in parallel to its finalisation it will greatly enhance the quality of the final recommendations.

I am aware that the final report will not be available until after 4 August and that it will contain the findings of the trial period. Once the final report has been received the Natural Resources Commission are requested to present to myself and the Minister for the Environment and Conservation its comments on the recommendations contained within the INS Review Group report as soon as possible, but not after 30 days from receiving the report.

I thank you for your assistance in this matter. As the report is of great significance to both landholders and the wider community it is extremely important that it be processed as urgently as possible.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ian Macdonald'.

IAN MACDONALD MLC

**Review of the Invasive Native Scrub Assessment
Methodology and Decision Support Tool of the
Property Vegetation Plan Developer under the
*Native Vegetation Act 2003***

4 August 2006

Saunders, D., Shepherd, R., Kneipp, K., Norman, P., Raine, C., Green, D., Briggs, S.,
Howling, G. and Ferraro, T.

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Glossary

Assessment Methodology: See EOAM below.

Derived vegetation community: Derived communities are communities that have changed to a secondary or derived community as a consequence of management practices following European settlement eg. grassland or open woodland has become dense shrubland or forest, or a woodland or a shrubland has become a grassland – due to factors such as reduced fire, removal of trees, livestock grazing, or occurrence (or absence) of a range of different disturbances. Many Invasive Native Scrub (INS) communities, particularly native woody shrub communities of western NSW are derived vegetation communities.

Determining whether INS is a derived community requires informed judgement at the site. Some of the features to consider when making this judgement are: presence or absence of mature plants, floristic and structural composition of the vegetation (in comparison with similar vegetation and similar sites), local knowledge, historical records, patterns of surrounding vegetation, landscape position, soil type, and land management practices. Vegetation communities with both mature trees and young trees of the same species are generally not derived communities.

EOAM (aka Assessment Methodology): The Native Vegetation Regulation 2005 Environmental Outcomes Assessment Methodology. Prescriptions contained within the EOAM are Regulations and are legally binding.

Erosion hazard: The susceptibility of a parcel of land to the prevailing agents of erosion. It is dependent on a combination of climate, landform, soil, land use and land management factors (Houghton & Charman 1986).

Erosion risk (aka erosion potential): The intrinsic susceptibility of a parcel of land to the prevailing agents of erosion. It is dependent on a combination of climate, landform and soil factors.

Determination of erosion risk differs from the determination of *erosion hazard* in that land management factors are ignored. Thus, the relative difference between various parcels of land is less susceptible to change due to technological improvements in land management practices (Houghton & Charman 1986).

Filter questions: A number of landscape features whose presence limit the use of certain treatment options are identified through ‘filter questions’. The identification of the different limiting factors within the treatment areas ensures that treatment options are appropriate for the landscape.

Individual plant treatment: See Spot treatment below.

INS Species Database: Table 7.1 of the Native Vegetation Regulation 2005 Environmental Outcomes Assessment Methodology that contains the list of plant species that meet the criteria to be classed as invasive native species.

Invasive Native Scrub (INS) Species are defined as;

1. a species that invades plant communities where it has not been known to occur previously OR a species that regenerates densely following natural or artificial disturbance,
and
2. the invasion and/or dense regeneration of the species results in change of structure and/or composition of a vegetation community,

and

3. the species is within its natural geographic range or distribution.

Note that INS species have to be acting invasively as defined in the EOAM as well as be listed INS species in order to be managed in the INS Tool.

INS Tool: The tool of the PVP Developer that assesses clearing of INS as part of a Property Vegetation Plan.

Operational Manual: The Operational Manual for the PVP Developer Invasive Native Scrub Tool. It is a supporting document for the INS tool, providing advice and operating guidelines for assessors. The Operational Manual is not a legal instrument.

Non-target species (aka non-INS): Plant species that are not listed as INS in Table 7.1 are non-target species. Limits on the amount of non-target species permitted to be cleared as an incidental consequence of INS management are prescribed within the EOAM and INS tool.

Paddock scale treatment: Clearing of all plants of INS species over an area such as a paddock (by mechanical means such as dozing, chaining or rolling).

Spot treatment (aka individual plant treatment): Selective clearing of individual plants of INS species (generally using manual techniques such as targetted herbicide application).

Zone: Area of INS with particular characteristics that affect the treatment options allowed.

Executive Summary

The INS Tool of the PVP Developer was developed between January and June 2005. Due to the short timeframe in which the tool was developed, the INS Working Group recommended that it be reviewed within 3 months of the PVP Developer becoming operational (which occurred in December 2005).

A review of the INS Tool was undertaken by the INS Review Group between March and June 2006.

The Terms of Reference for this Review were to consider:

1. Issues arising during the first 3 months of operation of the PVP Developer Invasive Native Scrub Tool (including issues raised via the 1800 number and the PVP Service Centre and other sources);
2. The Invasive Native Scrub Species Database (Table 7.1 Environmental Outcome Assessment Methodology) to advise on additions or removal of species from the list, review stem densities and size classes, and to amend other data;
3. The Invasive Native Scrub Tool decision criteria as deemed appropriate;
4. Science underpinning the INS tool and advise on further Invasive Native Scrub knowledge creation and data improvement; and
5. Other relevant issues identified during the review or directed to the Invasive Native Scrub Working Group.

The review included consultation with key stakeholders, particularly CMAs, landholders and environmental groups. Issues highlighted by the stakeholders through written submissions and during meetings were documented (see Supporting Document) and considered in the Review. Appendix 1 contains the full list of recommendations from the review grouped by the nature of action required.

The key recommendations from the Review are that:

1. Species nominated to the review for listing as INS species by CMAs, and assessed as meeting the requirements for listing as Invasive Native Scrub, be added to the INS Species Database (Table 1 of Appendix 5).
2. A transparent process for future amendments to the INS Species Database be adopted. This process is to require that all nominations for listing of INS species: come from CMAs; be supported with documentation addressing the criteria for listing as Invasive Native Scrub species; be reviewed by an impartial group; and, be updated publicly via an Internet website.
3. Diameter thresholds (dbh) for retention of large INS trees be amended (Table 3 of Appendix 2) and that CMAs be able to alter diameter thresholds for retained trees by +/- 5 cm using judgement.
4. The requirements for retention of small stems of INS be amended for paddock scale treatments (Table 1 of Appendix 5); the requirement to retain small stems be removed for *Callitris* spp; the retention figures for small stems not be cumulative; and the retention of multiple species for individual plant treatment be amended and the retention requirements reflect the species and proportions that are present in the vegetation community.
5. Retention requirements be amended as follows for paddock scale treatments:
 - For shrubs and cypress species - no retention of stems below the minimum dbh for retention AND 20% retention of INS across the property;

- For tree species - retention of 10 ha per 100 ha of INS AND 20% retention of INS across the property AND the larger trees, OR, retention of 20 stems per ha AND 20% INS across the property AND the larger trees.
- and for individual plant treatments:
- For shrubs – no retention of stems below the minimum dbh for retention AND 20% INS across the property;
 - For cypress species and other trees – retention of 20 stems per ha AND 20% of INS across the property AND the larger trees.
6. Within paddock scale treatments, landholders be provided with the choice of retaining clumps of INS totalling at least 10 ha within each 100 ha treatment area in spatial arrangements that mimic natural vegetation patterns, OR retaining stems in each ha throughout the treated area.
 7. Mapping requirements of INS be simplified for assessors mapping riparian areas and other limiting landscape features.
 8. Restrictions on the use of exotic species be amended to permit the introduction of lucerne when clearing plants at paddock scale with temporary groundcover and soil disturbance and clearing plants at paddock scale with longer-term disturbance to soil and groundcover.
 9. Cropping be defined for the purposes of the tool by the act of cultivation, and the number of rotations permitted when clearing plants at paddock scale with longer-term disturbance to soil and groundcover be amended to 3 in 15 years.
 10. CMAs be authorised to amend the criteria for determining whether additional areas can be treated using paddock scale methods (50% groundcover and 75% native species) upward in line with their Catchment Action Plan.
 11. This report be released as a public document, the recommendations from this review be implemented as soon as possible, and Chapter 7 of the EOAM be revised to expedite implementation of the recommendations.

This report is submitted to the Ministerial Review Committee for Implementation of Native Vegetation Reforms for their consideration, evaluation, and referral to the Natural Resources Commission and Directors-General of the Department of Natural Resources and the Department of Environment and Conservation for implementation.

The current MOU signed by the Directors-General of the above agencies prescribes the following processes for changing the EOAM and the databases in the EOAM:

Changes to the EOAM

Clause 25 of the *Native Vegetation Regulation 2005* sets out the procedure for amending the EOAM:

- 1) the Minister is to seek the advice of the NRC about a proposed amendment before making a decision about the proposed amendment;
- 2) the Minister must allow the NRC not less than 30 days in which to give its advice;
- 3) the NRC is to provide its advice as formal recommendations to the Minister;
- 4) the advice of the NRC is to be made public within a reasonable time after it is provided to the Minister and no later than the date of publication in the Gazette of the amendment;
- 5) the Minister is not to make an amendment that relates to the assessment of biodiversity without the concurrence of the Minister for the Environment and the Minister for Primary Industries;
- 6) an amendment is to be published in the Gazette; and

- 7) an amendment does not take effect until the definition of EOAM in clause 24 is amended to give effect to the amendment.

The NRC may propose amendments to the EOAM to the Minister.

Changes to databases within the EOAM

Chapter Section 2.4.2 of the EOAM explains the procedure for changing databases within the EOAM:

“Prior to updating the databases the Director General of the Department responsible for that database must consult the Natural Resources Commission, the Catchment Management Authorities and any other public authorities, bodies or persons that are, in the opinion of the Director General, likely to be affected by the proposal. Changes to the databases must be published on the internet.”

In addition, Chapter Sections 5.2.3 and 5.2.4 provide that the Minister for the Environment must consult with the Minister for Natural Resources prior to any changes being made to certain databases.

The following databases are identified in the EOAM under Chapter Section 2.4.2:

- threatened species profiles database;
- vegetation benchmarks database;
- overcleared landscapes database;
- overcleared vegetation types database;
- major rivers database;
- important wetlands database;
- soil subregions database; and
- invasive native scrub species database.

1.0 Introduction

The Invasive Native Scrub (INS) Tool in the PVP Developer

Under the *Native Vegetation Act 2003*, native vegetation can be cleared in accordance with a Property Vegetation Plan if the clearing will improve or maintain environmental outcomes. The Property Vegetation Plan Developer (PVP Developer) was developed as the decision support tool to assess Property Vegetation Plans. The PVP Developer initially comprised five tools to assess environmental outcomes for Salinity, Soil, Water Quality, Biodiversity and Threatened Species. These tools were not designed for assessing applications to clear invasive native scrub.

In December 2004 the Science and Information Board (SIB) of Department of Natural Resources (DNR) (then Department of Infrastructure, Planning and Natural Resources) released a discussion paper *Clearing/thinning of Native Vegetation Known as Invasive Native Scrub under the Native Vegetation Act 2003* to seek submissions from stakeholders on invasive native scrub and its management. The release of this document was followed by a series of meetings throughout NSW in January 2005 to discuss INS and to seek submissions to the discussion paper. The need for a PVP tool to assess management of Invasive Native Scrub became strongly apparent at this time.

INS Working Group

In late January 2005, the INS Working Group was set up to develop a tool for the PVP Developer to assess invasive native scrub. The members of the INS Working Group were:

Dr Denis Saunders, Chair and member of the DNR Science and Information Board;

Dr Sue Briggs, NSW Department of Environment and Conservation;

Tim Ferraro, General Manager Central West Catchment Management Authority;

Daryl Green, General Manager Western Catchment Management Authority;

Gary Howling, NSW Department of Environment and Conservation (except April 2005 – September 2005)

Karen Kneipp, Western Catchment Management Authority;

Daryl Lawrence, Department of Infrastructure Planning and Natural Resources (until May 2005).

Phillip Norman, Department of Infrastructure Planning and Natural Resources;

Carolyn Raine, Central West Catchment Management Authority; and

Kevin Roberts, NSW Department of Environment and Conservation (from April 2005 – September 2005).

Grant Robinson (Department of Infrastructure, Planning and Natural Resources) provided software support to the group.

The members of the group were appointed for their expertise and did not represent the organisations to which they belonged. At times, observers from the conservation groups (Madeline Hourihan, Nature Conservation Council) and the NSW Farmers Association (Brian Tomalin) attended meetings of the Working Group.

The Working Group was charged with developing an INS tool by the end of May 2005; the deadline was later extended to late July 2005. By the end of July 2005: (i) the INS Tool was operational within the PVP Developer and available to CMAs for trial; (ii) the INS chapter for the Environmental Outcomes and Assessment Methodology (EOAM) had been drafted; (iii)

the Operational Manual for the INS Tool had been prepared; and (iv) a report collating the submissions to the SIB discussion paper was produced for publication and to be made available to those who had made submissions. This document was finally released on 15 June 2006 and is available on the web at:

<http://www.nativevegetation.nsw.gov.au/methodology/index.shtml>. The tool was made operational in December 2005 by activation of the PVP Developer.

When the INS Tool and its associated documentation were incorporated into the PVP Developer and Operational Manual, the INS Working Group raised the following issues relating to the INS Tool which would require review soon after it became operational:

- adding or removing species from the list of INS on Table 7.1 of the EOAM;
- reviewing INS stem densities and size classes where retentions were specified; and
- amend other data or decision criteria after experience was gained with use of the INS Tool.

The Working Group recommended to the Directors-General of DNR and DEC that the Tool and its application should be reviewed no later than 3 months after it became operational. In addition, the Working Group recommended that a clearly prescribed process for carrying out any amendments to the Tool and associated documentation from the proposed or subsequent reviews was required. The review process must be transparent and clearly understood by all stakeholders.

INS Review: Terms of Reference

The *Native Vegetation Act 2003* was “switched on” in early December 2005 and the PVP Developer became operational at this time. It soon became apparent that matters that limited the efficiency and effectiveness of the INS Tool needed to be addressed as soon as possible. As a result, in early March 2006 a group was established by the Director General of DNR to review the INS Tool and make recommendations for its refinement.

This Review Group comprised:

Dr Denis Saunders, Chair, DNR SIB;
Dr Sue Briggs, NSW DEC;
Tim Ferraro, General Manager Central West CMA;
Daryl Green, General Manager Western CMA;
Gary Howling, NSW DEC;
Karen Kneipp, Western CMA;
Phillip Norman, NSW DNR;
Carolyn Raine, Central West CMA;
Renee Shepherd, Executive Officer, NSW DNR.

The INS Review Group (in this report referred to as the Review Group) was directed to consider:

1. Issues arising during the first 3 months of operation of the PVP Developer Invasive Native Scrub Tool (including issues raised via the 1800 number, the PVP Service Centre, and other sources);
2. The Invasive Native Scrub Database (Table 7.1 - Environmental Outcome Assessment Methodology) to advise on additions or removal of species from the list, review stem densities and size classes of retained species, and to amend other data;
3. The Invasive Native Scrub Tool decision criteria as deemed appropriate;

4. Science underpinning and advise on further Invasive Native Scrub knowledge creation and data improvement; and
5. Other relevant issues identified during the review or directed to the Invasive Native Scrub Working Group.

The Review Group was required to seek input from:

- Catchment Management Authorities;
- Department of Natural Resources, Department of Environment and Conservation, Department of Primary Industries (DPI);
- Natural Resources Commission (and Ministerial Review Committee for Implementation of Native Vegetation Reforms);
- NSW Farmers Association; and
- Total Environment Centre (on behalf of conservation interests).

The final report and recommendations from the review were required by the Ministerial Review Committee for Implementation of Native Vegetation Reforms by 4 August 2006.

Review process

The initial meeting of the Review Group was held in Cowra on 22 March 2006. This meeting was attended by all members of the group as well as Dr Dave Rissik from the Natural Resources Commission (NRC). Dr Rissik was assigned by the NRC to liaise between the NRC and the Review Group during the review period. At this meeting the group made a preliminary assessment of the issues that required addressing and planned the consultation process for the review (in accordance with directions given to the group). Minutes of this meeting (and all subsequent meetings of the group) are included in a Supporting Document to this report. A telephone conference was held by the Review Group on 26 April 2006 in order to finalise consultations (see Supporting Document).

Letters of invitation for submissions to the review process were sent to Chairs and General Managers of all CMAs, the DGs of DNR, DEC and DPI, the NRC, NSW Farmers Association and the Total Environment Centre (TEC). The TEC was asked to liaise with associated stakeholders and seek their input to the review. A series of meetings were arranged throughout the State.

The Review Group met with members of:

- Border Rivers-Gwydir CMA, Namoi CMA and Northern Rivers CMA in Armidale on 28 April 2006 (see Supporting Document);
- Central West CMA, Lachlan CMA and Western CMA in Dubbo on 11 May 2006 (see Supporting Document); and
- Lower Darling CMA in Dubbo on 12 May 2006 (see Supporting Document).

The Review Group met with members of NSW Farmers Association in Sydney on 25 May 2006. At the meeting with NSW Farmers Association were members of the Cobar Vegetation Management Committee, the Lower Pian/Pagan Creek Conservation Group, the Regional Community Survival Group, and the Southern Mallee Planning Committee. The meeting convened by NSW Farmers Association followed a meeting specifically with members of the Cobar Vegetation Management Committee (combined minutes from these two meetings are in the Supporting Document). After the meetings a set of notes summarizing the issues raised was prepared and circulated to all participants and further submissions were

sought. The Review Group asked that any nominations for INS species be made through relevant CMAs.

The Review Group met with members of TEC, World Wildlife Fund (WWF), Nature Conservation Council and the Wilderness Society in Sydney on 14 June 2006. These groups provided a joint written submission on 23 June 2006 to the Review Group.

At each of these meetings the Review Group invited feedback on the INS Tool and its operation. After each meeting notes summarizing the issues raised were prepared and circulated to all participants and further submissions on the issues were sought and received (copies of these and notes from other meetings convened by the Review Group are contained in the Supporting Document).

The Chair of the Review Group briefed the MRC in Sydney on 14 June 2006.

The Review Group also took part in the INS Forum held in Broken Hill on 15 June 2006. This was not organised by the Review Group but the group was invited to participate. The group used that opportunity to invite further submissions to the review (notes of the meeting are included in the Supporting Document).

Economic and social considerations not addressed

Economic and social issues were not addressed by the Review Group. This is because social and economic issues are not included in PVP assessment and they were not included in the Terms of Reference of the review.

Principles on which the INS Tool is based

The principles upon which the INS Tool was developed are as follows:

Principle 1: Invasive Native Scrub is a real problem

There has been a continuing debate about the nature of Australia's vegetation prior to European settlement. Much of the debate has been about the extent to which the landscape was open grassy woodland or dominated by dense woodland and shrubland. What is not controversial is that the landscape was a mixture of both vegetation states and that changes in land management over time, from Aboriginal to European practices, have resulted in a shift in the mix of the vegetation states. The need to restore and maintain a mosaic of landscape states is a key principle underpinning the INS Tool.

Principle 2: The INS Tool is a tool for vegetation management.

The INS Tool is not a vehicle for conversion of native vegetation to non-native vegetation. Such a change in land use is assessed using the other PVP Developer tools. Application of the prescriptions within the INS Tool is permitted on the basis that the outcome is restoration of native vegetation ie. managing vegetation dominated by invasive or thickening trees or shrubs to create open native woodland or native grassland.

Principle 3: The result of INS management must be to improve or maintain environmental outcomes.

INS is native vegetation by definition and the clearing of native vegetation is governed by the *Native Vegetation Act 2003*. This Act requires that clearing will not be approved unless it improves or maintains environmental outcomes as assessed using the EOAM.

Principle 4: The INS Tool must be underpinned by the best available knowledge.

The development of the INS Tool has drawn on the best available science. It has also drawn on local knowledge, including written submissions and input at public meetings.

Principle 5: The INS Tool is based on a risk-weighted approach.

The management actions in the INS Tool are encouraged by their potential for environmental benefit and constrained by their potential for environmental damage. Management actions with the highest risk are the most constrained.

Principle 6: Management actions permitted through the INS Tool must be implementable.

Recognising that INS is a real problem for land management, it is in the State's best interests for INS to be managed. Although the *Native Vegetation Act 2003* does not permit socio-economic issues to be taken into account in making decisions through the PVP Developer, the INS Tool management prescriptions must be practical and cost-effective.

2.0 Issues Identified

The main issues identified by feedback during the stakeholder meetings and by the written submissions received by the INS Review Group, fell into the following categories: identification and listing of INS species; density and spatial pattern of retained stems; mapping INS; management options; filter questions; operational aspects including training of PVP officers; and implementation of recommendations from the review.

2.1 INS Identification and Species Listing

Identifying INS

Feedback from CMAs indicated that assessing officers were experiencing difficulty in making a determination about whether a species was behaving invasively. It was suggested that provision of additional guidelines and photographs would assist CMA officers to identify invasive native scrub better. Such material would also help ensure consistency between different assessing officers and different CMAs.

Recommendation 2.1.1

Supporting material, including photographic examples and a list of characteristics for CMA officers to consider in making a determination of whether a species is acting invasively, be provided in the Operational Manual to clarify what constitutes INS.

Identification of derived communities

The INS assessment methodology currently requires retention of small plants of INS species that are trees, except where those species did not previously occur as part of the vegetation community being assessed, ie. where the community is a derived community. The CMA assessor is required to decide whether the vegetation is a community where the species did not previously occur. Some CMA officers reported experiencing difficulty in making this determination.

Recommendation 2.1.2

Additional information and guidelines on how to identify derived communities and whether an INS species previously occurred in the vegetation community being assessed be provided in the Operational Manual.

INS Species Database

The INS Species Database in the EOAM contains a list of INS species by CMA and (in some cases) biogeographic region. CMAs were invited to make nominations of INS species to be added to or removed from that list. Nominations were received from a number of CMAs. Nominations were reviewed by a sub-committee of the Review Group against the INS definition criteria using available information and expert advice. Those that met the criteria (Table 1 of Appendix 2) are proposed for addition to the INS Species Database, and those that did not (Table 2 of Appendix 2) were not recommended for addition to the INS Species Database.

Recommendation 2.1.3

Amend the INS Species Database to include the recommended species as listed in Table 1 of Appendix 2.

Future amendments to the INS Species Database

Procedures for changing the EOAM and the databases in the EOAM are outlined in the Native Vegetation Regulations 2005 and EOAM and in the MOU between DNR, DEC, DPI and NRC and relating to the 'protocol for changing the PVP Developer and EOAM'. Because of the range of issues and circumstances that are required to be addressed these procedures are quite general in nature. It is anticipated that the INS Species Database (in particular the list of species) will require amendment (at least initially). A more streamlined process for amending the INS Species Database in the PVP Developer is required.

Recommendation 2.1.4

In relation to the operational procedure for amendments to the INS Species Database, the following process should be adopted:

- Nominations, accompanied by relevant technical information and using the proforma in Appendix 3 are lodged by CMAs with the NRC;
- Nominations are assessed by an impartial review group comprising independent ecological expertise which could include members of the INS Review Group, convened by the NRC;
- Nominations be incorporated into the INS Species Database by DNR on recommendation from the impartial review group and following consultation with other appropriate persons and organisations;
- All information that is received by the impartial review group from the CMAs should be stored in an adequate and traceable manner by the managing agency; and
- Any changes to the INS Species Database be made publicly available on the internet.

2.2 Retentions

Retention of individual large trees

Large mature trees have particular environmental values – they are important for wildlife habitat (eg through the development of hollows), they are important sources for other resources (eg seed, pollen and nectar), and they are slow to be replaced once lost (eg Gibbons and Lindenmayer 2002). The INS Tool recognises the special values of large trees by specifying maximum stem diameters (dbh) above which removal of plants of INS species is not permitted. The dbh threshold was initially set at 20 cm for all tree species based on recommendations from the previous Regional Vegetation Management Committees.

The growth rate of trees varies considerably with climate and species. A mature tree in one part of the state can have the same dbh as a juvenile tree elsewhere. Therefore, it is appropriate that the threshold dbh for retention of large trees vary between species, CMAs, and sub-regions. Accordingly, CMAs were requested to provide feedback to the review on the maximum size (as measured by the diameter in cms at breast height [dbh]) of each INS species listed in their area. Western CMA nominated changes to the dbh for two species and these are included in the recommended changes to the INS Species Database (Table 3 of Appendix 2). Because of the limited nominations at this stage it is likely that CMAs will require flexibility to make changes in the future. Large changes have potentially major consequences and will require amendments to the INS Species Database (in which case they will need to be considered by the NRC appointed review panel). Minor changes to meet local variations in soil and climate and species characteristics have relatively limited potential impact and CMA officers should be permitted to use their judgement to vary maximum stem diameters for retention by +/- 5 cm.

A further issue raised was confusion about the application of stem diameter thresholds to shrub species. Stem diameter thresholds were never intended to apply to shrubs, and the confusion was a consequence of the way the INS Species Database was formatted.

Recommendation 2.2.1

Amend the stem diameter thresholds within the INS Species Database for the species listed in Table 3 of Appendix 2. Future such variations will require consideration through the process proposed in Recommendation 2.1.4.

Recommendation 2.2.2

Amend the EOAM to allow CMA officers to vary the maximum dbh to be cleared of individual INS species by +/- 5 cm, using judgement. Guidance on the application of this judgement to be provided in the Operational Manual, including a proforma to document the justification for any such variation where the CMA officer wishes to do this.

Recommendation 2.2.3

Remove the maximum dbh to be cleared requirement for shrubs in the INS Species database.

Retention of small plants

In communities that are not derived communities, it is important to retain some small trees, including recruits to replace large trees as they decline and die to ensure that the species persists. The retention requirements are to meet improve or maintain requirements so that recruitment of INS species continues in places where the species occur naturally.

The EOAM currently requires that 20 small stems (ie less than the threshold maximum dbh to be cleared) of each INS species are retained per hectare. The size class distributions prescribed to be retained are generally the same for all species in all areas throughout the State except where the INS are part of a derived community, in which case no small plants are required to be retained.

The review considered four issues with respect to the retention of small plants:

- the number (or density) of plants to be retained;
- the size of those plants;
- the spatial arrangement of those plants; and
- the species mix of plants to be retained.

The following comments were received:

- the retained stem density prescriptions were too inflexible and could be excessive where multiple INS species are present and numbers are additive,
- the prescriptions were difficult to interpret and apply, particularly where plants were unevenly distributed between size classes,
- current requirements to retain small stems scattered across the area for all INS treatments is undesirable ecologically.

The stated aim of the Tool is “to create a mosaic of open and densely wooded areas”. Requiring that stems be retained per hectare for all treatments does not achieve this. Smaller stems should be retained preferentially in clumps to create an irregular mosaic and to maintain viable units of vegetation (rather than scattered individuals). And, it is ecologically desirable to favour eucalypts over Cypress Pine species (the latter species has increased substantially relative to the former over the past few centuries [Lunt et al. 2006]).

Recommendation 2.2.4

Specify in the EOAM that the retention figures for smaller stems are not cumulative. When using individual plant treatments, and more than one species with a stem retention requirement is present, stems are to be retained at the maximum number specified for the highest retention species. These stems are to be retained in a range of size classes and INS species that reflect the proportions present in the vegetation community. Species with like retention requirements to be grouped by CMA and IBRA regions in the INS Species Database.

Recommendation 2.2.5

The INS Species Database be amended to remove the requirement to retain smaller stems for Black and White Cypress Pine for paddock-scale treatments.

Recommendation 2.2.6

The EOAM, Operational Manual, and PVP agreement be amended to allow the retention of small plants unevenly (ie in clumps) when using paddock scale treatments. Clumps are to be as follows:

- 10 ha of native vegetation must be retained per 100 ha for INS listed as requiring smaller stem retention in the INS Species Database within each 500 ha parcel treated,
- wherever possible clumps of small stems should be retained around or adjoining retained larger trees.

Note: clumps retained according to these requirements are additional to the 20% retention of native vegetation in each 500 ha area specified elsewhere.

Recommendation 2.2.7

The EOAM, Operational Manual and INS Tool be amended to allow and specify the following:

A. Paddock scale treatments: If shrubs or cypress species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If the species being treated are not shrubs or cypress species (ie. they are trees), then 10 ha per 100 ha of INS treated is required to be retained, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5, OR 20 stems per ha are required to be retained in each ha in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

B. Individual plant treatments: If shrub species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If cypress or other tree species are being treated, then 20 stems per ha are required to be retained in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

Untreated area retentions

Because INS is native and has always been part of the landscape the INS Tool prescribes that a minimum of 20% of the INS extent must be retained untreated. A number of submissions to the review raised questions about the spatial arrangement of the retained area and in particular, how it related to the requirement to retain clumps and buffers when using paddock scale treatment.

In recognition of the importance of habitat connectivity for conservation of native plants and animals and for ecological processes, the INS Tool currently prescribes that paddock scale treatment be permitted in blocks of maximum area of 500 ha of which 100 ha (or 20%) of native vegetation is to be retained as perimeter buffers, clumps, or a combination of both.

For ecological reasons a landscape with irregular vegetation boundaries that reflect landscape elements (eg changes in slope, elevation or soil) and that contain patches of varying sizes and shapes is desirable. For this reason, 20% untreated INS should be retained in a pattern that mimics natural vegetation patterns rather than in a single block. Note that for some treatments, additional requirements may exist for retention of small clumps (eg. 10 ha per 100 ha) or scattered individuals for recruitment purposes.

Recommendation 2.2.8

The Operational Manual be amended to indicate that when paddock scale treatments (d-f) are being used, the 20% retention of untreated INS should be spread across each 500 ha area of INS in a pattern that mimics natural vegetation patterns rather than in a single block.

2.3 INS Tool Mapping

Mapping INS extent

The extent of INS on a property needs to be mapped to determine maximum areas that can be treated with different management options. Zones of INS also have to be mapped where the INS occurs on different slopes or soil types that affect the treatments allowed. Some CMAs reported difficulties in mapping the INS extent due to limited accessibility for field assessment and difficulty in identifying INS via remote sensing imagery where they are understorey species. Concerns were expressed about mapping the boundaries of environmental features used in filter questions (eg areas where INS represented less than 50% of the canopy). This issue can be addressed by assessing officers using a risk management approach. CMA officers should map INS extent and zones of INS with a higher emphasis on detailed field verification where higher impact management options are proposed.

Recommendation 2.3.1

Review and amend guidelines in the Operational Manual to encourage a risk management approach to mapping INS using higher levels of field verification and mapping where higher impact treatment options are proposed.

Mapping riparian buffers

Due to technical difficulties and inadequacies of the PVP Mapper along with the nature of small streams in the western part of the State it is often difficult to map the riparian buffer for small streams on the PVP map. The streams cannot be seen on SPOT satellite imagery. A condition stating treatment options that cannot be used in the specified buffer of a stream or tributary is more reliable than attempting to map riparian areas that cannot be detected on satellite imagery. PVP officers should map major streams and insert a condition in the PVP that areas within the riparian buffer distance for small streams can only be treated with individual plant management options for INS.

Recommendation 2.3.2

Explain within the Operational Manual how judgement can be used in mapping riparian areas and add a condition to the PVP agreement that areas within the buffer distance for small streams can only be treated with individual plant management options for INS.

Mapping isolated features

Mapping features (restricted areas of different vegetation, or restricted rocky outcrops) that activate the filter questions can be very difficult. PVP officers need to exercise judgement to decide which features must be mapped. This decision will be influenced by which management options the applicant wishes to carry out. For example, if the landholder only wishes to burn or spot treat, then features need not be mapped as the management options are not constrained. Mapping should consider the extent and distribution of the INS or features that affect the INS treatment options. For example, if small areas of INS or landscape features that affect INS treatment options are scattered over a large zone and only individual plants are being treated then the map of INS can have a lower resolution than if a paddock scale treatment is being used. This can be determined by assessing officers.

Recommendation 2.3.3

Amend the INS Tool and PVP Agreement to allow limiting features and small patches of INS to be included in a zone where it is not practical to be mapped out of the zone, and then incorporate a condition in the PVP agreement that states what methods can be applied on the limiting feature area.

Recommendation 2.3.4

Review and amend the Operational Manual to explain how judgement can be used in mapping a limiting feature (such as rock outcrops) where it is restricted and isolated and its presence does not affect the management option proposed. Amend the Operational Manual to explain how judgement can be used to indicate small patches of INS in a larger zone (rather than precisely mapping each small patch of INS).

Recommendation 2.3.5

Amend the Operational Manual and the INS Tool and advise assessors to seek advice from applicants on the nature of management actions they propose at an early stage in the process in order to streamline the mapping and assessment process.

Mapping of bioregions

Mapping of bioregional boundaries is very coarse and sometimes not easily interpretable on the ground. Some PVP officers experience difficulties where the bioregional boundary appeared to be mapped to a geographic feature (eg a river) and the soils, vegetation, and other features characteristic of that bioregion extended beyond that feature.

Recommendation 2.3.6

Include a clarification within the Operational Manual that the description of the bioregion always takes precedence, if there is inconsistency between the mapping and description of a bioregion.

Lack of linkage between PVP Mapper and the INS Tool

The time it takes to produce a PVP, including an INS PVP can be unacceptably long due to the problems with the PVP Mapper and because the Mapper is not linked with the INS Tool. The lack of linkage between the Mapper and the INS Tool makes the PVP unnecessarily time consuming. The INS Tool needs to be linked to the Mapper to allow information to be shared between the two pieces of software, and for the PVP Agreement to be automatically generated.

Recommendation 2.3.7

Update and improve the PVP Mapper so that it links to the INS Tool and its outputs.

2.4 Management Options

Riparian areas

The INS Tool currently permits the management of INS in riparian areas (as defined by the Water Quality Tool of the EOAM) using burning and individual plant treatment with no ground disturbance. In recognition of the importance of riparian native vegetation for protection of water quality the INS Tool does not permit the use of individual plant treatment with ground disturbance or any paddock scale options in riparian areas.

Responses to the review indicated that there was general concurrence on the value of riparian vegetation and the need to protect it, but there remained a misconception that INS treatment was prohibited from riparian areas.

Recommendation 2.4.1

Incorporate Chapter 7, Clause 14 from the EOAM regarding the management of INS in riparian areas into the Operational Manual.

Recommendation 2.4.2

Provide information to CMAs and stakeholders about the burning and individual plant management options permitted by the INS Tool within riparian areas. This could be included in a general advisory note about management of native vegetation in riparian areas.

Non INS trees and shrubs

The INS Tool permits the use of paddock scale options to manage INS only where the INS species dominate within the tree and shrub canopy (ie represent more than 50% of the individuals). The wording in the Tool and the Operational Manual (a “double-negative”) is confusing and difficult to explain to landholders.

Recommendation 2.4.3

Reword information in the Operational Manual and PVP agreement to clarify the reference to “non-INS”.

Management of retention areas

Retention areas, where they are in excess of the 20% to be retained untreated (eg the 10 ha per 100 ha retained for recruitment) should be able to be managed by burning or individual plant treatment options where these are ecologically desirable.

Recommendation 2.4.4

Note in the EOAM that where the retained, untreated INS areas exceed 20% of the total extent then burning (where ecologically suitable) or individual (spot) treatment options may be applied.

Management of INS using burning

The value of fire as a tool for managing INS is well recognised (eg Perrings and Walker 1997, Burgess 1988, MacLeod and Ludwig 1991). Burning is the least restricted of the options available within the INS Tool, being permitted across 80% of the extent of INS on a property and restricted only by slope (to less than 18 degrees). Rather than imposing the restriction of 18 degrees it would be better for CMAs to follow procedures for fire management under the *Rural Fires Act 1997*. CMAs should be encouraged and assisted to develop and provide advisory literature on best practice in their area for landholders wishing to use fire for INS

control. Such literature should be based on Bushfire Management Plans under the *Rural Fires Act 1997* where these occur.

A Strategic Reserve-funded project is being implemented by DNR with the Western CMA focussed on developing an understanding of the factors that influence landholders' attitudes to fire, and using this understanding, along with field trials, to develop Best Management Practice (BMP) guidelines for the use of fire to manage invasive native scrub. Another project, the "Hotspots" project is a collaboration between the Nature Conservation Council of NSW, the New South Wales Rural Fire Service, New South Wales Department of Environment and Conservation, the Catchment Management Authorities and NSW Farmers Association. The project is being funded by the New South Wales Environmental Trust, which is working with landholders in coastal regions and the central west to develop local guidelines and fire management plans for ecological burning.

Recommendation 2.4.5

Revise the EOAM and INS Tool to remove the 18 degree slope constraint on use of burning to manage INS.

Recommendation 2.4.6

Investigate the role of Bushfire Management Plans under the *Rural Fires Act 1997* as guidelines and/or regulatory documents for burning INS.

Paddock scale management with no disturbance to groundcover (eg chaining or roping)

Inconsistencies between the EOAM and Operational Manual in wording about the use of chaining has created confusion in some instances.

Recommendation 2.4.7

Remove note to Management Option 4, note to (c) of not chaining in open areas in the Operational Manual.

Recommendation 2.4.8

Amend the Operational Manual to make it clearer that it is an advisory document only and the EOAM is the legal document.

Distinction between mechanical treatments

Some assessors and stakeholders expressed difficulty in determining which activities fitted within the definition of *temporary disturbance to groundcover* (used to describe bladeploughing) and which fitted *longer-term disturbance to groundcover* (used to describe cropping). Clarification is required about why the two mechanical treatments of bladeploughing and cultivation are in separate disturbance categories, and which category other types of mechanical treatment methods (eg use of a crocodile) should be assigned to. The allowed use of the treatment is related to its degree of disturbance to soil and vegetation, not to the equipment used.

Recommendation 2.4.9

Add notes and photographs to the Operational Manual and the INS Tool to better distinguish between the paddock scale treatment options of *temporary disturbance to groundcover* and *longer-term disturbance to groundcover* and to reinforce the descriptions of the level of soil and vegetation disturbance as a result of the different treatments. Make it clear that allowed use of the treatment is related to its degree of disturbance to soil and vegetation, not to the equipment used.

Introduction of exotic groundcover

The INS Tool permits the use of exotic annual plants only with paddock scale treatment of INS that has limited or short-term disturbance to groundcover. This to rapidly re-establish groundcover after treatment (to protect against erosion) and because of current limitations on availability of seed of native groundcover species. In addition to exotic annuals, lucerne (*Medicago sativa*) should be permitted for the two higher impact paddock scale treatments (temporary disturbance and longer-term disturbance). Lucerne does not persist in semi-arid and arid areas and does not become an environmental weed.

Recommendation 2.4.10

Amend the EOAM to allow lucerne to be planted for clearing plants at paddock scale with temporary groundcover and soil disturbance and for clearing plants at paddock scale with longer-term disturbance to soil and groundcover.

Cultivation and cropping

Three main issues were raised about the application of cropping as a treatment for INS. They were:

- how should cropping be defined;
- how many rotations should be permitted; and
- what is the appropriate standard by which a treated area is assessed as restored (and thus permitting an additional area of treatment).

As cultivation is the disturbance activity, cropping should be defined by the action of cultivation, rather than by harvesting as presently in the Tool. Such a change would bring the INS Tool into line with the *Western Lands Act 1901* which uses cultivation consents.

The INS Tool presently permits cropping in any one area for 2 years in 10. This was based on evidence that in western NSW native grasses can establish within 5 years of cultivation (Robson 1995, Nadolny 1999, P Weston pers.comm), depending on follow-up rainfall. Cropping 3 years in 15 is analogous to cropping 2 years in 10 years and the time period of 15 years is consistent with the life of a clearing PVP.

The INS Tool presently requires groundcover to reach 50% (dead and living material) and 75% of the 50% to be native live groundcover before another 20% of INS can be cultivated and cropped. Natural areas of groundcover differ across NSW. Rather than these fixed figures, it would be better to allow CMAs to set groundcover targets based on their Catchment Action Plans where the CMA groundcover figures are higher than the above figures. These figures should be the default if CMAs do not have groundcover targets in their Catchment Action Plans.

Recommendation 2.4.11

The EOAM be amended to refer to cropping as the act of cultivation rather than harvest in relation to the last treatment option.

Recommendation 2.4.12

The current 50%/75% groundcover percentages be retained, however the EOAM should be amended to permit variation to a higher percentage of the groundcover target by individual CMAs.

Recommendation 2.4.13

Standard guidelines be developed and distributed to PVP officers on how to assess the 50%/75% groundcover rule.

Recommendation 2.4.15

The method of clearing plants at paddock scale with longer-term disturbance to soil and groundcover be amended to allow for three crops in 15 years from the date of granting consent or approval of the PVP.

Pasture cropping

Pasture cropping is a relatively recent development in crop establishment where cereal crops are direct drilled into pastures with competition controlled using sub-lethal levels of herbicide.

There are presently no special provisions within the INS Tool for pasture cropping and there are questions about which of the management options it fits within. As with all methods of INS treatment, the decision regarding which disturbance category a particular treatment falls within is based on the level of soil disturbance that occurs and the amount of groundcover that is retained. There is currently a variety of methods that landholders believe fall within the pasture cropping technique. As a result, the disturbance level for each method should be assessed to determine which disturbance category it falls within, rather than assigning a generic category to the general activity of 'pasture cropping'.

Although pasture cropping is a lower disturbance activity than other forms of cropping, its potential role (if any) in INS treatment requires investigation.

Recommendation 2.4.16

Guidance to be provided in the Operational Manual to assist PVP officers with making the decision as to which paddock scale treatment category pasture cropping falls within, based on the level of soil disturbance that occurs and the amount of groundcover that is retained.

Recommendation 2.4.17

The feasibility of pasture cropping within areas of less than 500 mm per annum as a form of low intensity cropping following INS treatment needs to be investigated.

Combining management options

Past experience with successes and failures in INS management strongly supports the need to encourage the use of treatment methods in combination. The percentage limits can be difficult to interpret particularly when using multiple management options in combination. This is made more complex in the PVP Developer by not having the Mapper and INS Tool "live-linked". Lachlan CMA has developed a simple Excel calculator to address this issue and is prepared to make that available to other CMAs.

Recommendation 2.4.18

Guidelines, diagrams and other assistance be provided in the Operational Manual and attached to the PVP Agreement to assist PVP officers and applicants to interpret treatment option percentage limits.

2.5 Filter Questions

Threatened ecological communities

The INS Tool does not permit paddock scale management options to be used in Threatened Ecological Communities (TEC). In some circumstances INS has a negative impact on a TEC, and its removal would result in long-term benefits. An example is Coolibah-Black Box TEC where substantial areas have degraded groundcover due to extensive cover of Roly Poly.

"Low impact" paddock scale treatments to control understorey INS in a TEC can be ecologically desirable in certain circumstances. Examples are targeted use of herbicide applied using an infra-red sensor, or removing INS plants with a rake where impact on non-INS is limited. Due to possible ecological impacts, paddock scale treatment of INS in a TEC should be permitted on a case-by-case basis for specific cases where impacts are low. Further work will be required to define these circumstances. Amendment of the EOAM to permit such options across broader areas could be considered in the future if appropriate safeguards and need could be demonstrated.

Recommendation 2.5.1

Amend the EOAM to permit paddock-scale treatment with no ground disturbance (eg roping etc) where TEC condition is not high and impact of treatment low.

Soils

Three issues were raised in relation to the soils filter questions. They were:

- 1) inconsistency in terminology and definition in the terms "erosion risk"/"erosion hazard" between INS and the Land and Soil Capability (LSC) Tool;
- 2) prohibition of the use of any paddock scale treatment methods on stony/shallow soils; and
- 3) prohibition of the use of cropping in areas with soils less than 1metre in depth.

Erosion classes used within the INS Tool are to assess the potential risk for erosion of the soils, not to assess existing erosion hazard which is a combination of erosion risk and land management. This is to ensure that INS can be managed where this is required to reduce or prevent erosion. Table 2.1 outlines the three different classes of soil erosion potential that are used within the INS Tool.

Table 2.1. Soil erosion potential classes used in the INS Tool

Soil erosion potential	Soil texture and slope
Nil - Low	Sand, and Medium to Heavy Clays on less than 12% slopes. Loamy Sand, Clayey Sand, Sandy Loam, Sandy Clay Loam, Clay Loam and Light Clay on less than 6% slopes.
Medium	Sand, and Medium to Heavy Clays on greater than 12% slopes. Loamy Sand, Clayey Sand, Sandy Loam, Sandy Clay Loam, Clay Loam and Light Clay on 6%-12% slopes. Silty Loam, Loam and Silty Clay Loam on less than 3% slopes.
High - Very High - Extreme	Loamy Sand, Clayey Sand, Sandy Loam, Sandy Clay Loam, Clay Loam and Light Clay on greater than 12% slopes. Silty Loam, Loam and Silty Clay Loam on greater than 3% slopes.

The LSC Tool defines erosion as erosion hazard (ie, erosion risk plus land management) and assesses erosion as current erosion. This means that areas that are eroding because of land management or vegetation factors cannot be treated. The proposed redesign of the PVP Developer presents an opportunity to address between-Tool inconsistencies. In the meantime, information will be provided to clarify the distinction between erosion risk and erosion hazard.

Managing INS with paddock-scale treatments that do not disturb groundcover (such as chaining or roping) have similar disturbance as individual plant treatments where the only constraint relates to the stoniness of the soil (and the soil surface remains undisturbed), therefore management should be permitted on stony soils.

Recommendation 2.5.2

Provide additional wording in the Operational Manual and INS Tool to consistently refer to erosion risk (= potential) rather than erosion hazard (= erosion risk plus management).

Recommendation 2.5.3

Revise the Operational Manual and INS Tool to permit paddock-scale treatment with no ground disturbance (eg roping etc) in stony/shallow soils.

Skeletal/stony soils, dunefields or lunettes

Some assessors expressed difficulty in determining the existence of rocky soils, dunefields and lunettes (as used within the Filter Question) in the absence of guidelines or a definition.

The use of the term “stony” in the INS chapter of the EOAM is inconsistent with the tool and with other tools.

Recommendation 2.5.4

Provide guidelines and other explanatory information in the Operational Manual to assist assessors in identifying rocky soils, dunefields and lunettes.

Recommendation 2.5.5

That the EOAM be amended to substitute the term “rocky” for “stony” in Clause (9), Chapter 7.

2.6 Operational Aspects/Training the Operators

Groundcover definition

Although implied, the definition of native vegetation within the *Native Vegetation Act 2003* does not explicitly state whether the definition refers only to live vegetation. Legal advice is that native vegetation in the *Native Vegetation Act 2003* only includes live vegetation unless the Act states otherwise.

Recommendation 2.6.1

State in the EOAM that reference to ‘native vegetation’ equates to ‘**live** native vegetation’.

Editorial change

The term ‘Management Actions’ is confusing in the PVP agreements. In order to provide consistency with other consent documents and to clearly identify to landholders their legal obligations, ‘Management Actions’ should be re-named PVP Conditions.

Recommendation 2.6.2

Replace the term ‘Management Actions’ with ‘PVP Conditions’ within the PVP agreements.

Operational Manual

DNR produced an unauthorised *Invasive Native Scrub Tool User Guide* which is a highly confusing and incorrect document and is available on the DNR Intranet. This document should be withdrawn as soon as possible. The *Draft Operational Manual for the PVP Developer Invasive Native Scrub Tool* (compiled by members of the INS Working Group) is the correct document for CMA staff to refer to when assessing INS. This document is currently located within the ‘Reference Guide’ section of the Intranet.

Recommendation 2.6.3

The incorrect and highly misleading *Invasive Native Scrub Tool User Guide* should be removed from the DNR Intranet site as soon as possible. It should be replaced by the *Draft Operational Manual for the PVP Developer Invasive Native Scrub Tool*.

Accredited experts

In order to determine whether a landholder may clear species through the INS Tool, a PVP officer must determine that the INS species in the INS Species Database is behaving in an invasive manner. When mapping the extent of INS within the particular property, an accredited biodiversity expert must certify that the species are behaving invasively in that particular case. This creates a significant additional bottleneck in the process and provides little additional benefit. PVP officers receive extensive training in plant identification and ecology, they require considerable expertise to complete other aspects of the PVP process, and they possess significant local knowledge. It is therefore recommended that the requirement for an accredited biodiversity expert is removed, and as a result PVP officers should receive training in INS identification within the PVP accreditation process.

Recommendation 2.6.4

Remove the requirement for an accredited biodiversity expert to certify that species are behaving invasively from the EOAM. Ensure that PVP officers have the biodiversity expertise required by including training in the identification of INS in the PVP accreditation process.

Decision support tool

The PVP Developer is a tool to support and guide decision-makers rather than to make the decision itself. Decision support tools should not be used as decision making tools. While scientific knowledge can reliably be coded into software to assist decision making, ecological systems are highly variable and it is not possible to code a tool for every possible circumstance. There should always be a human interface between decision support software and the decision (Williams et al. 2005). CMA officers should apply judgement and discretion when operating the PVP Tools, including the INS Tool.

Recommendation 2.6.5

CMA officers be assisted in using the INS Tool as a decision support tool, including the appropriate use of judgement, and use of the minor variation and varied data provisions of the Native Vegetation Regulations.

INS management and offsets

The INS Tool is a landscape tool and does not use offsets. It is possible to generate offsets from INS management using the other PVP Tools. Only invasive native scrub management actions that score positively for environmental outcomes in the non-INS PVP Tools can provide offsets for clearing elsewhere.

Recommendation 2.6.6

CMA officers to be provided with advice on “Invasive Native Scrub and Offsets” in the form of Dr Briggs' note and supporting legal advice (see Appendix 4).

Documenting scientific basis of the INS Tool

The INS Tool was developed from a sound scientific base. Due to resource constraints the supporting material for the tool material has not yet been collated into one document. Funding has been obtained to document the science underpinning the INS Tool, with Central West CMA managing the document's development.

Recommendation 2.6.7

The current Central West CMA project to collate the scientific information underpinning the INS Tool be noted.

INS research program

Developing the INS Tool highlighted significant gaps in scientific knowledge about INS. These gaps included relationships between INS and soil, and understanding of INS tree communities. Research projects have been initiated to address some of these knowledge gaps. These projects include: a research and knowledge exchange project, and a project to develop BMPs for the use of fire to manage INS, both of which are managed jointly by Central West and Western CMA with support from a stakeholder advisory committee.

Additional work is needed to add to our understanding of the role played by INS in the persistence of biodiversity in landscapes with different levels of past clearing, and how these values might be factored into future refinements of INS management. Further consideration should be given to designing and resourcing research that will address these issues in complex landscapes.

DNR and DEC also have a number of current projects investigating aspects of INS and its management including landholder perceptions of INS, management of dense cypress pine and

eucalypt regeneration. There are benefits in enhancing communication between these INS projects, including through workshops.

The current 'Review of Multi-farm or Landscape Vegetation Plans' by the NRC provides an opportunity to link INS management under the INS Tool with vegetation planning across property boundaries and at the landscape scale. Consideration should be given to how INS management might be factored into such planning following the NRC's release of recommendations on landscape planning. A long term benefit would be to shift the emphasis away from considering INS management solely as a regulatory issue, and moving towards promoting the management of INS as a landscape restoration activity.

Recommendation 2.6.8

Agencies and CMAs note and support ongoing research and information exchange on INS.

Recommendation 2.6.9

Agencies, CMAs, research bodies and stakeholders design and seek resourcing for research to refine our understanding of how to manage INS for native plants and animals in complex landscapes.

Recommendation 2.6.10

That communication between the CW CMA INS project and the other related INS projects be encouraged, and fostered through joint workshops and other communication.

Recommendation 2.6.11

Agencies, CMAs and the NRC investigate opportunities provided by the outcomes of the Review of Multi-farm and Landscape Plans to better link INS management with broader landscape management beyond individual farm boundaries.

2.7 Implementing the Review

Implementation of report recommendations

The consultation process, and the subsequent submission of this report are the first steps in the review process. The next step is the implementation of the agreed recommendations.

Continuing stakeholder acceptance of the INS Tool is highly dependent on the speed with which the recommendations in this report are dealt with. If there is substantial delay between the submission and implementation phase, faith in the process will be undermined. The Review Group recommend that the recommendations in this report be considered and implemented as fast as possible.

The recommendations in this report involve amendments to the EOAM, the Operational Manual, the PVP agreement, the INS Tool, data in the INS Tool, and the DNR Intranet site. Given the number of suggested amendments and the potential complexity of implementing the final recommendations, it is recommended that a Project Officer be appointed to manage the overall project of implementation of the INS Tool and EOAM and Operational Manual upgrades in consultation with the members of the INS Review Group. A central point of contact will ensure that an officer is aware of all of the tasks that need to be completed, and that one officer takes responsibility for coordinating the people responsible for individual tasks.

A clearly defined implementation plan to implement the recommendations of the INS Review is required. Its content and timeframes need to be agreed upon by the Minister for Natural Resources and the Minister for the Environment, the Directors-General of DNR, DEC and the NRC, and the Chairs and General Managers of CMAs. The plan should include the exact tasks that need to be completed, the department/branch responsible for each task, recommended timeframes, the process for recording completion of tasks, and reporting pathways. The plan is essential to provide direction to the Project Officer implementing the results of the Review.

The plan needs to be based on the Memorandum of Understanding for changes to the EOAM and the PVP Developer as follows:

Changes to the EOAM

Clause 25 of the *Native Vegetation Regulation 2005* sets out procedure for amending the EOAM:

- (a) the Minister is to seek the advice of the NRC about a proposed amendment before making a decision about the proposed amendment;
- (b) the Minister must allow the NRC not less than 30 days in which to give its advice;
- (c) the NRC is to provide its advice as formal recommendations to the Minister;
- (d) the advice of the NRC is to be made public within a reasonable time after it is provided to the Minister and no later than the date of publication in the Gazette of the amendment;
- (e) the Minister is not to make an amendment that relates to the assessment of biodiversity without the concurrence of the Minister for the Environment and the Minister of Primary Industries;
- (f) an amendment is to be published in the Gazette; and
- (g) an amendment does not take effect until the definition of *Assessment Methodology* in Clause 24 is amended to give effect to the amendment.

The NRC may propose amendments to the Assessment Methodology to the Minister.

Changes to databases within the EOAM

Chapter Section 2.4.2 of the EOAM explains the procedure for changing databases within the EOAM:

“Prior to updating the databases the Director General of the Department responsible for that database must consult the Natural Resources Commission, the Catchment Management Authorities and any other public authorities, bodies or persons that are, in the opinion of the Director General, likely to be affected by the proposal. Changes to the databases must be published on the internet.”

In addition, Chapter Sections 5.2.3 and 5.2.4 provide that the Minister for the Environment must consult with the Minister for Natural Resources prior to any changes being made to certain databases.

The following databases are identified in the EOAM under Chapter Section 2.4.2:

- threatened species profiles database;
- vegetation benchmarks database;
- overcleared landscapes database;
- overcleared vegetation types database;
- major rivers database;
- important wetlands database;
- soil subregions database; and
- invasive native scrub species database.

The current Review Group could provide advice to the the Project Officer and assist with overseeing the implementation process.

Recommendation 2.7.1

Recommendations within the report should be dealt with promptly.

Recommendation 2.7.2

A Project Officer should be appointed to undertake and manage the implementation of the recommendations contained within this report.

Recommendation 2.7.3

An implementation plan consistent with the EOAM and the Regulations be developed and agreed upon by the Minister for Natural Resources and the Minister for the Environment, the Directors-General of DNR and DEC and the NRC, and the Chairs and General Managers of CMAs, to provide direction on the implementation of the recommendations in this report.

Recommendation 2.7.4

The INS Review Group be maintained to provide advice for the Project Officer implementing the recommendations from the Review.

Recommendation 2.7.5

The amended EOAM submitted by the Review Group (see Appendix 5) be used for formal amendments to Chapter 7 of the EOAM.

Communication of the review report

The two relevant Ministers – Hon Ian Macdonald, Minister for Natural Resources and Hon Bob Debus, Minister for the Environment, the Directors-General – Dr Richard Sheldrake, Department of Natural Resources, Lisa Corbyn, Department of Environment and Conservation, and Alex McMillan, Natural Resources Commission, the Ministerial Review Committee for Implementation of Native Vegetation Reforms, and the Chairs and General Managers of the CMAs should be briefed by the Review Group on the recommendations of the review.

It is recommended that the Review report be released as a public document.

Recommendation 2.7.6

The INS Review Group brief the Minister for Natural Resources and the Minister for the Environment, the Directors-General of the Department of Natural Resources, the Department of Environment and Conservation and the Natural Resources Commission, the Ministerial Review Committee for Implementation of Native Vegetation Reforms, and the CMA Chairs and General Managers.

Recommendation 2.7.7

The Review report be released as a public document as soon as possible.

3.0 Final Comments

The comments received through written submissions and as part of the stakeholder meetings were instrumental in developing the recommendations within this report.

The Terms of Reference for this review were tightly defined, and therefore some of the submissions fell outside the issues that the Review Group could consider. Socio-economic considerations were not included in the review because they are not part of PVP assessment.

It became obvious during the stakeholder meetings that a number of misconceptions exist about the capabilities of the INS Tool. It appears that these misconceptions arose from the initial PVP trials and the problems from those trials, a lack of knowledge amongst CMA staff, and generally poor communication about the Tool. The current fact sheets, guidelines, and the Assessment Methodology are confusing to read and contain some contradictory information. An appropriate communications strategy about the INS Tool is required to overcome misconceptions about the Tool.

A process for future review of the INS Tool needs to be established. This will streamline the INS management process for landholders, and ensure that environmental values are maintained and improved for INS native vegetation throughout NSW.

Recommendation 3.1

An appropriate communication strategy on the INS Tool and its application be developed, and be coordinated and implemented through the CMA General Managers Native Vegetation Working Group.

Recommendation 3.2

A clearly understood and transparent process for future review of the INS Tool be established.

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Native Vegetation Committees - Draft Vegetation Plans (contact Dr Briggs for copies)

A number of papers in the *Rangeland Journal* (www.publish.csiro.au/nid/204.htm) that are not listed individually here are relevant to invasive native scrub. For access to specific papers in the *Rangeland Journal* contact Dr Briggs.

A number of relevant papers are also in the *Journal of the Soil Conservation Service of NSW*.

5.0 Acknowledgements

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We thank Dennis Boschma and Sarah Munro for commenting on a late draft of the Report.

Appendix 1

Summary of Review Group recommendations.

Table 1. Summary of Review Group Recommendations

Aspect to be amended	Recommendation
<p>Recommendations specific to the Native Vegetation Regulation 2005 Environmental Outcomes Assessment Methodology (“EOAM”)</p>	<p>Recommendation 2.1.3 Amend the INS Species Database to include the recommended species as listed in Table 1 of Appendix 2.</p> <p>Recommendation 2.1.4 In relation to the operational for amendments to the INS Species Database, the following process should be adopted:</p> <ul style="list-style-type: none"> - nominations, accompanied by relevant technical information and using the proforma in Appendix 3 are lodged by CMAs with the NRC; - nominations are assessed by an impartial review group comprising independent ecological expertise which could include members of the INS Review Group, convened by the NRC; - nominations be incorporated into the INS Species Database by DNR on recommendation of the impartial review group and following consultation with other appropriate persons and organisations; - all information that is received by the impartial review group from the CMAs should be stored in an adequate and traceable manner by the managing agency; and - any changes to the INS Species Database be made publicly available on the internet. <p>Recommendation 2.2.1 Amend the stem diameter thresholds within the INS Species Database for the species listed in Table 3 of Appendix 2. Future such variations will require consideration through the process proposed in Recommendation 2.1.4.</p> <p>Recommendation 2.2.2 Amend the EOAM to allow CMA officers to vary the maximum dbh to be cleared of individual INS species by +/- 5 cm, using judgement. Guidance on the application of this judgement to be provided in the Operational Manual, including a proforma to document the justification for any such variation where the CMA officer wishes to do this.</p> <p>Recommendation 2.2.3 Remove the maximum dbh to be cleared requirement for shrubs in the INS Species Database.</p> <p>Recommendation 2.2.4 Specify in the EOAM that the retention figures for smaller stems are not cumulative. When using individual plant treatments, and more than one species with a stem retention requirement is present, stems are to be retained at the maximum number specified for the highest retention species. These stems are to be retained in a range of size classes and INS</p>

species that reflect the proportions present in the vegetation community. Species with like retention requirements to be grouped by CMA and IBRA regions in the INS Species Database.

Recommendation 2.2.5

The INS Species Database be amended to remove the requirement to retain smaller stems for Black and White Cypress Pine for paddock-scale treatments.

Recommendation 2.2.6

The EOAM, Operational Manual, and PVP agreement be amended to ensure retention of small plants unevenly (ie in clumps) when using paddock scale treatments. Clumps are to be as follows:

- 10 ha of native vegetation must be retained per 100 ha for INS listed as requiring smaller stem retention in the INS Species Database within each 500 ha parcel treated,
- wherever possible clumps of small stems should be retained around or adjoining retained larger trees.

Note: clumps retained according to these requirements are additional to the 20% retention of native vegetation in each 500 ha area specified elsewhere.

Recommendation 2.2.7

The EOAM, Operational Manual and INS Tool be amended to allow and specify the following:

A. Paddock scale treatments: If shrubs or cypress species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If the species being treated are not shrubs or cypress species (ie. they are trees), then 10 ha per 100 ha of INS treated is required to be retained, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5, OR 20 stems per ha are required to be retained in each ha in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

B. Individual plant treatments: If shrub species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If cypress or other tree species are being treated, then 20 stems per ha are required to be retained in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

Recommendation 2.4.1

Incorporate Chapter 7, Clause 14 from the EOAM regarding the management of INS in riparian areas into the Operational Manual.

Recommendation 2.4.4

Note in the EOAM that where the retained, untreated INS areas exceed

	<p>20% of the total extent then burning (where ecologically suitable) or individual (spot) treatment options may be applied.</p> <p>Recommendation 2.4.5 Revise the EOAM and INS Tool to remove the 18 degree slope constraint on use of burning to manage INS.</p> <p>Recommendation 2.4.10 Amend the EOAM to allow lucerne to be planted for clearing plants at paddock scale with temporary groundcover and soil disturbance and for clearing plants at paddock scale with longer-term disturbance to soil and groundcover.</p> <p>Recommendation 2.4.11 The EOAM be amended to refer to cropping as the act of cultivation rather than harvest in relation to the last treatment option.</p> <p>Recommendation 2.4.12 The current 50%/75% groundcover percentages be retained, however the EOAM should be amended to permit variation to a higher percentage of the groundcover target by individual CMAs.</p> <p>Recommendation 2.4.15 The method of clearing plants at paddock scale with longer-term disturbance to soil and groundcover be amended to allow for three crops in 15 years from the date of granting consent or approval of the PVP.</p> <p>Recommendation 2.5.1 Amend the EOAM to permit paddock-scale treatment with no ground disturbance (eg roping etc) where TEC condition is not high and impact of treatment low.</p> <p>Recommendation 2.5.5 That the EOAM be amended to substitute the term “rocky” for “stony” in Clause (9), Chapter 7.</p> <p>Recommendation 2.6.1 State in the EOAM that reference to ‘native vegetation’ equates to ‘live native vegetation’.</p> <p>Recommendation 2.6.4 Remove the requirement for an accredited biodiversity expert to certify that species are behaving invasively from the EOAM. Ensure that PVP officers have the biodiversity expertise required by including training in the identification of INS in the PVP accreditation process.</p>
<p>Recommendations specific to the Draft Operational Manual for the PVP Developer Invasive Native Scrub Tool (“Operational Manual”)</p>	<p>Recommendation 2.1.1 Supporting material, including photographic examples and a list of characteristics for CMA officers to consider in making a determination of whether a species is acting invasively, be provided in the Operational Manual to clarify what constitutes INS.</p> <p>Recommendation 2.1.2 Additional information and guidelines on how to identify derived communities and whether an INS species previously occurred in the vegetation community being assessed be provided in the Operational Manual.</p>

Recommendation 2.2.2

Amend the EOAM to allow CMA officers to vary the maximum dbh to be cleared of individual INS species by +/- 5 cm, using judgement. Guidance on the application of this judgement to be provided in the Operational Manual, including a proforma to document the justification for any such variation where the CMA officer wishes to do this.

Recommendation 2.2.6

The EOAM, Operational Manual, and PVP agreement be amended to ensure retention of small plants unevenly (ie in clumps) when using paddock scale treatments. Clumps are to be as follows:

- 10 ha of native vegetation must be retained per 100 ha for INS listed as requiring smaller stem retention in the INS Species Database within each 500 ha parcel treated,
- wherever possible clumps of small stems should be retained around or adjoining retained larger trees.

Note: clumps retained according to these requirements are additional to the 20% retention of native vegetation in each 500 ha area specified elsewhere.

Recommendation 2.2.7

The EOAM, Operational Manual and INS Tool be amended to allow and specify the following:

A. Paddock scale treatments: If shrubs or cypress species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If the species being treated are not shrubs or cypress species (ie. they are trees), then 10 ha per 100 ha of INS treated is required to be retained, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5, OR 20 stems per ha are required to be retained in each ha in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

B. Individual plant treatments: If shrub species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If cypress or other tree species are being treated, then 20 stems per ha are required to be retained in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.

Recommendation 2.2.8

The Operational Manual be amended to indicate that when paddock scale treatments (d-f) are being used, the 20% retention of untreated INS must be spread across each 500 ha area of INS in a pattern that mimics natural vegetation patterns rather than in a single block.

Recommendation 2.3.1

Review and amend guidelines in the Operational Manual to encourage a risk management approach to mapping INS using higher levels of field verification and mapping where higher impact treatment options are proposed.

Recommendation 2.3.2

Explain within the Operational Manual how judgement can be used in mapping riparian areas and add a condition to the PVP agreement that areas within the buffer distance for small streams can only be treated with individual plant management options for INS.

Recommendation 2.3.4

Review and amend the Operational Manual to explain how judgement can be used in mapping a limiting feature (such as rock outcrops) where it is restricted and isolated and its presence does not affect the management option proposed. Amend the Operational Manual to explain how judgement can be used to indicate small patches of INS in a larger zone (rather than precisely mapping each small patch of INS).

Recommendation 2.3.5

Amend the Operational Manual and the INS Tool and advise assessors to seek advice from applicants on the nature of management actions they propose at an early stage in the process in order to streamline the mapping and assessment process.

Recommendation 2.3.6

Include a clarification within the Operational Manual that the description of the bioregion always takes precedence, if there is inconsistency between the mapping and description of a bioregion.

Recommendation 2.4.3

reword information in the Operational Manual and PVP agreement to clarify the reference to “non-INS”.

Recommendation 2.4.7

Remove recommendation of chaining in open areas in the Operational Manual (Management Option 4, note to [c]).

Recommendation 2.4.8

Amend the Operational Manual to make it clearer that it is an advisory document only and the EOAM is the legal document.

Recommendation 2.4.9

Add notes and photographs to the Operational Manual and the INS tool to better distinguish between the paddock scale treatment options of *temporary disturbance to groundcover* and *longer-term disturbance to groundcover* and to reinforce the descriptions of the level of soil and vegetation disturbance as a result of the different treatments. Make it clear that allowed use of the treatment is related to its degree of disturbance to soil and vegetation, not to the equipment used.

Recommendation 2.4.16

Guidance to be provided in the Operational Manual to assist PVP officers with making the decision as to which paddock scale treatment category pasture cropping falls within, based on the level of soil disturbance that occurs and the amount of groundcover that is retained.

	<p>Recommendation 2.4.18 Guidelines, diagrams and other assistance as appropriate be provided in the Operational Manual and attached to the PVP Agreement to assist PVP officers and applicants to interpret treatment option percentage limits.</p> <p>Recommendation 2.5.2 Provide additional wording in the Operational Manual and INS Tool to consistently refer to erosion potential (=risk) rather than erosion hazard.</p> <p>Recommendation 2.5.3 Revise the Operational Manual and INS Tool to permit paddock-scale treatment with no ground disturbance (eg roping etc) in stony/shallow soils.</p> <p>Recommendation 2.5.4 Provide guidelines and other explanatory information in the Operational Manual to assist assessors in identifying rocky soils, dunefields and lunettes.</p>
<p>Recommendations specific to the PVP Agreement</p>	<p>Recommendation 2.2.6 The EOAM, Operational Manual, and PVP agreement be amended to ensure retention of small plants unevenly (ie in clumps) when using paddock scale treatments. Clumps are to be as follows: - 10 ha of native vegetation must be retained per 100 ha for INS listed as requiring smaller stem retention in the INS Species Database within each 500 ha parcel treated, - wherever possible clumps of small stems should be retained around or adjoining retained larger trees. Note: clumps retained according to these requirements are additional to the 20% retention of native vegetation in each 500 ha area specified elsewhere.</p> <p>Recommendation 2.3.2 Explain within the Operational Manual how judgement can be used in mapping riparian areas and add a condition to the PVP template agreement that areas within the buffer distance for small streams can only be treated with individual plant management options for INS.</p> <p>Recommendation 2.3.3 Amend the INS Tool and PVP Agreement to allow limiting features to be included in a zone where it is not practical to be mapped out of the zone, and then incorporate a condition in the PVP agreement that states what methods can be applied on the limiting feature area.</p> <p>Recommendation 2.4.18 Guidelines, diagrams and other assistance as appropriate be provided in the Operational Manual and attached to the PVP Agreement to assist PVP officers and applicants to interpret treatment option percentage limits.</p> <p>Recommendation 2.6.2 Replace the term ‘Management Actions’ with ‘PVP Conditions’ within the PVP agreements.</p>

<p>Recommendations specific to the INS Tool</p>	<p>Recommendation 2.2.7 The EOAM, Operational Manual and INS Tool be amended to allow and specify the following: A. Paddock scale treatments: If shrubs or cypress species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If the species being treated are not shrubs or cypress species (ie. they are trees), then 10 ha per 100 ha of INS treated is required to be retained, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5, OR 20 stems per ha are required to be retained in each ha in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5. B. Individual plant treatments: If shrub species are being treated, no retention of smaller stems (ie. stems below the dbh specified for retention of all larger trees, see Table 1 of Appendix 5) is required in addition to the 20% of INS retained across the property. If cypress or other tree species are being treated, then 20 stems per ha are required to be retained in the treated areas in similar proportions to the species present before treatment, in addition to the 20% of INS retained across the property and in addition to the retention of all larger trees, see Table 1 of Appendix 5.</p> <p>Recommendation 2.3.3 Amend the INS Tool and PVP Agreement to allow limiting features to be included in a zone where it is not practical to be mapped out of the zone, and then incorporate a condition in the PVP agreement that states what methods can be applied on the limiting feature area.</p> <p>Recommendation 2.3.5 Amend the Operational Manual and the INS Tool and advise assessors to seek advice from applicants on the nature of management actions they propose at an early stage in the process in order to streamline the mapping and assessment process.</p> <p>Recommendation 2.3.7 Update and improve the PVP Mapper so that it links to the INS Tool and its outputs.</p> <p>Recommendation 2.4.5 Revise the EOAM and INS Tool to remove the 18 degree slope constraint on use of burning to manage INS.</p> <p>Recommendation 2.4.9 Add notes and photographs to the Operational Manual and the INS tool to better distinguish between the paddock scale treatment options of <i>temporary disturbance to groundcover</i> and <i>longer-term disturbance to groundcover</i> and to reinforce the descriptions of the level of soil and vegetation disturbance as a result of the different treatments. Make it clear that allowed use of the treatment is related to its degree of</p>
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	<p>disturbance to soil and vegetation, not to the equipment used.</p> <p>Recommendation 2.5.2 Provide additional wording in the Operational Manual and INS Tool to consistently refer to erosion potential (=risk) rather than erosion hazard.</p> <p>Recommendation 2.5.3 Revise the Operational Manual and INS Tool to permit paddock-scale treatment with no ground disturbance (eg roping etc) in stony/shallow soils.</p>
<p>Recommendations that require communication, information and training</p>	<p>Recommendation 2.4.2 Provide information to CMAs and stakeholders about the burning and individual plant management options permitted by the INS Tool within riparian areas. This could be included in a general advisory note about management of native vegetation in riparian areas.</p> <p>Recommendation 2.4.6 Investigate the role of Bushfire Management Plans under the <i>Rural Fires Act 1997</i> as guidelines and/or regulatory documents for burning INS.</p> <p>Recommendation 2.4.13 Standard guidelines be developed and distributed to PVP officers on how to assess the 50%/75% groundcover rule.</p> <p>Recommendation 2.6.3 The incorrect and highly misleading <i>Invasive Native Scrub Tool User Guide</i> should be removed from the DNR Intranet site as soon as possible. It should be replaced by the <i>Draft Operational Manual for the PVP Developer Invasive Native Scrub Tool</i>.</p> <p>Recommendation 2.6.4 Remove the requirement for an accredited biodiversity expert to certify that species are behaving invasively from the EOAM. Ensure that PVP officers have the biodiversity expertise required by including training in the identification of INS in the PVP accreditation process.</p> <p>Recommendation 2.6.5 CMA officers be assisted in using the INS Tool as a decision support tool, including the appropriate use of judgement, and use of the minor variation and varied data provisions of the Native Vegetation Regulations.</p> <p>Recommendation 2.6.6 CMA officers to be provided with advice on “Invasive Native Scrub and Offsets” in the form of Dr Briggs’ note and supporting legal advice (see Appendix 4).</p>
<p>Recommendations for Future Research</p>	<p>Recommendation 2.4.17 The feasibility of pasture cropping within areas of less than 500 mm per annum as a form of low intensity cropping following INS treatment needs to be investigated.</p> <p>Recommendation 2.6.7 The current Central West CMA project to collate the scientific</p>

	<p>information underpinning the INS Tool be noted.</p> <p>Recommendation 2.6.8 Agencies and CMAs note and support ongoing research and information exchange on INS.</p> <p>Recommendation 2.6.9 Agencies, CMAs, research bodies and stakeholders desing and seek resourcing for research to refine our understanding of how to manage INS for native plants and animals in complex landscapes.</p> <p>Recommendation 2.6.10 That communication between the CW CMA INS project and the other related INS projects be encouraged, and fostered through joint workshops and other communication.</p> <p>Recommendation 2.6.11 Agencies, CMAs and the NRC investigate opportunities provided by the outcomes of the Review of Mulit-farm and Landscape Plans to better link INS management with broader landscape management beyond individual farm boundaries.</p>
<p>Recommendations related to the implementation of the review</p>	<p>Recommendation 2.7.1 Recommendations within the report should be dealt with promptly.</p> <p>Recommendation 2.7.2 A Project Officer should be appointed to undertake and manage the implementation of the recommendations contained within this report.</p> <p>Recommendation 2.7.3 An implementation plan consistent with the EOAM and the Regulations be developed and agreed upon by the Minister for Natural Resources and the Minister for the Environment, the Directors-General of DNR and DEC and the NRC, and the Chairs and General Managers of CMAs, to provide direction on the implementation of the recommendations in this report.</p> <p>Recommendation 2.7.4 The INS Review Group be maintained to provide advice for the Project Officer implementing the recommendations from the Review.</p> <p>Recommendation 2.7.5 The amended EOAM submitted by the Review Group (see Appendix 5) be used for formal amendments to Chapter 7 of the EOAM.</p> <p>Recommendation 2.7.6 The INS Review Group brief the Minister for Natural Resources and the Minister for the Environment, the Directors-General of the Department of Natural Resources, the Department of Environment and Conservation and the Natural Resources Commission, the Ministerial Review Committee for Implementation of Native Vegetation Reforms, and the CMA Chairs and General Managers.</p> <p>Recommendation 2.7.7 The Review report be released as a public document as soon as possible.</p> <p>Recommendation 3.1</p>

	<p>An appropriate communication strategy on the INS Tool and its application be developed, and be coordinated and implemented through the CMA General Managers Native Vegetation Working Group.</p>
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Recommendation 3.2

A clearly understood and transparent process for future review of the INS Tool be established.

Appendix 2

Recommended amendments to the INS Species Database

Table 1. Recommended amendments to the Invasive Native Scrub Species Database.

Catchment Management Authority – IBRA region	Invasive native species	Retention requirements			INS treatment options available
		Number of plants per hectare to be retained for treatments b-c*	Retention required by criterion 17A and 18A (treatments d-f only)	Maximum dbh allowed to be cleared	
Border Rivers/ Gwydir--BBS	<i>Cassinia laevis</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--DRP	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--DRP	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--NAN	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Border Rivers/	<i>Cassinia laevis</i>	None prescribed	No	n/a	All

Gwydir--NAN					
Border Rivers/ Gwydir--NAN	<i>Dodonea viscosa</i> subsp. angustissima (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--NAN	<i>Dodonea viscosa</i> subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--NET	<i>Cassinia laevis</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--NET	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Central West--All	<i>Acacia salicina</i> (Cooba or Native Willow)	20 (Total under 20cm dbh)	Yes	20cm	a-e*
Central West--All	<i>Eucalyptus camaldulensis</i> (River Red Gum)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Lachlan	<i>Sclerolaena birchii</i> (Galvanised Burr)	None prescribed	No	n/a	All
Lachlan	<i>Sclerolaena muricata</i> (Black Roly-poly)	None prescribed	No	n/a	All
Murrumbidgee	<i>Sclerolaena birchii</i> (Galvanised Burr)	None prescribed	No	n/a	All
Namoi--All	<i>Acacia stenophylla</i> (Black Wattle or River Cooba)	20 (Total under 20cm dbh)	Yes	n/a	All
Namoi--All	<i>Cassinia laevis</i>	None prescribed	No	n/a	All
Namoi--All	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Namoi--All	<i>Casuarina cristata</i> (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Namoi--All	<i>Dodonea viscosa</i> subsp. angustissima (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Namoi--All	<i>Dodonea viscosa</i> subsp. mucronata	None prescribed	No	n/a	All
Namoi--All	<i>Dodonea viscosa</i> subsp.	None prescribed	No	n/a	All

	spatulata (Broadleaf Hopbush)				
Namoi--All	Eremophila bignoniiflora (Eurah)	None prescribed	No	n/a	All
Namoi--All	Eremophila longifolia (Emu Bush)	None prescribed	No	n/a	All
Namoi--All	Eremophila mitchellii (Budda)	None prescribed	No	n/a	All
Namoi--All	Sclerolaena birchii (Galvanised Burr)	None prescribed	No	n/a	All
Namoi--All	Sclerolaena muricata (Black Roly-poly)	None prescribed	No	n/a	All
Western--BBS	Casuarina cristata (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Western--BBS	Eremophila bignoniiflora (Eurah)	None prescribed	No	n/a	All
Western--BHC	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All
Western--BHC	Eremophila mitchellii (Budda)	None prescribed	No	n/a	All
Western--DRP	Casuarina cristata (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Western--DRP	Eremophila bignoniiflora (Eurah)	None prescribed	No	n/a	All
Western--DRP	Muehlenbeckia cunninghamii (Lignum)**	None prescribed	No	n/a	a*
Western--DRP	Sclerolaena birchii (Galvanised Burr)	None prescribed	No	n/a	All
Western--DRP	Sclerolaena muricata (Black Roly-poly)	None prescribed	No	n/a	All
Western--CP	Eucalyptus intertexta (Red Box)	20 (Total under 20cm dbh)	Yes	20cm	All

Western--CP	<i>Sclerolaena birchii</i> (Galvanised Burr)	None prescribed	No	n/a	All
Western--ML	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Western--ML	<i>Eremophila bowmanii</i> var. <i>bowmanii</i> (Silver Turkey Bush)	None prescribed	No	n/a	All
Western--ML	<i>Muehlenbeckia florulenta</i> (Lignum)**	None prescribed	No	n/a	a*
Western--MDD	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Western--MDD	<i>Senna</i> form taxon ' <i>artemisoides</i> '	None prescribed	No	n/a	All
Western--SSD	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All

* a= burning

* b= clearing of individual plants with no disturbance to groundcover

* c= clearing of individual plants with minimal disturbance to soil and groundcover

* d= clearing of plants at a paddock scale with nil to minimal disturbance to soil and groundcover

* e= clearing of plants at paddock scale with temporary groundcover and soil disturbance

* f= clearing of plants at paddock scale with longer-term disturbance to soil and groundcover

** Some members of the Review Group have reservations about the listing of Lignum as INS. Lignum meets the definition of INS only in certain, limited situations. Therefore, only burning is recommended as a management option.

Table 2. Species nominated by the CMA for listing as INS but not recommended for listing as INS by the INS Review Group.

Catchment Management Authority	Species nominated by a CMA but not recommended for listing by the INS Review Group	Reasons
Central West	Leptospermum divaricatum (Inland Tea tree)	Dense only in localised areas and information does not support listing, therefore not appropriate to list as an INS.
Namoi	Allocasuarina luehmannii (Bull Oak)	Information and advice does not support listing as an INS.

Table 3. -Number of young plants to be retained and maximum dbh of INS trees that that can be cleared (where these differ from 20 cm dbh) for currently listed INS.

Catchment Management Authority – IBRA region	Invasive native species	Retention requirements		Maximum dbh allowed to be cleared	INS treatment options available
		Number of plants per hectare to be retained for treatments a-c*	Retention required by criterion 17A and 18A (treatments d-f only)		
Western--BBS	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--CP	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--DRP	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--ML	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--BBS	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--BHC	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--CP	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--DRP	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--ML	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--MDD	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--SSD	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All

Appendix 3

CMA Proforma for nomination of species on the INS Species Database

CMA proforma for nomination of speices on the INS Species Database

CMA:

Contact person:

Please explain with details how the species meets each of the criteria. Information about appropriate treatments, recommended stem density retention and the IBRA regions that the species is invasive may also be provided. Note: This information needs to be adequate to demonstrate it meets the definition for inclusion in the INS module. Please provide the information for each species separately.

Species	
The species invades plant communities where it has not been known to occur previously <u>OR</u> the species regenerates densely following natural or artificial disturbance	
the invasion and/ or dense regeneration of the species results in change of structure and/ or composition of a vegetation community	
the species is within its natural range or distribution	

Species	
Treatment options that may be appropriate for the species (Please refer to treatment options within the INS prescriptions)	
What IBRA regions (May be ALL in CMA) is the species invasive within the CMA? (Please refer to species list for previous recommendation)	
Recommended stem density retention	
Other Comments	

Appendix 4

Invasive Native Scrub and Offsets

Invasive Native Scrub and Offsets

Background

The question of whether managing invasive native scrub (INS) under the INS tool can be used for offsets other PVP tools has arisen. The notes below provide guidance on this matter. Certain rules and principles for PVP assessment are pertinent:

- The EOAM (Section 2.3) states "B. the benefits of the offset are assessed using the *same methodologies* used to assess the impacts of the proposed clearing." (bolded italics added by SB).
- The INS assessment tool for PVPs is an integrated package. The improve or maintain test for clearing INS is met by applying the INS assessment tool across the assessment area, including retained areas, and constraints according to type of clearing and the nature of the land and the INS. Actions in the INS tool are not scored for their individual loss or gain in biodiversity, or other environmental factor.
- Unlike the INS tool, BioMetric scores loss and gain in biodiversity on specific areas of land. Loss in biodiversity is scored at three scales - regional, landscape connectivity, and site condition.

The Question

The question is "Can a landholder apply the INS tool and then use any environmental gain from the INS management as an offset".

The Answer

The answers to the above question are - "**No** to the question 'Can a landholder apply the INS tool and use any environmental gain as an offset' and **Yes in certain circumstances** to the question 'Can a landholder use environmental gain from invasive native scrub management as an offset'".

Reasons are -

1. Benefits of offsets and impacts of clearing have to be assessed using the same methodologies. This means any benefits of invasive native scrub management for offsets have to be scored using the non-INS tools.
2. The INS tool is applied as a package, and does not separately score loss and gain in biodiversity (or other environmental factors). The INS tool prescribes the circumstances in which environmental outcomes are improved or maintained overall. The INS tool does not provide scores that can be used as an offset in other tools.
3. Where all actions undertaken in the INS tool are positive or neutral for biodiversity the gain in biodiversity (and other environmental values) from the action could be scored in BioMetric and the other PVP tools. For biodiversity, this could only be done where: (i) all individual actions undertaken in the INS tool are positive or neutral for biodiversity (and other environmental factors), and (ii) the actions can be scored for their biodiversity benefit in the BioMetric (and other tools for other environmental factors). For BioMetric, these actions are - vegetation being restored to benchmark cover or a derived community being converted back to the known original community.
4. In these circumstances one could apply the INS tool, then score the positive benefits from biodiversity using BioMetric (and other tools for other environmental values), and then use

the resulting offsets for clearing. In practice, this is clumsy, unnecessary and unlikely to produce offsets for loss in landscape connectivity from clearing.

5. Clearing invasive native scrub that improves biodiversity, ie, actions that restore vegetation to benchmark cover or convert a derived community to the original community, should be scored directly in BioMetric. The INS tool is unnecessary.
6. Clearing requires offsets for loss of landscape value (connectivity) as well as condition. Offsets provided by restoring vegetation to benchmark cover or converting a derived community to the original community would provide offsets for condition, but not much for landscape value. Threatened species and other environmental factors also have to be offset.

Summary

- Because benefits of offsets and impacts of proposed clearing have to be assessed using the same methodology, biodiversity (and other environmental) gains from managing invasive native scrub proposed for offsets have to be scored using the methodologies in BioMetric (and other PVP tools), not the INS tool.
- Managing invasive native scrub which produces gains for biodiversity can be scored in BioMetric the same as any other action which produces gains for biodiversity. Only two types of invasive scrub management are likely to score positively for biodiversity, restoring vegetation to benchmark cover or converting a derived community to the original community. Such gains in biodiversity can be used as offsets for vegetation condition. They will generally provide very minor offsets for landscape connectivity.
- **Therefore the answer to the question "Can a landholder apply the INS tool and then use any environmental gain from the INS management as an offset" is "Environmental gain from invasive scrub management can be used as an offset, but the environmental gain from the invasive scrub management has to be measured in the other PVP tools, not in the INS tool. In these circumstances applying the INS tool is redundant as the offsets have to be scored in the other PVP tools. Only invasive native scrub management actions that score positively for environmental outcomes in the non-INS PVP tools can provide offsets"**

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22/1/06

Note. This document does not constitute formal legal advice.

Appendix 5

DRAFT

7 Invasive Native Scrub Assessment

7.1 Introduction

This Chapter applies to the clearing of species of invasive native scrub under the *Native Vegetation Act 2003*.

Native vegetation that is classified as “unprotected regrowth” under the *Native Vegetation Act 2003* may be cleared without approval under that Act. All other vegetation, which is classified under the *Native Vegetation Act 2003* as “remnant vegetation” or “protected regrowth” requires clearing approval from the local Catchment Management Authority. This includes clearing of invasive native species.

Where a proposal only involves clearing of invasive native species a shortened assessment process (within the PVP Developer) can be used. This assessment process is designed to maintain or create a mosaic of vegetation communities and conditions across the landscape in a way that does not require offsets for clearing approvals.

Further information on supporting science and application of the Environmental Outcome Assessment Methodology relating to clearing/thinning of native vegetation known as invasive native scrub under the *Native Vegetation Act 2003* is contained in:

- Operational Manual for the PVP Developer;
- collation of Discussion Paper submissions and responses from the Invasive Native Scrub Working Group.

Delete second reference and replace with ‘Collation of Discussion Paper Submissions and Responses from the Invasive Native Scrub Team’
(<http://www.nativevegetation.nsw.gov.au/methodology/index.shtml>)

7.2 Assessing invasive native species clearing proposals

This Chapter applies to the clearing of invasive native species.

Note:

There are two steps in assessing a proposal to clear invasive native species.

The first step is assessing whether the species may be cleared under this Chapter. This involves determining whether the species is listed in Table 7.1 as generally being invasive in the Catchment Management Authority area and/or the Interim Biogeographic Regionalisation of Australia (“IBRA”) region and secondly, whether the behaviour of the species in the area of the proposal satisfies certain criteria relating to whether a species can be said to be an invasive native species.

The area as mapped by the relevant Catchment Management Authority is also certified by an accredited biodiversity expert that the species are behaving invasively in this situation. If the species are not invasive native species, then the clearing proposal may not be assessed under this Chapter

The second step is assessing whether the clearing proposal satisfies all of the applicable criteria listed below. If the clearing proposal does satisfy all applicable criteria, the clearing is

to be regarded as improving or maintaining environmental outcomes and it is not necessary to assess the clearing proposal against the other environmental values listed in the Assessment Methodology (that is, water quality, salinity, soils and biodiversity).

If the clearing proposal does not satisfy all of the applicable criteria, then the proposal may not be assessed under this Chapter.

In the Note above, remove the sentence “The area as mapped by the relevant Catchment Management Authority is also certified by an accredited biodiversity expert that the species are behaving invasively in this situation.”

Insert a full stop at the end of the sentence “If the species are not invasive native species, then the clearing proposal may not be assessed under this Chapter”.

Invasive native species for the purposes of this Chapter means a plant species that satisfies the following criteria:

- 1) The species is listed in Table 7.1 in respect of the Catchment Management Authority Area or the Catchment Management Authority Area and IBRA region to which the clearing proposal relates; **and**
- 2) In the opinion of the relevant Catchment Management Authority (or an officer of that Authority who is responsible for making this assessment) and an accredited biodiversity expert, the species satisfies the following criteria:
 - (a) the species is invading plant communities where it has not been known to occur previously, **or**
 - the species is regenerating densely following natural or artificial disturbance, **and**
 - (b) the invasion and/ or dense regeneration of the species is resulting in change of structure and/ or composition of a vegetation community, **and**
 - (c) the species is within its natural geographic range.

In 2), remove “and an accredited biodiversity expert”.
In two add after ...following criteria ‘acting invasively’.

For the purpose of assessing whether clearing for the purpose of controlling invasive native scrub will improve or maintain environmental outcomes, such clearing is divided into the following types:

- burning (for example, low intensity fire);
- clearing of individual plants with no disturbance to groundcover (for example, chemical spot treatment or ringbarking);
- clearing of individual plants with minimal disturbance to groundcover (for example, grubbing);
- clearing of plants at paddock scale with nil to minimal disturbance to soil and groundcover (for example, chaining, slashing or roping);
- clearing of plants at paddock scale with temporary disturbance to soil and groundcover (for example, bladeploughing); and
- clearing of plants at paddock scale with longer-term disturbance to soil and groundcover (for example, short-term cropping).

Remove the dots in each of the above dot points and replace with “(a)”, “(b)”, “(c)”, “(d)”, “(e)” and “(f)” as appropriate.

(The examples set out above are given by way of illustration only and do not limit techniques of clearing which fall within each method.)

Change the above sentence to “The examples set out above are given by way of illustration only and do not limit management techniques for clearing which fall within each method”.

Proposed invasive native species clearing assessed under this Chapter is regarded as improving or maintaining environmental outcomes in relation to applications for consent or Property Vegetation Plans if it meets all of the following criteria which apply to the proposed clearing.

All of the following criteria apply to all proposed clearing, unless the criterion is expressly stated to apply only to a specific type of clearing.

In the following criteria:

- “groundcover” has the same meaning as in the *Native Vegetation Act 2003*, that is, any type of herbaceous vegetation;
- “the extent of invasive native species on the property” means the extent of the areas on the property where invasive native species are currently present and areas on the property where they may not presently occur but where invasive native scrub management is required to prevent their spread or recurrence, as mapped by the relevant Catchment Management Authority. Non native vegetation areas and areas of native vegetation not impacted by invasive native scrub should not be included in the extent of invasive native scrub on the property;
- “non-invasive native species” means any species that are not invasive native species, as defined above; and
- “diameter at breast height” means the diameter of the stem at 1.3 metres.

In the first dot point, remove all words in that dot point following the word “groundcover” and replace them with “means any type of herbaceous vegetation, native and non-native, living or dead”.

Immediately following the first dot point, add the following new dot point: “ “native groundcover” means living, native herbaceous vegetation.”

Insert the following “ “erosion risk” (also known as erosion risk) means the intrinsic susceptibility of a parcel of land to the prevailing agents of erosion. It is dependant on a combination of climate, landform and soil factors (Houghton & Charman 1986).”

Insert the following “ “derived vegetation community” for the purposes of this chapter means a vegetation community where the species did not previously occur.”

Purpose of the clearing

- 1) Clearing is for the purpose of re-establishing native vegetation or allowing natural regeneration of native species.

Native groundcover

- 2) After the period of 15 years after the date of consent or the date of approval of the property vegetation plan, native groundcover on the area where the clearing took place is maintained in perpetuity unless clearing is permitted by a property vegetation plan or consent under the *Native Vegetation Act 2003*.

Total areas which may be cleared

- 3) Total clearing of invasive native species does not exceed 80% of the extent of invasive native species on the property.

4)

Where the following types of clearing are carried out

- burning or
- clearing of individual plants with no disturbance to groundcover

- (a) The clearing does not exceed 80% of the extent of the area of invasive native species on the property (as mapped by the relevant Catchment Management Authority).

5)

Where the following types of clearing are carried out:

- clearing of individual plants with minimal disturbance to groundcover or
 - clearing plants at a paddock scale with nil to minimal disturbance to soil and *groundcover*.
- (a) The clearing does not exceed 60% of the extent of invasive native species on the property, except as set out below.
- (b) A further 20% of the extent of invasive native species on the property is cleared only if the Catchment Management Authority is satisfied that land that was initially cleared by either of these types of clearing has achieved a vegetative groundcover of greater than 50% and the groundcover consists of greater than 75% native groundcover.

Remove all text in paragraph (b) and replace with: "Up to a further 20% of the extent of invasive native species on the property is cleared only if the Catchment Management Authority is satisfied that land that was initially cleared by either of these types of clearing has achieved a groundcover of greater than 50% (or higher percentage as determined by the CMA) and the groundcover consists of greater than 75% (or higher percentage as determined by the CMA) native groundcover."

Immediately below paragraph (b), add the following new paragraph: "(c) If clearing plants at a paddock scale with nil to minimal disturbance to soil and groundcover is carried out with clearing plants at a paddock scale with temporary disturbance to soil and groundcover and/or clearing of plants at paddock scale with longer-term disturbance to soil and groundcover the clearing must not exceed 60% of the extent of invasive native species on the property except as set out above."

Immediately below new paragraph (c), add the following new paragraph: "(d) The CMA must certify in writing that it is satisfied as to the matters set out in paragraph (b) before the further clearing referred to in that paragraph can take place."

Add Note: Criterion 5 (c) means that the percentage of the extent of invasive native species on the property is calculated by adding the percentage of the extent of invasive native species on the property cleared by any of the higher impact treatments.

6)

Where the following type of clearing is carried out:

- Clearing plants at a paddock scale with temporary disturbance to soil and groundcover.
- (a) The clearing does not exceed 40% of the extent of invasive native species on the property, except as set out below.
- (b) A further 40% of the extent of invasive native species is cleared only if the Catchment Management Authority is satisfied that the land that was initially cleared by this type of clearing has achieved a vegetative groundcover of greater than 50% and the groundcover consists of greater than 75% native groundcover.
- (c) Native groundcover is maintained in perpetuity on land initially cleared by this type of clearing from the date the Catchment Management Authority is satisfied the land is at the vegetative groundcover set out in 6(c) unless clearing is permitted by a property vegetation plan or consent under the *Native Vegetation Act 2003*.
- (d) If both clearing plants at paddock scale with temporary disturbance to soil and groundcover and clearing of plants at paddock scale with longer-term disturbance to soil and groundcover are to be carried out, then section 8 also applies.

Remove all text in paragraph (b) and replace with: "Up to a further 40% of the extent of invasive native species on the property is cleared only if the Catchment Management Authority is satisfied that land that was initially cleared by this type of clearing has achieved a groundcover of greater than 50% (or higher percentage as determined by the CMA) and the

groundcover consists of greater than 75% (or higher percentage as determined by the CMA) native groundcover.”

In paragraph (c), remove “set out in 6(c)” and replace with “set out in paragraph (b)”.

Immediately below paragraph (d), add the following new paragraph: “(e) The CMA must certify in writing that it is satisfied as to the matters set out in paragraph (b) before the further clearing referred to in that paragraph can take place.”

7)

Where the following type of clearing is carried out:

- Clearing of plants at paddock scale with longer-term disturbance to soil and groundcover.
 - (a) The clearing does not exceed 20% of the extent of invasive native species on the property, except as set out below.
 - (b) A further 60% of the extent of invasive native species is cleared only if the Catchment Management Authority is satisfied that for each further 20% (up to a maximum of 80%) of the extent of invasive native species, the land that was previously cleared by this type of clearing has achieved a vegetative groundcover of greater than 50% and the groundcover consists of greater than 75% native groundcover.
 - (c) Native groundcover is maintained in perpetuity on land cleared by this type of clearing from the date the Catchment Management Authority certifies in writing that the land is at the vegetative groundcover set out in 7(c)) unless clearing is permitted by a property vegetation plan or consent under the *Native Vegetation Act 2003*.
 - (d) The clearing at any one time does not exceed 20% of the invasive native species extent on the property.
 - (e) If both clearing plants at paddock scale with temporary disturbance to soil and groundcover and clearing of plants at paddock scale with longer-term disturbance to soil and groundcover are to be carried out, then section 8 also applies.

Remove all text in paragraph (b) and replace with: “Up to a further 60% of the extent of invasive native species on the property is cleared only if the Catchment Management Authority is satisfied that for each further 20% (up to a maximum of 80%) of the extent of invasive native species on the property, land that was initially cleared by this type of clearing has achieved a groundcover of greater than 50% (or higher percentage as determined by the CMA) and the groundcover consists of greater than 75% (or higher percentage as determined by the CMA) native groundcover.”

In paragraph (c), remove “set out in 7(c)” and replace with “set out in paragraph (b)”.

Immediately below paragraph (e), add the following new paragraph: “(f) The CMA must certify in writing that it is satisfied as to the matters set out in paragraph (b) before the further clearing referred to in that paragraph can take place.”

8)

Where both of the following types of clearing are carried out:

- clearing plants at a paddock scale with temporary disturbance to soil and groundcover and
- clearing of plants at paddock scale with longer-term disturbance to soil and groundcover.
 - (a) The clearing does not exceed 40% of the extent of invasive native species on the property except as set out below.
 - (b) A further 40% of the extent of invasive native species is cleared only if the Catchment Management Authority is satisfied that the land that was initially cleared by this type of clearing has achieved a vegetative groundcover of greater than 50% and the groundcover consists of greater than 75% native groundcover.
 - (c) Native groundcover is maintained in perpetuity on land initially cleared by this type of clearing from the date the Catchment Management Authority is satisfied the land is at

the vegetative groundcover set out in 8(c) unless clearing is permitted by a property vegetation plan or consent under the *Native Vegetation Act 2003*.

- (d) The clearing at any one time does not exceed 40% of the invasive native species extent on the property.

Remove all text in paragraph (b) and replace with: "Up to a further 40% of the extent of invasive native species on the property is cleared only if the Catchment Management Authority is satisfied that land that was initially cleared by either of these types of clearing has achieved a groundcover of greater than 50% (or higher percentage as determined by the CMA) and the groundcover consists of greater than 75% (or higher percentage as determined by the CMA) native groundcover."

In paragraph (c), remove "set out in 8(c)" and replace with "set out in paragraph (b)".

Immediately below paragraph (d), add the following new paragraph: "(e) The CMA must certify in writing that it is satisfied as to the matters set out in paragraph (b) before the further clearing referred to in that paragraph can take place."

Note:

For example, using this type of clearing, if the extent of invasive native species on a property is 1,000 ha, then the landholder may initially clear 20% of this area, that is, 200 ha. Once the Catchment Management Authority is satisfied that this 200 ha has achieved a groundcover of more than 50% cover and that cover consists of more than 75% native vegetation, then the landholder may clear a further 20% of the extent of invasive native species on the property, that is, a further 200 ha. The initially cleared area may not be cleared again and must be retained. Once the Catchment Management Authority is satisfied that the second parcel of 200 ha has achieved the groundcover described above, then the landholder may clear a further 200 ha and so on, until the landholder has cleared 800 ha, which is the maximum area permitted to be cleared (that is, 80% of 1,000 ha). The landholder must retain all of the cleared areas which have achieved the necessary level of groundcover in perpetuity. At any one time, no more than 200 ha may be cleared.

Remove the sentence in the above note 'The initially cleared area may not be cleared again and must be retained.'

Restrictions on which methods of clearing may be used

Below the heading "Restrictions on which methods of clearing may be used", insert the following new criterion, to be numbered "8A)": "The clearing type that is used (being a type described in section 7.2 (a) to (f)) is a type which is permitted for the species being cleared, according to Table 7.1"

- 9) The method of clearing is limited to burning, clearing of individual plants with no disturbance to groundcover or clearing of individual plants with minimal disturbance to groundcover where:
- a) non-invasive native trees and shrubs represent more than 50% of total number of individual trees and shrubs; or
 - b) vegetation is an endangered ecological community or population within the meaning of the *Threatened Species Conservation Act 1995*; or
 - c) skeletal/ stony soils, dunefields or lunettes occur on the area where the proposed clearing is to take place.

In paragraph c), delete "skeletal/ stony soils" and replace with "skeletal/ rocky soils".

- 10) For methods other than clearing of individual plants with no disturbance to groundcover and clearing of individual plants with minimal disturbance to groundcover, no land of slope greater than 18 degrees is cleared.

Remove all text in criterion 10 and replace with: "For methods other than burning, clearing of individual plants with no disturbance to groundcover and clearing of individual plants with minimal disturbance to groundcover, no land of slope greater than 18 degrees is cleared."

- 11) For the method of clearing of plants at paddock scale with longer-term disturbance to soil and groundcover, no vegetation is cleared on land:
 - a) with a soil profile less than 1m in depth; or
 - b) of a medium erosion hazard; or
 - c) of a high erosion potential.
- 12) For method clearing of plants at a paddock scale with temporary disturbance to soil and groundcover, no vegetation is cleared on land of a high erosion hazard.

In criteria 11 and 12, remove "hazard" and "potential" wherever it appears and replace it with "risk".

- 13) For methods other than burning, any vegetation that has a stem or trunk with a diameter at breast height ("dbh") greater than the dbh specified in the column headed "Maximum dbh to be cleared" in Table 7.1 is not cleared.

Immediately after "is not cleared" insert "except as set out below".

Change "Maximum dbh to be cleared" to "Maximum dbh allowed to be cleared".

After criterion 13, add the following new criterion, to be numbered "13A": "The relevant Catchment Management Authority may vary the measurement in the column "Maximum dbh allowed to be cleared" in Table 7.1 by up to 5 centimetres if, in the judgement of the Catchment Management Authority, the variation is appropriate for the land to be cleared."

- 14) For methods other than burning or clearing of individual plants with no disturbance to groundcover, no clearing is undertaken within riparian buffer distances as defined by Table 3.1 and Chapter Section 3.3 of the Environmental Outcomes Assessment Methodology.

Remove all text in criterion 14 and replace with: "For methods other than burning or clearing of individual plants with no disturbance to groundcover, no clearing is undertaken within the riparian buffer distances, as set out in Table 3.1 of the Environmental Outcomes Assessment Methodology. Rivers and important wetlands are defined by Section 3.3 of the Environmental Outcomes Assessment Methodology. Other watercourses, lagoons and wetlands listed in Table 3.3 are to be defined by Section 3.3 of the Environmental Outcomes Assessment Methodology or as defined by the Catchment Management Authority."

- 15) For methods other than burning, plants of the species listed in Table 7.1 are retained at the densities per hectare as specified in Table 7.1, except where the vegetation is a community where the species did not previously occur (whether the vegetation is a community where the species did not previously occur is a determination to be made by the relevant Catchment Management Authority). For the purposes of this criterion, the number of plants per hectare means the number of plants on a one hectare area.

Remove all text in criterion 15 and replace with "[Note: this criterion has been removed. See criterion 17A.]"

Note:

The effect of criterion 15 is that the number of plants per hectare cannot be calculated by (for example) averaging out the number of plants that are retained over an area of more than one

hectare.

In the Note above, remove “criterion 15” and replace with “criterion 17A”.
Remove the Note above and insert it immediately before criterion 18 (that is, immediately following the new criterion 17A).

Non-native vegetation

16) The clearing does not result in the introduction into the cleared area of any non-native perennial vegetation.

Remove all text in criterion 16 and replace with: “For methods clearing plants at paddock scale with temporary disturbance to soil and groundcover, and clearing of plants at paddock scale with longer term disturbance to soil and groundcover, the clearing does not result in the introduction into the cleared area of any non-native perennial vegetation other than *Medicago sativa* (Lucerne).”

17) For methods other than clearing plants at a paddock scale with temporary disturbance to soil and groundcover and clearing of plants at paddock scale with longer term disturbance to soil and groundcover, the clearing does not result in the introduction into the cleared area of any annual non-native vegetation.

In criterion 17, remove “annual”.

Retention of native vegetation

Below the heading “Retention of native vegetation”, add the following new criterion, to be numbered “17A”: “For methods of clearing of individual plants with no disturbance to groundcover and clearing of individual plants with minimal disturbance to groundcover:

- a) Plants of the species listed in Table 7.1 as requiring retention are to be retained at the densities specified in Table 7.1, except
 - i. Where the vegetation is a derived vegetation community (whether the vegetation is a derived vegetation community is a determination to be made by the relevant Catchment Management Authority). For the purposes of this criterion, the number of plants per hectare means the number of plants on a one hectare area; and
 - ii. As set out in criterion 17A (b); and
- b) The total retention requirement for all species does not exceed 20 stems per hectare. If there is more than one species present, the stems retained must reflect the proportion of total individuals for each species present and stems are to be retained for a range of size classes present less than the dbh specified in Table 7.1.; and
- c) Stems retained must represent the size classes present prior to clearing.”
- d) The relevant Catchment Management Authority may use its judgement to vary the number of stems per hectare that must be retained as specified by Table 7.1. However, the number of stems per hectare may not be varied to a ratio less than 1 stem under the maximum dbh allowed to be cleared in Table 7.1 to every 1 stem over the maximum dbh allowed to be cleared in Table 7.1, present per hectare for each species present to which this criterion applies. Any such variation does not affect the other requirements of this criterion.

18) For the methods of clearing plants at a paddock scale with nil to minimal disturbance to soil and groundcover, clearing plants at a paddock scale with temporary disturbance to

soil and groundcover and clearing of plants at paddock scale with longer-term disturbance to soil and groundcover:

- (a) a minimum of 20% of the native vegetation on the area to be cleared is retained in either patches or buffers; and
- (b) if more than 500 ha is to be cleared, then a minimum of 20% of the native vegetation on that area must be retained on each 500 ha area.

In criterion 18, remove the full stop at the end of paragraph (b) and add “;and”. Immediately below paragraph (b), add new paragraph: “(c) the 20% retained native vegetation may not be cleared by any other method.” Immediately below paragraph (c), insert the following “The native vegetation retained for the purposes of this criterion may be included as an area uncleared in the calculation of extent of invasive native species on the property for criterion 3-8. “

Note:

The intention of this criterion is that, for example, if 750 ha are to be cleared, then the 750 ha area is to be divided into a 500 ha “envelope” and a 250 ha “envelope.” At least 100 ha must be retained on the 500 ha envelope and at least 50 ha must be retained on the 250 ha envelope. It is not permissible to retain, for example, 150 ha on the 500 ha envelope and retain nothing on the 250 ha envelope.

Immediately following the Note above, insert the following new criterion, to be numbered “18A”: “For the methods of clearing plants at a paddock scale with nil to minimal disturbance to soil and groundcover, clearing plants at a paddock scale with temporary disturbance to soil and groundcover and clearing of plants at paddock scale with longer-term disturbance to soil and groundcover, if plants of the species listed in Table 7.1 as requiring retention are present:

- a) a minimum of 10% of the native vegetation on the area to be cleared is retained in patches; and
- b) if more than 100ha is to be cleared, then a minimum of 10% of the native vegetation on that area must be retained on each 100ha area; and
- c) the areas retained as required by this criterion are additional to the areas retained for the purposes of criterion 18; or
- d) plants of the species listed in Table 7.1 as requiring retention are to be retained at the densities specified in Table 7.1, except
 - i. where the vegetation is a derived vegetation community (whether the vegetation is a derived vegetation community is a determination to be made by the relevant Catchment Management Authority). For the purposes of this criterion, the number of plants per hectare means the number of plants on a one hectare area; and
 - ii. as set out in criterion 18A (e); and
- e) The total retention requirement for all species does not exceed 20 stems per hectare. If there is more than one species present, the stems retained must reflect the proportion of total individuals for each species present and stems are to be retained for a range of size classes present less than the dbh specified in Table 7.1.; and
- f) Stems retained must represent the size classes present prior to clearing.”
- g) The relevant Catchment Management Authority may use its judgement to vary the number of stems per hectare that must be retained as specified by Table 7.1. However, the number of stems per hectare may not be varied to a ratio less than 1 stem under the maximum dbh allowed to be cleared in Table 7.1 to every 1 stem over the maximum dbh allowed to be cleared in Table 7.1, present per hectare for each species present to which this criterion applies. Any such variation does not affect the other requirements of this criterion.

h) However, where the vegetation is a derived vegetation community (whether the vegetation is a derived vegetation is a determination to be made by the relevant Catchment Management Authority) this criterion does not apply.

Add note: The native vegetation retained for the purposes of 18A (a) may be calculated as an area uncleared for the purposes of criterion 3-8 if the vegetation is not cleared by any other clearing type. If other clearing types (a-c) are used in the 10% retained per 100ha the area cannot be used to calculate areas uncleared for the purposes of criterion 3-8.

Requirements on how the clearing is to be carried out

The clearing is carried out in accordance with the methods set out below:

- 19) If clearing by the method of burning:
 - a) burning of non-invasive native species is to the minimum extent necessary to clear the invasive native species; and
 - b) the clearing does not result in soil surface disturbance.
- 20) If clearing by the method of clearing of individual plants with no disturbance to groundcover:
 - a) the clearing does not result in soil surface disturbance; and
 - b) non-invasive native trees and shrubs cleared comprise no more than 1% of the total number of individual trees and shrubs cleared; and
 - c) any clearing of groundcover is incidental in extent; and
 - d) the clearing is limited to clearing of individual plants of invasive native species.
- 21) If clearing by the method of clearing of individual plants with minimal disturbance to soil and groundcover:
 - a) disturbance to soil surface is to the minimum extent necessary to clear individual plants; and
 - b) non-invasive native trees and shrubs cleared comprise no more than 1% of the total number of individual trees and shrubs cleared and;
 - c) the clearing of groundcover is to the minimum extent necessary; and;
 - d) the clearing is specific to individual plants of invasive native species.
- 22) If clearing by method of clearing of plants at a paddock scale with nil to minimal disturbance to soil and groundcover:
 - a) disturbance to soil surface is to the minimum extent necessary; and
 - b) non-invasive trees and shrubs comprise less than 10% of the total number of individual trees and shrubs cleared; and
 - c) the clearing of groundcover is to the minimum extent necessary.
- 23) If clearing by method of clearing plants at a paddock scale with temporary groundcover and soil disturbance:
 - a) non-invasive trees and shrubs comprise less than 10% of the total number of individual trees and shrubs cleared; and
 - b) the clearing of groundcover is to the minimum extent necessary; and
 - c) disturbance to soil surface is limited to the minimum extent necessary to control the invasive native species; and
 - d) introduction of annual non-native vegetation is limited to the clearing activity; and
 - e) any non-native vegetation planted is not harvested.

Remove all text in paragraph (d) and replace with: "introduction of annual non-native vegetation and *Medicago sativa* (Lucerne) is limited to the clearing activity; and"..

- 24) If clearing by method of clearing of plants at paddock scale with longer-term disturbance to soil and groundcover:
 - a) the non-invasive trees and shrubs comprise less than 20% of the total number of individual trees and shrubs cleared; and
 - b) the clearing of groundcover is to the minimum extent necessary to control the

- invasive native species; and
- c) harvesting of any non-native vegetation planted is limited to two occasions in ten years from the date of granting of consent or approval of the Property Vegetation Plan.

Remove all text in paragraph (c) and replace with “the cultivation and planting of annual non-native vegetation and *Medicago sativa* (Lucerne) is limited to three occasions in 15 years from the date of granting of consent or approval of the Property Vegetation Plan”.

Proposed changes to Table 7.1

- (1) In the first sentence under the heading “Table 7.1 Invasive native scrub species database”, remove the word “the” immediately following “with the following criteria”.
- (2) For all species listed in the column headed “Invasive native species”, where the species is a shrub:
 - (i) remove the text in the corresponding cell in the column headed “Maximum dbh to be cleared”; and
 - (ii) replace it with “n/a”.
- (3) Wherever the species in the column headed “Invasive native species” is “*Callitris endlicheri* (Black Cypress)” or “*Callitris glaucophylla* (White Cypress)”,
 - (i) remove retention requirements for clearing types d-f.
- (4) Remove the column headed “Number of plants per hectare to be retained” and replace it with the column headed “Retention requirements” in Table A.
- (5) Change column headed “Maximum dbh to be cleared” to “Maximum dbh allowed to be cleared”.
- (6) The order in which the row for each species in Table 7.1 is to be listed (from top to bottom), within the relevant Catchment Management Authority (and, in the case of Border Rivers/Gwydir and Western, the IBRA region) is as follows:
 - (i) species for which there is a retention requirement of “20 (Total under 30cm dbh)”,
 - (ii) species for which there is a retention requirement of “20 (Total under 20cm dbh)”,
 - (iii) species for which there is a retention requirement of “20 (Total under 15cm dbh)”,
 - (iv) species for which no number is prescribed.
- (7) Immediately below Table 7.1, insert the following:

Note (1): For clearing types (d), (e) and (f), 20cm. For all other clearing types, no maximum dbh is applicable.

Key

In Table 7.1:

“n/a” means not applicable.

In the column headed “Clearing type permitted” and Note (1), the letters “a” to “f” correspond with the clearing types listed on page 60, that is:

a: burning (for example, low intensity fire);

b: clearing of individual plants with no disturbance to groundcover (for example, chemical spot treatment or ringbarking);

c: clearing of individual plants with minimal disturbance to groundcover (for example, grubbing);

d: clearing of plants at paddock scale with nil to minimal disturbance to soil and groundcover (for example, chaining, slashing or roping);

e: clearing of plants at paddock scale with temporary disturbance to soil and groundcover (for example, bladeploughing); and

f: clearing of plants at paddock scale with longer-term disturbance to soil and groundcover (for example, short-term cropping).

Table 1. Recommended amendments to the Invasive Native Scrub Species Database

Catchment Management Authority – IBRA region	Invasive Native Species	Retention requirements			INS treatment options available
		Number of plants per hectare to be retained for treatments b and c	Retention required by criterion 17A and 18A (treatments d-f only)	Maximum dbh allowed to be cleared	
Border Rivers/Gwydir--BBS	<i>Callitris endlicheri</i> (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Border Rivers/Gwydir--BBS	<i>Callitris glaucophylla</i> (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Border Rivers/Gwydir--BBS	<i>Cassinia arcuata</i> (Sifton Bush)	none prescribed	No	n/a	All
Border Rivers/Gwydir--BBS	<i>Eremophila mitchellii</i> (Budda, False sandalwood)	none prescribed	No	n/a	All
Border Rivers/Gwydir--BBS	<i>Olearia eliptica</i> (Sticky Daisy Bush, Peach Bush)	none prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Cassinia laevis</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--BBS	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Acacia farnesiana</i> (Mimosa)	None prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Acacia stenophylla</i> (River cooba, Black Wattle)	None prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Acacia salicina</i> (Cooba)	None prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Callitris endlicheri</i> (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All

Border Rivers/Gwydir--DRP	<i>Callitris glaucophylla</i> (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Border Rivers/Gwydir--DRP	<i>Eremophila bignoniiflora</i> (Eurah)	none prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Eremophila maculata</i> (Spotted Fuschia)	none prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Eremophila longifolia</i> (Emu Bush)	none prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Eremophila mitchellii</i> (Budda, False sandalwood)	none prescribed	No	n/a	All
Border Rivers/Gwydir--DRP	<i>Eucalyptus camaldulensis</i> (River Red Gum)	20 (Total under 20cm dbh)	Yes	20cm	All
Border Rivers/Gwydir--DRP	<i>Eucalyptus coolabah</i> (Coolibah)	20 (Total under 20cm dbh)	Yes	20cm	All
Border Rivers/Gwydir--DRP	<i>Eucalyptus largiflorens</i> (Black box)	20 (Total under 20cm dbh)	Yes	20cm	All
Border Rivers/ Gwydir--DRP	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir--DRP	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/Gwydir--NAN	<i>Acacia deanei</i> (Deane's Wattle)	none prescribed	No	n/a	All
Border Rivers/Gwydir--NAN	<i>Callitris endlicheri</i> (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Border Rivers/Gwydir--NAN	<i>Callitris glaucophylla</i> (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Border Rivers/Gwydir--NAN	<i>Cassinia arcuata</i> (Sifton Bush)	none prescribed	No	n/a	All
Border Rivers/Gwydir--NAN	<i>Leptospermum brevipes</i> (Grey Teatree, Teatree)	none prescribed	No	n/a	All
Border Rivers/Gwydir--NAN	<i>Olearia elliptica</i> (Sticky Daisy Bush, Peach Bush)	none prescribed	No	n/a	All
Border Rivers/ Gwydir--NAN	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir--NAN	<i>Cassinia laevis</i>	None prescribed	No	n/a	All

Border Rivers/ Gwydir-- NAN	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/ Gwydir-- NAN	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	None prescribed	No	n/a	All
Border Rivers/Gwydir-- NET	<i>Leptospermum brevipes</i> (Grey Teatree, Teatree)	none prescribed	No	n/a	All
Border Rivers/ Gwydir-- NET	<i>Cassinia laevis</i>	None prescribed	No	n/a	All
Border Rivers/ Gwydir-- NET	<i>Cassinia quinquefaria</i>	None prescribed	No	n/a	All
Central West--All	<i>Acacia aneura</i> (Mulga)	20 (Total under 20cm dbh)	Yes	20cm	All
Central West--All	<i>Acacia deanei</i> (Deane's Wattle)	none prescribed	No	n/a	All
Central West--All	<i>Acacia farnesiana</i> (Mimosa)	none prescribed	No	n/a	All
Central West--All	<i>Acacia stenophylla</i> (Black Wattle)	none prescribed	No	n/a	All
Central West--All	<i>Callitris endlicheri</i> (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Central West--All	<i>Callitris glaucophylla</i> (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Central West--All	<i>Cassinia arcuata</i> (Sifton Bush)	none prescribed	No	n/a	All
Central West--All	<i>Dodonea viscosa</i> subsp. <i>spatulata</i> (Broadleaf Hopbush)	none prescribed	No	n/a	All
Central West--All	<i>Dodonea viscosa</i> subsp. <i>angustissima</i> (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Central West--All	<i>Eremophila bignoniiflora</i> (Eurah)	none prescribed	No	n/a	All
Central West--All	<i>Eremophila longifolia</i> (Emu Bush)	none prescribed	No	n/a	All
Central West--All	<i>Eremophila mitchellii</i> (Budda, False sandalwood)	none prescribed	No	n/a	All
Central West--All	<i>Eremophila sturtii</i> (Turpentine)	none prescribed	No	n/a	All

Central West--All	Eucalyptus coolabah (Coolibah)	20 (Total under 20cm dbh)	Yes	20cm	All
Central West--All	Eucalyptus largiflorens (Black Box)	20 (Total under 20cm dbh)	Yes	20cm	All
Central West--All	Eucalyptus populnea (Bimble box, Poplar Box)	20 (Total under 20cm dbh)	Yes	20cm	All
Central West--All	Maireana microphylla (Eastern Cotton Bush)	none prescribed	No	n/a	All
Central West--All	Nitraria billardieri (Dillon Bush)	none prescribed	No	n/a	All
Central West--All	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Central West--All	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Central West--All	Sclerolaena birchii (Galvanised Burr)	none prescribed	No	n/a	All
Central West--All	Sclerolaena muricata (Black Roly Poly)	none prescribed	No	n/a	All
Central West--All	Acacia homalophylla (Yarran)	none prescribed	No	n/a	All
Central West--All	Geijera parviflora (Wilga)	20 (Total under 20cm dbh)	No	n/a	All
Central West--All	Acacia salicina (Cooba or Native Willow)	None prescribed	Yes	20cm	a-e*
Central West--All	Eucalyptus camaldulensis (River Red Gum)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Hawkesbury/Nepean--All	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Hawkesbury/Nepean--All	Cassinia arcuata (Sifton Bush)	none prescribed	No	20cm	All
Hawkesbury/Nepean--All	Kunzea ericoides (Burgan)	none prescribed	No	n/a	All
Hawkesbury/Nepean--All	Kunzea parvifolia (Violet Kunzea)	none prescribed	No	n/a	All
Hunter and Central Rivers--All	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Lachlan--All	Acacia deanei (Deane's)	None prescribed	No	n/a	All

	Wattle)				
Lachlan--All	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Lachlan--All	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Lachlan--All	Cassinia arcuata (Sifton Bush)	none prescribed	No	n/a	All
Lachlan--All	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Lachlan--All	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	none prescribed	No	n/a	All
Lachlan--All	Eremophila bowmanii subsp. bowmanii (Silver Turkey Bush)	none prescribed	No	n/a	All
Lachlan--All	Eremophila longifolia (Emu Bush)	none prescribed	No	n/a	All
Lachlan--All	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All
Lachlan--All	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Lachlan--All	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Lachlan--All	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Lachlan	Sclerolaena birchii (Galvanised Burr)	None prescribed	No	n/a	All
Lachlan	Sclerolaena muricata (Black Roly-poly)	None prescribed	No	n/a	All
Lower Murray /Darling--All	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Lower Murray /Darling--All	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	none prescribed	No	n/a	All
Lower Murray /Darling--All	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All

Lower Murray /Darling--All	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Lower Murray /Darling--All	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Lower Murray /Darling--All	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Murray--All	Acacia paradoxa (Kangaroo Thorn)	none prescribed	No	n/a	All
Murray--All	Eucalyptus camaldulensis (River Red Gum)	20 (Total under 20cm dbh)	Yes	20cm	All
Murray--All	Eucalyptus largiflorens (Black Box)	20 (Total under 20cm dbh)	Yes	20cm	All
Murray--All	Sclerolaena muricata (Black Roly Poly)	none prescribed	No	n/a	All
Murray--All	Nitraria billardieri (Dillon Bush)	none prescribed	No	n/a	All
Murrumbidgee--All	Acacia aneura (Mulga)	20 (Total under 20cm dbh)	Yes	20cm	All
Murrumbidgee--All	Acacia stenophylla (River cooba, Black Wattle)	none prescribed	No	n/a	All
Murrumbidgee--All	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Murrumbidgee--All	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	N	n/a	All
Murrumbidgee--All	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	none prescribed	N	n/a	All
Murrumbidgee--All	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	N	n/a	All
Murrumbidgee--All	Eremophila sturtii (Turpentine)	none prescribed	N	n/a	All
Murrumbidgee--All	Eucalyptus camaldulensis (River Red Gum)	20 (Total under 20cm dbh)	Yes	20cm	All
Murrumbidgee--All	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Murrumbidgee--All	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Murrumbidgee	Sclerolaena birchii	None prescribed	No	n/a	All

	(Galvanised Burr)				
Namoi--All	Acacia deanei (Deane's Wattle)	none prescribed	No	n/a	All
Namoi--All	Acacia farnesiana (Mimosa)	none prescribed	No	n/a	All
Namoi--All	Bursaria spinosa (Blackthorn)	none prescribed	No	n/a	All
Namoi--All	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Namoi--All	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Namoi--All	Cassinia arcuata (Sifton Bush)	none prescribed	No	n/a	All
Namoi--All	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Namoi--All	Eucalyptus coolabah (Coolibah)	20 (Total under 20cm dbh)	Yes	20cm	All
Namoi--All	Eucalyptus largiflorens (Black box)	20 (Total under 20cm dbh)	Yes	20cm	All
Namoi--All	Olearia eliptica (Sticky Daisy Bush, Peach Bush)	none prescribed	No	n/a	All
Namoi--All	Leptospermum brevipes (Grey Teatree, Teatree)	none prescribed	No	n/a	All
Namoi--All	Acacia stenophylla (Black Wattle or River Cooba)	20 (Total under 20cm dbh)	Yes	20cm	All
Namoi--All	Cassinia laevis	None prescribed	No	n/a	All
Namoi--All	Cassinia quinquefaria	None prescribed	No	n/a	All
Namoi--All	Casuarina cristata (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Namoi--All	Dodonea viscosa subsp. angustissima (Narrowleaf Hopbush)	None prescribed	No	n/a	All
Namoi--All	Dodonea viscosa subsp. mucronata	None prescribed	No	n/a	All
Namoi--All	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All
Namoi--All	Eremophila bignoniflora (Eurah)	None prescribed	No	n/a	All

Namoi--All	Eremophila longifolia (Emu Bush)	None prescribed	No	n/a	All
Namoi--All	Eremophila mitchellii (Budda)	None prescribed	No	n/a	All
Namoi--All	Sclerolaena birchii (Galvanised Burr)	None prescribed	No	n/a	All
Namoi--All	Sclerolaena muricata (Black Roly-poly)	None prescribed	No	n/a	All
Southern Rivers--All	Kunzea ericoides (Burgan)	none prescribed	No	n/a	All
Southern Rivers--All	Kunzea parvifolia (Violet Kunzea)	none prescribed	No	n/a	All
Southern Rivers--All	Acacia mearnsii (Black Wattle)	none prescribed	No	n/a	All
Southern Rivers--All	Bursaria spinosa (Blackthorn)	none prescribed	No	n/a	All
Southern Rivers--All	Cassinia arcuata	none prescribed	No	n/a	All
Western--BBS	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--BBS	Acacia farnesiana (Mimosa)	none prescribed	No	n/a	All
Western--BBS	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--BBS	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--BBS	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--BBS	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	none prescribed	No	n/a	All
Western--BBS	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All
Western--BBS	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--BBS	Eucalyptus coolabah (Coolibah)	20 (Total under 20cm dbh)	Yes	20cm	All
Western--BBS	Eucalyptus largiflorens (Black box)	20 (Total under 20cm dbh)	Yes	20cm	All
Western--BBS	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--BBS	Senna form taxon	none prescribed	No	n/a	All

	'artemisoides' (Silver Cassia)				
Western--BBS	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--BBS	Casuarina cristata (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Western--BBS	Eremophila bignoniiflora (Eurah)	None prescribed	No	n/a	All
Western--BHC	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--BHC	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--BHC	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--BHC	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Western--BHC	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--BHC	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All
Western--BHC	Eremophila mitchellii (Budda)	None prescribed	No	n/a	All
Western--DRP	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--DRP	Acacia farnesiana (Mimosa)	none prescribed	No	n/a	All
Western--DRP	Acacia stenophylla (Black Wattle)	none prescribed	No	n/a	All
Western--DRP	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--DRP	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--DRP	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--DRP	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	none prescribed	No	n/a	All
Western--DRP	Eremophila longifolia (Emu Bush)	none prescribed	No	n/a	All
Western--DRP	Eremophila mitchellii (Budda,	none prescribed	No	n/a	All

	False sandalwood)				
Western--DRP	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--DRP	Eucalyptus coolabah (Coolibah)	20 (Total under 20cm dbh)	Yes	20cm	All
Western--DRP	Eucalyptus largiflorens (Black box)	20 (Total under 20cm dbh)	Yes	20cm	All
Western--DRP	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--DRP	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Western--DRP	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--DRP	Casuarina cristata (Belah)	20 (Total under 20cm dbh)	Yes	20cm	a-c*
Western--DRP	Eremophila bignoniflora (Eurah)	None prescribed	No	n/a	All
Western--DRP	Muehlenbeckia cunninghamii (Lignum)**	None prescribed	No	n/a	a*
Western--DRP	Sclerolaena birchii (Galvanised Burr)	None prescribed	No	n/a	All
Western--DRP	Sclerolaena muricata (Black Roly-poly)	None prescribed	No	n/a	All
Western--CC	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--CC	Eremophila duttonii (Harlequin Fuchsia Bush)	none prescribed	No	n/a	All
Western--CC	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All
Western--CC	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--CC	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--CP	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--CP	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--CP	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All

Western--CP	<i>Dodonea viscosa</i> subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--CP	<i>Dodonea viscosa</i> subsp. spatulata (Broadleaf Hopbush)	none prescribed	No	n/a	All
Western--CP	<i>Eremophila longifolia</i> (Emu Bush)	none prescribed	No	n/a	All
Western--CP	<i>Eremophila mitchellii</i> (Budda, False sandalwood)	none prescribed	No	n/a	All
Western--CP	<i>Eremophila sturtii</i> (Turpentine)	none prescribed	No	n/a	All
Western--CP	<i>Eucalyptus populnea</i> (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--CP	<i>Senna</i> form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Western--CP	<i>Senna</i> form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--CP	<i>Acacia homalophylla</i> (Yarran)	none prescribed	No	n/a	All
Western--CP	<i>Geijera parviflora</i> (Wilga)	20 (Total under 20cm dbh)	No	20cm	All
Western--CP	<i>Eucalyptus intertexta</i> (Red Box)	20 (Total under 20cm dbh)	Yes	20cm	All
Western--CP	<i>Sclerolaena birchii</i> (Galvanised Burr)	None prescribed	No	n/a	All
Western--ML	<i>Acacia aneura</i> (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--ML	<i>Callitris endlicheri</i> (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--ML	<i>Callitris glaucophylla</i> (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--ML	<i>Dodonea viscosa</i> subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--ML	<i>Eremophila duttonii</i> (Harlequin Fuchsia Bush)	none prescribed	No	n/a	All
Western--ML	<i>Eremophila gilesii</i> (Green Turkey-bush)	none prescribed	No	n/a	All
Western--ML	<i>Eremophila longifolia</i> (Emu	none prescribed	No	n/a	All

	Bush)				
Western--ML	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All
Western--ML	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--ML	Eucalyptus populnea (Bimble box, Poplar box)	20 (Total under 30cm dbh)	Yes	30cm	All
Western--ML	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Western--ML	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--ML	Acacia homalophylla (Yarran)	none prescribed	No	n/a	All
Western--ML	Geijera parviflora (Wilga)	20 (Total under 20cm dbh)	No	20cm	All
Western--ML	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All
Western--ML	Eremophila bowmanii var. bowmanii (Silver Turkey Bush)	None prescribed	No	n/a	All
Western--ML	Muehlenbeckia florulenta (Lignum)**	None prescribed	No	n/a	a*
Western--MDD	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--MDD	Callitris glaucophylla (White Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--MDD	Callitris endlicheri (Black Cypress)	20 (Total under 20cm dbh)	No	20cm	All
Western--MDD	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--MDD	Eremophila mitchellii (Budda, False sandalwood)	none prescribed	No	n/a	All
Western--MDD	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--MDD	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--MDD	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All

Western--MDD	Senna form taxon 'artemisoides'	None prescribed	No	n/a	All
Western--SSD	Acacia aneura (Mulga)	20 (Total under 15cm dbh)	Yes	15cm	All
Western--SSD	Dodonea viscosa subsp angustissima (Narrowleaf Hopbush)	none prescribed	No	n/a	All
Western--SSD	Eremophila sturtii (Turpentine)	none prescribed	No	n/a	All
Western--SSD	Senna form taxon 'artemisoides' (Silver Cassia)	none prescribed	No	n/a	All
Western--SSD	Senna form taxon 'filifolia' (Punty Bush)	none prescribed	No	n/a	All
Western--SSD	Dodonea viscosa subsp. spatulata (Broadleaf Hopbush)	None prescribed	No	n/a	All