

1.0 Cover Page

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

REGIONAL WEED MANAGEMENT PLAN

1.1 Plan Title: *Riverina's Hardhead thistle Management Plan* as revised in 2009

1.2 Plan Proponents / Applicant Contact Details

Regional Weeds Advisory Committee: Eastern & Western Riverina Noxious Weeds Advisory Groups

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Signature: Eastern Group Representative: Date:

Signature: Western Group Representative: Date:

1.3 Name of Plant(s)

WONS - No

Scientific name: *Acroptilon repens* (L.) DC. Common name: Hardhead thistle / Creeping Knapweed

1.4 Plan Period

Starting date: 01/07/2009

Completion date: 30/06/2014

1.5 Area of Operation:

Region 5: extending from Tumut in the east to Wentworth/S.A border in the west and Carrathool in the north to the Murray River in the south. The Local Control Authorities and Livestock Health and Pest Authorities this region encompasses are all representatives of the Eastern and Western Riverina Noxious Weeds Advisory Groups (**E/WRNWAG**). The Region extends across 4 Catchment Management Authority (CMA) areas, being Lachlan, Lower Murray Darling, Murray and the Murrumbidgee.

1.6 Aim:

To control all existing Hardhead thistle infestations, remove new infestations and prevent further spread into and across the Riverina.

1.7 Objectives:

- a. Locate and identify all new infestations of Hardhead thistle in the Riverina.
- b. Contain and treat all new infestations of Hardhead thistle before flowering.
- c. Contain and reduce existing infestations by 20% per annum for the life of the plan.
- d. Minimise the entry of Hardhead thistle into the Riverina, through increasing community awareness of this weeds impacts.

2.0 STAKEHOLDERS

2.1 Signatories

The following Local Control Authority (**LCA**) members of the Eastern and Western Riverina Noxious Weeds Advisory Groups (**E&WRNWAG**): Albury City, Balranald Shire, Bland Shire, Carrathool Shire, Central Murray County, Coolamon Shire, Cootamundra Shire, Corowa Shire, Greater Hume Shire, Griffith City, Gundagai Shire, Hay Shire, Jerilderie Shire, Junee Shire, Leeton Shire, Lockhart Shire, Murrumbidgee Shire, Narrandera Shire, Temora Shire, Tumbarumba Shire, Tumut Shire, Urana Shire, Wagga Wagga City, Wakool Shire, Wentworth Shire, Hume LHPA, Riverina LHPA and Western LHPA.

2.2 Other Stakeholders

The Noxious Weeds Advisory Committee (**NWAC**), NSW Department of Primary Industries (**NSW DPI**), Department of Lands (**DoL**), Lower Murray Darling, Lachlan, Murray and Murrumbidgee Catchment Management Authorities (**CMAs**), NSW National Parks & Wildlife Service (**DEC**), Roads and Traffic Authority (**RTA**), Forests NSW (**FNSW**) Murrumbidgee Irrigation (**MI**), Australian Rail Track Corporation (**ARTC**) and Murray Irrigation Ltd (**MIL**).

3.0 BACKGROUND AND JUSTIFICATION

3.1 Plan Justification and Description of the Problem

Creeping Knapweed or Hardheads (*Acroptilon repens* or *Rhapanticum repens*) arrived in Australia at the start of the 20th century and were considered naturalised in Victoria by 1907. It is now a major problem weed in the Murray River Irrigation Area and the Victorian Mallee, and is of major concern to the Riverina.

Hardheads are an extremely vigorous and efficient competitor for water and nutrients. The extensive root system stores food and makes the plant very hardy. It is an aggressive weed of cultivation, especially in irrigated and dryland crops and pastures, and can become the dominant weed when conditions are suitable. It forms dense, smothering patches and releases allelopathic chemicals that can suppress the growth of other plants. Although it is grazed freely, this plant may be poisonous to livestock if eaten in large amounts. Prolonged contact with hardheads may also cause skin sensitisation and dermatitis in humans.

At present there are only 7 existing and 4 eradicated infestations in the Riverina, all being confined to the southern half of the region bordering with Victoria. The first recorded infestation in the Riverina was in Wakool shire in 1976 on private property, thought to have been introduced in seed. This infestation still exists along with 4 other isolated roadside and private property patches in the shire.

A Balranald farmer reported an infestation on his property back in 1991. It was controlled immediately and there have been no return plants. Two sites have also been found during roadside spraying of road shoulders in Balranald Shire. The 1st infestation (12 plants) was found in 1997 and sprayed immediately. It is being closely monitored and any regrowth is treated. To prevent further spread, stock has been prevented from grazing this section of the roadside. The 2nd infestation (approximately 10 plants) discovered in 1999, was found prior to seeding and was eradicated. The site is checked every couple of months and there have been no return plants.

The first and only reported infestation in Corowa shire was discovered on private property at Savernake in 1999 and again found on the same property in 2003. It was found on a small irrigation channel in the middle of a paddock and has spread along the channel for about 500 metres. The affected farmer is in the process of eradicating it.

Central Murray County Council have several known infestations. The first near Tocumwal was discovered in 1994 and treated; constant monitoring has not seen any return plants. The other infestations, found in 2009 on private properties in the north east of Berrigan Shire, are now under management. Isolated plants have also been found on roadsides in that area. There are also some infestations restricted to the Broken Hill district in the extreme west, north of Wentworth shire.

At present these are the only known infestations of Hardhead Thistle in the Riverina. The main concern for this region is the level of hardhead thistle infestation in Victoria just over the Murray River and the general lack of awareness of Hardhead thistle in the Riverina. Infestations in the Northern irrigation region of Victoria appear to be heading south with new infestations being found in previously clean areas just this season – due to stock or hay movements (starting on roadsides). Infestations found in the Riverina are only in those shires directly north of infestations in Victoria.

With the current drought, a lot of fodder and stock are being moved readily interstate and this is one weed that landholders may be unknowingly introducing to clean properties. This weed is not commonly known across the Riverina. DPI has an excellent education program running with their landholders and we are keen to continue this throughout the Riverina.

Extension and education are key components of this plan. If people are unable to identify Hardhead thistles, are unaware of the potential problems it can cause and lack an understanding of management options, then they are unlikely to act. Extension activities will address these issues and be delivered through field days, workshops, media releases, personal contact during inspections and through the provision of printed material to the general public.

A flier on deep rooted perennial weeds as well as a flier on “Good Management Practices for Hardhead thistle control” were developed by DPI in Echuca and have been modified to target landholders in the Riverina. This was distributed to all weed officers/rangers in 2003 to be distributed to land holders. The same flier is currently being modified and will be distributed with a more comprehensive factsheet for the Riverina in the next 12 months.

A television advertising campaign “Weeds Don’t Have Borders” was aired in northern Victoria and southern Riverina in late 2002. When the next campaign is organised, footage of Hardheads will be introduced to further increase awareness of this new and emerging weed.

3.2 The “Do Nothing” Option

Considering the rapid spread of this weed in Victoria, there is a serious and urgent need to increase community awareness and remove current infestations before they develop into the present situation in Victoria. They are quite vigilant about this weed and it is still being found in clean areas. Once established, hardheads have the ability to reduce yields by up to 75%. They form dense patches that will shade out crops and pastures. It is also a major weed of vineyards and orchards, spreading not only on cropping land but irrigation as well. If we can prevent it from establishing in private property, we will save the community greatly. Once Hardheads have established they are extremely difficult to eradicate. If no control were to be undertaken Hardheads will become an endemic weed of the Riverina, infesting a similar range of the other deep rooted perennial already found here (Silverleaf nightshade and Prairie ground cherry).

3.3 Distribution of Infestations

Refer to Appendix 1. for distribution of Hardheads in the Riverina and Appendix 2. for distribution of Hardheads in Northern Victoria.

3.4 Weed Biology

An erect, rhizomatous, perennial herb standing 30-90cm tall (mostly 45cm). Resembling a spine-free thistle, it reproduces from creeping roots and by seed. Seedlings emerge late winter to early spring and form rosettes, most of which do not produce flowering stems in the first summer. During this time they develop an extensive root system to a depth of 2-2.5metres. Although seed is viable, seedlings are not common. The root system extends both laterally and vertically. The roots are long lived – one patch in Canada so far surviving 80 years despite numerous attempts at eradication.

3.5 Method and Rate of Spread

Infestations of Hardheads increase by lateral root extension as well as by seed. Seed is not dispersed to any significant extent by wind. It may be dispersed by water (along channels), contaminated farm machinery and in fodder and agricultural seed such as Lucerne. Seed viability is increased by 80% after passing through the digestive tract of livestock. It can also adhere to their coats.

The main means of dispersal is by movement of root fragments by cultivation. Segments as short as 2.5cm are capable of shooting to form new plants. Equipment hygiene is really important to avoid spread onto clean properties.

3.6 Species Management

Control of hardheads is difficult as they persist in very adverse conditions and are not susceptible to many herbicides. Early detection and eradication of small patches using herbicides is recommended. Competitive ground covers will effectively compete with Hardheads in horticultural crops. For further information refer to our flier “Good Management Practices for Hardhead Thistle control”.

Farmers 25 odd years ago were undertaking the same control practices then as is being recommended now – fencing the infestation off, keeping away from it and treating it.

3.7 Key Land Managers

All land holders/managers listed below are critical in the success or failure of this plan. If hardheads were to be left untouched due to a lack of awareness of its potential distribution, the Riverina could end up with severe infestations that would cost the community greatly.

Roads and Traffic Authority, Department of Lands, Livestock Health & Pest Authorities, Local Control Authorities and other land managers.

4.0 LEGISLATIVE AND REGULATORY SITUATION

4.1 Current Declaration

Hardhead thistles are currently declared as a Class 4 weed in the following Local Government Areas: Balranald Shire Council, Central Murray County Council (Berrigan, Conargo, Deniliquin & Murray Shires) and Wakool Shire Council.

Class 4 – **Locally Controlled Weeds** – the growth and the spread of the plant must be controlled according to the measures specified in the management plan published by the local control authority.

Balranald Shire: Reduce existing infestations & prevent spread. Acceptable control options include:

- Chemical control using approved Herbicide, following all instructions on label.
- Small patches should be treated & marked to avoid disturbing & enabling you to locate patch the following season.

CMCC: Reduce existing infestations & prevent spread. Acceptable control options include:

- Establishing competitive pasture growth
- Chemical control

Wakool: Reduce existing infestations & prevent spread. Acceptable control options include:

- Chemical control using approved Herbicide, following all instructions on label.
- Small patches should be treated & marked to avoid disturbing & enabling you to locate patch the following season.

4.2 Declaration Changes

None required at this stage.

5.0 CONSIDERATIONS AND OPPORTUNITIES

5.1 Financial support to carry out the plan

Hardheads only infest a small portion of this region. There is a significant opportunity to limit the spread of this weed. At present this weed is not commonly recognised, an extensive awareness campaign will lift the profile of this weed. External funding opportunities exist through the Caring for our Country, Catchment Management Authorities and other fund sources that could significantly accelerate implementation of this plan.

A tri-state liaison committee was formed to look into weed and seed transfer across both the Victorian and South Australian borders. This will improve communication across the border increasing our resources and knowledge on best management practices. ERNWAG and WRNWAG members and the RNWPO will continue to be active participants on this taskforce.

5.2 Links to other Strategies

~ Australian Weed Strategy. Addressing:

- Goal 1: Prevent new weed problems
 - 1.3: Reduce the spread of new weeds to new areas within Australia.
- Goal 2: Reduce the impact of existing priority weed problems

- ~ NSW Invasive Species Plan (and NSW Incursion Plan for Invasive Plant Species). Addressing:
 - o Goals 2 (eradicate or contain) & 3 (effectively manage). Hardheads aren't new to the Riverina but are still in the establishment phase. We need to throw everything at them now so they don't become widespread as is the case in bordering regions in Victoria (see map in Appendix 2.).
 - ~ Regional Weed Strategy - Lower Murray Darling Catchment. Hardheads are recognised as a 'Priority Category B' weed in this catchment. Meaning the weed is present with limited distribution, several small infestations in the Catchment.
 - ~ Regional Weed Strategy – Murray Catchment. Hardheads are recognised as a 'Category B' weed in some of the subregions: meaning the weed is present with limited distribution, several small infestations in the subregion OR 'Category C' weed in the other subregions: meaning the weed is present with moderate distribution in the subregion, numerous to large partially dispersed infestation.
 - ~ Regional Weed Strategy – Murrumbidgee Catchment. Hardheads are recognised as a 'Priority Category A, B or C' weed in this catchment. Meaning the weed ranges from not present to present with moderate distribution.
- The above mentioned Strategies can be downloaded from our website: www.riverinaweeds.org.au.
- ~ Regional Weed Strategy – Lachlan Catchment (Draft).
 - ~ Murray, Murrumbidgee, Lower Murray Darling Catchment Action Plans.
 - ~ North Central Catchment Management Authority Species Specific Action Plan.

5.3 Barriers and Contingencies

The following barriers will delay or obstruct the operation of this Hardhead Thistle regional plan.

- Movement of stock from infected areas to clean areas.
- Ignorance of the potential of Hardheads
- Some landholders may still not recognise Hardheads
- Ignorance of control options
- Lack of effective control (herbicide) options
- Spread by earthmoving machinery etc. Local and government associated road works in proximity to existing infestations (slashing, grading or realignment works). Machinery hygiene.
- Lack of knowledge of hardheads biology – Roadside grazing when plant is flowering and setting seed.

The following contingencies may delay or obstruct the operation of this Hardheads regional plan.

- Drought conditions
- Flood conditions
- Landowner inability to finance control options
- Lack of landholder support

6.0 PERFORMANCE INDICATORS AND ACTIONS

Objective a: Locate and identify all new infestations of Hardhead thistle in the Riverina.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Hold Hardhead thistle identification field day in Wakool and Corowa Shires.	All LCAs and LHPAs in the region able to identify Hardhead thistle in the field.	LCAs
2. Inspect all roads and highways during spring to early summer	All roads in south west inspected between September and January each year. All roads in north east inspected once every two years.	LCAs.
3. Inspect for Hardhead thistle as part of routine property inspection program during spring/summer.	Property inspection programs implemented.	LCAs
4. Inspect all saleyards in south/western part of region during spring/summer.	Sale yards / stock yards inspected.	LCAs, LHPAs and other stakeholders.
5. Field staff and landholders encouraged to report and map any new sightings of Hardhead thistle to build on existing database.	Map developed and regularly being updated with any new infestations.	LCAs, LHPAs and landholders
Objective b: Contain and treat all new infestations of Hardhead thistle before flowering.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Treat and / remove new infestations.	Infestations treated and / removed prior to flowering.	LCAs, LHPAs and Landholders
2. Reinspect and treat any germination at old infestation sites annually (late winter to early spring).	Old sites re-inspected and any germination treated prior to flowering.	LCAs
3. Map and maintain detailed records of infestations.	Regional map regularly updated.	LCAs and LHPAs
Objective c: Contain and reduce existing infestations by 20% per annum for the life of the plan.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. All properties and roadsides that have been/are infested are to be inspected annually to monitor infestation levels and deliver extension material.	100% of infested properties and roadside are inspected each year. This includes old sites as well as existing.	LCAs
2. Treat existing infestations prior to seed set to contain the infestations and reduce further spread.	100% of existing infestations are treated prior to seed set to contain and prevent its spread.	LCAs, LHPAs and Land managers.
3. LCAs, in conjunction with land managers, develop property weed management plan to ensure best control practices are undertaken.	All infested private properties have current property weed management plans.	LCAs and Land managers.

4. Follow-up inspection of existing infestations after treatment; any regrowth to be treated and monitored.	Monitoring of sites ongoing – all existing infestations re-inspected and re-growth treated.	LCAs inspecting. Land managers treating regrowth.
Objective d: Minimise the entry of Hardhead thistle into the Riverina, through increasing community awareness of this weeds impacts.		
ACTIONS	PERFORMANCE INDICATORS	RESPONSIBILITY
1. Run extension program targeted at relevant land managers, industries and the general public; based on outlining the problems this weed can cause while increasing its recognition.	<ul style="list-style-type: none"> - 2 field days run within the region over the plan period. This includes spot field days, when a plant is found, neighbouring properties and shires notified and meet for Id and control advice. - Relevant LCA/LHPA staff attend Murray downs, Henty Field days and Murrumbidgee Farm Fair. - 3 media releases run over plan period. - New factsheet developed and distributed to all weed officers by December 2009 - All weed officers up to date on best management practices by December 2009. Flier distributed to landholders as infestations are found. - personal contact made with each land manager during inspections where possible. 	LCAs, LHPAs, E/WRNWAG.

7.0 MONITOR AND REVIEW PROCESS

The progress of this plan will be reviewed by the ERNWAG & WRNWAG at one of their 3 meetings held annually. The Riverina Noxious Weeds Project Officer will prepare annual progress reports based on the information provided by contributing stakeholders as a component of the group project process.

8.0 BENEFITS

This plan is aiming at preventing further spread and introduction of Hardhead thistles while reducing known infestations across the Riverina. The benefits include:

- Reduction in herbicide use
- Protection of the agricultural industry
- Increased levels of production
- The local economy through flow on effects of reduced control costs / enhanced productivity of industries previously affected by Hardhead thistles.

Limiting the spread in the Riverina will also protect industries in other parts of the region, state and country that are currently unaffected by infestations of Hardhead thistles.

This plan also aims to heighten awareness of regional weed issues and improve networks between stakeholders. Benefits will accrue as a result of this plan bringing together people with an interest in the problems caused by Hardhead thistles, an interest which provides a common focus across the region in preventing its establishment. The cost savings through prevention of new Hardhead thistle infestations, although difficult to quantify, will be significant.

9.0 RESOURCES

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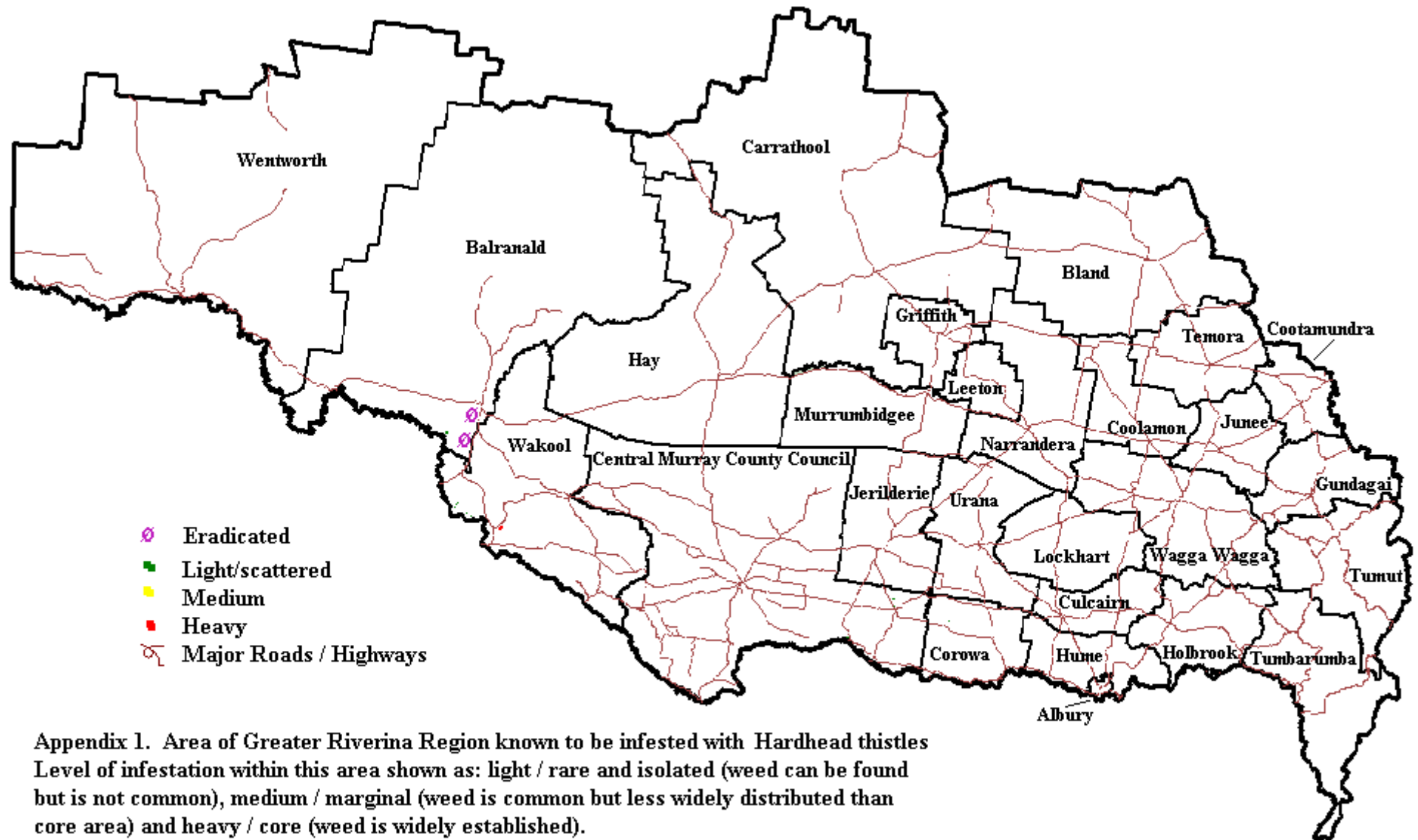
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DISCLAIMER

Any recommendations / comments contained in this document or referred literature do not necessarily represent the plan proponents, participants / stakeholders, authors, coordinators or NSW DPI policies or specific views. No person or organisation should act on the basis of the contents of this document or referred literature, whether as to matters of fact or opinion or other content, without first obtaining specific, independent professional advice which confirms the information contained in this document or referred literature.



Appendix 1. Area of Greater Riverina Region known to be infested with Hardhead thistles
 Level of infestation within this area shown as: light / rare and isolated (weed can be found but is not common), medium / marginal (weed is common but less widely distributed than core area) and heavy / core (weed is widely established).

Note: Base map derived from data provided by and copyright of Land and Property Information New South Wales. Road data is copyright of the Australian Land Information Group (AUSLIG). This general image determined by the regions, LCA Weeds Officers (WO) and RLPB Rangers (R). Generally, weed distribution remains similar on LCA and RLPB managed lands.

Appendix 2.

Infestations of Hardheads in the Northern Irrigation Districts of Victoria.
Produced by DPI, June 2003.

