

Without a Regional Weed Strategy . . .

REGIONAL WED STRATEGY LOWER MURRAY DARLING CATCHMENT

FOR THE USE OF ALL PRIVATE AND PUBLIC LAND MANAGERS

2nd ED

This weed strategy was prepared after consultation with all stakeholders involved. It is part of the Lower Murray Darling Catchment (LMDC) Blueprint as it addresses a specific action in that document. It aims to provide a coordinated weed management regime for the LMDC. The Blueprint forms the basis for the current Lower Murray Darling Catchment Action Plan (CAP).

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First published in July 2004 Strategy updated June 2006

Printed by Thomson's Graphipress Albury NSW 2640

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For further information on noxious weeds, go to: <u>www.dpi.nsw.gov.au/reader/weeds</u>

Regional Weed Strategy - Lower Murray Darling Catchment



Foreword

The effective management of weeds has been recognised by natural resource management groups in the catchment for a long time, what has been needed is a clear and practical method of determining which weed is the most critical to deal with for short term and long term benefit.

The Lower Murray Darling Catchment Management Authority was pleased to be able to fund the development of the Regional Weed Strategy.

I would like to thank the catchment community who contributed to the development of this document with their expertise and time and the facilitators who have achieved a high standard in developing this strategy.

The Regional Weed Strategy is a straight forward, easy to use tool that clearly outlines the definition of weeds and their priorities in various land use areas of the catchment.

This document will provide landholders and land managers with the ability to make informed decisions on where to best invest precious funds in weed control in the Lower Murray Darling Catchment. The natural resource outcomes of these decisions will benefit the community as a whole.

Sincerely Mark King Chair LMD CMA



Figure 1: Lower Murray Darling Catchment: The region to which this Strategy applies.

Refer to LMD CMA website <u>www.lmd.cma.nsw.gov.au</u> for further details about this region.

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Abbreviations

AQIS	Australian Quarantine and Inspection Service
CMA	Catchment Management Authority
CRC	Cooperative Research Centre for Weed Management
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAGE	Discovering Alternatives to Garden Escapes
DEC	Department Environment and Conservation
DNR	Department of Natural Resources
LCA	Local Control Authority (Councils)
LGA	Local Government Area
LMDC	Lower Murray Darling Catchment
NGIA	Nursery & Garden Industry Association
NSW DPI	New South Wales Department of Primary Industries
NWA 1993	Noxious Weeds Act 1993
PO	Project Officer
RLPBs	Rural Lands Protection Boards
RMAP	Rangelands Management Action Plan Inc
WoNS	Weeds of National Significance
WRNWAG	Western Riverina Noxious Weeds Advisory Group

Acknowledgments

The authors gratefully acknowledge the input of the following people: Andrew Pile, Birgitte Verbeek, Darryl Laird, Geoff Woods, Graeme McIntosh, Gregory Moulds, Paula Ash, Peter Jessop, Sheree Bradford and Trevor Ablett who facilitated the community workshops; Tracey Lee for her invaluable input and assistance; and all landholders and agency staff that attended the workshops for their contributions and guidance.

Workshops were held in Broken Hill (30/10/03), Dareton (31/10/03), Nanya (14/11/03), Hatfield (17/11/03), Darnick (27/11/03), Pooncarie (3/2/04), Anabranch (4/2/04) and Dareton (5/2/04).

Photographs were provided by Andrew Pile, NSW DPI; Andrew Storrie, NSW DPI; Angus Atkinson, WEST 2000 plus; Birgitte Verbeek, NSW DPI; Eric McCormick, DNR; Gregory Moulds, NSW DPI; Kate McArthur, DPI Frankston; Kevin Woods, Carrathool Shire Council; Dr Reiks van Klinken CSIRO.

What is a Weed?

As defined in the National Weed Strategy:

"A weed is a plant which has, or has potential to have, a detrimental effect on economic, social or conservation values."

1 Introduction

1.1 Purpose of this Strategy

This Strategy provides a comprehensive framework for weed management in the Lower Murray Darling Catchment (LMDC), giving clear directions for community and government investment in weed management. This document addresses an action from the LMD CAP¹. The Vegetation Management Target in the CAP is:

"Improve the condition of each vegetation community at 90% of sites by the year 2015 as measured by the key indicators."

The action under this target (in the previous Blueprint) is to "Develop and implement a Regional Weed Strategy."

1.2 How was the Strategy developed?

Land managers and others concerned with weed management in the LMDC were consulted to establish agreed outcomes for the Lower Murray Darling (LMD) Regional Weed Strategy (the Strategy). As a first step, these stakeholders agreed upon a vision for the Strategy.

Minimise the economic, environmental and social impacts of existing and new and emerging weeds in the Lower Murray Darling Catchment through coordination, cooperation and commitment from weed managers and the community.

Stakeholders also identified:

- Current weed problems
- A system to rank weeds into priority groups
- Determined goals, objectives and actions for implementation.

1.3 Who is the Strategy for?

The Strategy recognises the diversity of the region and endeavors to meet the needs of all stakeholders by addressing particular weed issues for the following areas - horticultural, rangelands, cropping and riparian areas. It considers weed species that affect the natural environment, agricultural production and social and cultural values. It complements other local, regional and state management plans, legislation and programs and is intended to be used by any individual, group or agency involved in weed management in the LMDC.

1. The LMD CAP sets the direction for managing the native vegetation, biodiversity, water and soils in the catchment using a targeted approach. Further information can be found at <u>www.lmd.cma.nsw.gov.au</u>

What is a noxious weed?

Noxious weeds are weeds that are declared under the Noxious Weeds Act 1993 (NWA). Weeds may be declared over the entire state or in one or more local government areas. Both environmental and production weeds may be declared under the NWA 1993.

1.4 How will the Strategy help me?

Increasingly, land managers are faced with the need to consider a range of environmental issues in their day-to-day operations. Many of the issues depend on the cooperation and good management of others. This Strategy describes the role that individuals, community groups and land and water management agents and authorities have in managing weeds. It provides the actions and monitoring guidelines to ensure effective weed management. This document assists in the decision making process of where to effectively invest money on weed control.



The Darling River

What is an environmental weed?

A weed that impacts on the natural environment. They may be spread by birds, water, wind, or more commonly by humans.

2 Developing the Strategy_

2.1 Goals, Objectives and Actions

The first step in developing the Strategy was for stakeholders to agree on goals to guide implementation. These were identified during the consultation process. Stakeholders developed four goals they deemed to be realistic and achievable that reflected the knowledge and will of key-stakeholders and land managers in the LMD. Importantly they seek to guide a cooperative and targeted approach to enhance the effectiveness of weed management throughout the catchment. The goals are:

- **1.** Protect the environment and agricultural productivity from the impact of weeds,
- 2. Educate stakeholders on weed management,
- **3.** Establish and maintain linkages with neighbouring states, agencies and other catchment management authorities, and
- 4. Ensure the LMDC Regional Weed Strategy remains a relevant working document over the long term.

Each goal is supported by objectives and actions which provide the detail for implementation. These are detailed in section 3 - Implementing the Strategy.

2.2 Listing and Prioritising weeds

A complementary step in developing goals, objectives and actions was for stakeholders to identify weed species in the region. Noxious weeds (see Table A1 and Appendix 3) were also included to produce a comprehensive weed list (see Appendix 1). Note – native species in NSW are protected by the *Native Vegetation Act 2003*.

A ranking system, based on Rod Randall's work (see Appendix 2), was used to prioritise weeds for each of the four land uses:

- 1. Riparian areas
- 2. Horticultural
- 3. Rangelands
- 4. Cropping

The prioritisation process complements the goals, objectives and actions of this Strategy and encourages land managers to adopt a consistent approach. Listed under the priority categories are dot points with recommended activities to deal with these weeds.

What are Class 1 and 2 noxious weeds?

These weeds are of limited distribution, or do not occur in the State, but pose a potentially serious threat to primary production or the environment.

Class 1 and 2 noxious weeds are notifiable under the NWA 1993.

Land managers are required to inform the LCA within 3 days of becoming aware of a Class 1 or 2 weed on the land.

E.g. Mesquite.

2.2.1 Priority categories

A - Weeds not currently present in the LMDC

- Quarantine the area and remove infestations/plants within 7 days (species dependant)
- Hold a spot field day with surrounding neighbours upon identification/ finding
- Report notifiable weeds to NSW DPI
- Widespread publicity using mass media; become pro-active with already established groups and increase awareness of the key features of these weeds during property inspections (Local Control Authorities - LCAs)
- Map and remove all infestations and monitor for re-emergence.

B - Weeds present with limited distribution, several small infestations in the LMDC

- Remove and or isolate infestations using best management practice
- Focus on distribution of the weed by holding field days specific to that weed
- Become pro-active with established groups. Fact sheets to be made available stating what needs to be done and why it is needed. Increase awareness of the key features of these weeds during property inspections (LCAs)
- Map and treat all infestations and monitor for re-emergence.

C - Weeds present with moderate distribution in the LMDC, numerous to large partially dispersed infestations

- Infestations managed as per declaration status
- Hygiene practices promoted to prevent further spread of the weed
- Send out media releases and conduct field days during growing season
- Map and treat all infestations and monitor for re-emergence.

- Incorporate into existing extension material and field days
- Encourage containment of infestations
- Promote hygiene practices to prevent further spread of the weed
- Manage infestations as per declaration and stipulation of LCA policy.

What are the invasive native species?

Six invasive native species are listed under the Native Vegetation Act 2003 and occur in the LMDC:

- Turpentine;
- Budda or false Sandalwood;
- Broadleaf hopbush;
- Narrowleaf Hopbush;
- Punty Bush;
- Silver cassia.

2.2.2 Unprioritised weeds

Some weeds identified by stakeholders were not prioritised because of one or more of the following reasons:

- Native species and not listed as an invasive native species
- Already widespread and well established throughout Australia
- Lack of detailed information.

2.2.3 Invasive Native Species (INS)

These are a significant problem in the rangeland area and have been prioritised for action. They are also dealt with under the *Native Vegetation Act 2003*. All future invasive native species management activities will be dealt with under this Act.



Community consultation at Nanya Hall (racecourse).

2.2.4 Weed Listings

The prioritised weed lists (Tables 2.1-2.4) are provided to guide the allocation of resources. Resources should be allocated firstly to preventing the introduction of new weeds (Priority A) and then to preventing the spread of weeds that are not yet widely established in the catchment (Priority B) and so on. Refer to section 2.2.1 for recommended activities for each category.

Weed		Deriourities the Code server
Common name	Scientific name	Prioritisation Category
Alligator weed	Alternanthera philoxeroides	А
Karoo thorn	Acacia karroo	А
Parthenium weed	Parthenium hysterophorus	А
Knapweed - black & spotted	Centaurea sp	А
Sagittaria	Sagittaria graminea	А
Harrisia cactus	Harrisia spp.	А
Green cestrum	Cestrum parqui	А
Kochia	Kochia scoparia	А
All other Class 1 and 2 weeds	numerous species	А
Class 1 and Class 2 Aquatics	numerous species	А
Mexican feather grass	Nassella tenuissima	А
Athel pine	Tamarix aphylla	В
Rhus tree	Toxicodendron succedaneum	В
Bridal creeper	Asparagus asparagoides	С
Noogoora/Californian Burr	Xanthium sp	С
Willows	Salix sp	С
African boxthorn	Lycium ferocissimum	С
Golden dodder	Cuscuta campestris	С
Lippia	Phyla nodiflora	С
Mexican poppy	Argemone ochroleuca	С
Bathurst burr	Xanthium sp	D
Spiny emex	Emex australis	D
Cathead/caltrop/3 corner jack	Tribulus terrestris	D

A - Weeds not currently present in the LMDC

B - Weeds present with limited distribution, several small infestations in the LMDC

C - Weeds present with moderate distribution in the LMDC, numerous to large partially dispersed infestations

Weed		
Common name	Scientific name	Prioritisation Category
Alligator weed	Alternanthera philoxeroides	А
Parthenium weed	Parthenium hysterophorus	А
Karoo thorn	Acacia karroo	А
Harrisia cactus	Harrisia spp.	А
Green cestrum	Cestrum parqui	А
Horsetail	Equisetum spp.	А
Columbus grass	Sorghum x almum	А
Kochia	Kochia scoparia	А
Knapweed - black & spotted	Centaurea sp	А
Hawkweed	Hieracium spp.	А
All other Class 1 and 2 weeds	numerous species	А
Class 1 and Class 2 Aquatics	numerous species	А
Mexican feather grass	Nassella tenuissima	А
Buffalo burr	Solanum rostratum	А
Prairie Ground Cherry	Physalis viscosa/virginiana	В
Bitou bush/bone seed	Chrysanthemoides monilifera	В
Silverleaf nightshade	Solanum elaeagnifolium	В
Hardhead thistle	Acroptilon repens	В
Noogoora/California burr	Xanthium sp	В
Rhus tree	Toxicodendron succedaneum	В
Bridal creeper	Asparagus asparagoides	С
Spiny burrgrass	Cenchrus sp	С
Johnson grass	Sorghum halepense	С
Golden dodder	Cuscuta campestris	С
Statice	Limonium thouinii	С
Morning glory	Ipomoea sp	С
Crows foot grass	Eleusine indica	С
Khaki weed	Alternanthera pungens	С
Bathurst burr	Xanthium sp	D
Spiny emex	Emex australis	D
Cathead/caltrop/3 corner jack	Tribulus terrestris	D
Olives - feral	Olea europaea sp	D
Paddy melon	Cucumis myriocarpus	D
Feathertop rhodes grass	Chloris virgata	D
Blackberry nightshade	Solanum nigrum	D
Salisfy	Tragopogon porrifolius	D

Table 2.2 – Prioritisation of weeds in horticulture areas.

A - Weeds not currently present in the LMDC

B - Weeds present with limited distribution, several small infestations in the LMDC

C - Weeds present with moderate distribution in the LMDC, numerous to large partially dispersed infestations

Weed		
Common name	Scientific name	Prioritisation Category
Parthenium weed	Parthenium hysterophorus	А
Jerusalem thorn	Parkinsonia aculeata	А
Karoo thorn	Acacia karroo	А
Harrisia cactus	Harrisia spp.	А
Prickly acacia	Acacia nilotica	А
Knapweed - black & spotted	Centaurea sp	А
African rue	Peganum harmala	А
Green cestrum	Cestrum parqui	А
Prairie Ground Cherry	Physalis viscosa/virginiana	А
Kochia	Kochia scoparia	А
Hawkweed	Hieracium spp.	А
All other Class 1 and 2 weeds	numerous species	А
Class 1 and Class 2 Aquatics	numerous species	А
Mexican feather grass	Nassella tenuissima	А
Bitou bush/bone seed	Chrysanthemoides monilifera	В
Silverleaf nightshade	Solanum elaeagnifolium	В
Mesquite	Prosopis sp	В
Tree of heaven	Ailanthus altissima	В
Camel thorn	Alhagi pseudalhagi	В
Hardhead thistle	Acroptilon repens	В
Rhus tree	Toxicodendron succedaneum	В
Bridal creeper	Asparagus asparagoides	С
Californian/noogoora burr	Xanthium sp	С
Spiny burrgrass	Cenchrus sp	С
African boxthorn	Lycium ferocissimum	С
Prickly pear	Opuntia sp	С
Galvanised burr	Sclerolaena birchii	С
Paterson's curse	Echium sp	С
Stattice	Limonium thouinii	С
Peppercorn tree	Schinus areira	С
Khaki weed	Alternanthera pungens	C
Bathurst burr	Xanthium sp	D
Ward's weed	Carrichtera annua	D
Narrow leaf hopbush	Dodonaea attenuata	D
Onion weed	Asphodelus fistulosus	D
Turpentine	Eremophila sturtii	D
Horehound	Marrumbium vulgare	D
Punty bush	Senna artemisioides subsp. filifolia	D
Silver cassia	Senna artemisioides subsp. jutjetta	D
Cathead/caltrop/3 corner jack	Tribulus terrestris	D
Common heliotrope	Heliotronium europaeum	D
Devils claw	Proboscidea louisianica Ibicella lutea	D
Spear thistle	Cirsium vulgare	D
Wild sage	Salvia reflecta	D
Maltese cockspur	Centaurea melitensis	D

Table 2.3 – Prioritisation of weeds in rangelands

A - Weeds not currently present in the LMDC

B - Weeds present with limited distribution, several small infestations in the LMDC

C - Weeds present with moderate distribution in the LMDC, numerous to large partially dispersed infestations

Weed		Deria - 14 - 14 - 10 Cata - 10
Common name	Scientific name	Prioritisation Category
Parthenium weed	Parthenium hysterophorus	А
Alligator weed	Alternanthera philoxeroides	А
Karoo thorn	Acacia karroo	А
Columbus grass	Sorhum x almum	А
Harrisia cactus	Harrisia spp.	А
Silk forage sorghum	Sorghum spp. hybrid cv	А
Green cestrum	Cestrum parqui	А
Horsetail	Equisetum spp.	А
Kochia	Kochia scoparia	А
Knapweed - black & spotted	Centaurea sp	А
Hoary cress	Cardaria draba	А
Branched broomrape	Orobanche sp	А
Mexican feather grass	Nassella tenuissima	А
All other Class 1 and 2 weeds	numerous species	А
Class 1 and Class 2 Aquatics	numerous species	А
Buffalo burr	Solanum rostratum	А
Prairie Ground Cherry	Physalis viscosa/virginiana	В
Silverleaf nightshade	Solanum elaeagnifolium	В
Hardhead thistle	Acroptilon repens	В
Rhus tree	Toxicodendron succedaneum	В
Californian/noogoora burr	Xanthium sp	С
Johnson grass	Sorghum halepense	С
Spiny burrgrass	Cenchrus sp	С
Willows	Salix sp	С
Statice	Limonium thouinii	С
Khaki weed	Alternanthera pungens	С
Bathurst burr	Xanthium sp	D
Onion weed	Asphodelus fistulosus	D
Spiny emex	Emex australis	D
Wild radish	Raphanus raphanistrum	D
Cathead/caltrop/3 corner jack	Tribulus terrestris	D
Horehound	Marrumbium vulgare	D
Devil's claw	Proboscidea louisianica, Ibicella lutea	D

Table 2.4 – Prioritisation of weeds in cropping areas

A - Weeds not currently present in the LMDC

B - Weeds present with limited distribution, several small infestations in the LMDC

C - Weeds present with moderate distribution in the LMDC, numerous to large partially dispersed infestations

3 Implementing the Strategy

Each goal of this Strategy is supported by a number of objectives; and objectives are supported by actions. The tables below show the hierarchy and include the agencies/persons responsible for achieving each action. All actions are of equal importance and completion is recommended within the life of the Strategy.

3.1 GOAL 1 – Protect the environment and agricultural productivity from the impact of weeds

Objective 1.1: Prevent the invasion of new weeds and manage existing infestations		
ACTIC	DNS	RESPONSIBILITY
1.1.1	Identify target areas to focus management activities for priority weeds	NSW DPI, landholders, RLPBs, LCA, DNR, DEC
1.1.2	Identify and protect areas with high conservation and cultural values as per current Acts and Plans	DEC, DNR, LCA, RLPB, RMAP
1.1.3	Develop and implement weed management plans for priority weeds incorporating mapping of infestations	WRNWAG, RMAP, RLPBs, LMD CMA, LCAs, landholders
1.1.4	Review developed weed management plans annually	WRNWAG, RLPBs, LCAs, landholders, RMAP, LMD CMA
1.1.5	Implementation of this Strategy by LCAs to ensure inspection and compliance activities are consistent with the priorities identified for noxious weeds	LCA
1.1.6	Support potential biological control options for the region	All stakeholders
1.1.7	Include weeds in Property Vegetation Plans	Landholders, DNR, LMD CMA
1.1.8	Review the declaration list for each shire within the LMDC	LCAs in conjunction with the stakeholders
1.1.9	Develop protocol for roadside weed management with relevant authorities	LCAs, WRNWAG
Objecti	ve 1.2: Prevent the introduction of new weeds from	the retail industry and gardens
ACTIC	DNS	RESPONSIBILITY
1.2.1	Promote the planting of non invasive species in gardens	LCAs, WRNWAG
1.2.2	Inform target groups of new weed incursions. Eg; retail outlets, farmers and the greater community	LCAs, WRNWAG, NSW DPI
1.2.3	Inform retail outlets about plants that are prohibited from sale	LCAs
1.2.4	Implement targeted inspectorial program on retail outlets	LCAs
1.2.5	Promote the impacts of weeds through the use of media, focusing on the threat of garden escapees and illegal dumping of garden refuse	LCAs, LMD CMA, DNR, RMAP, NSW DPI, WRNWAG
1.2.6	Develop links with Nursery and Garden Industry Association (NGIA) and Discovering Alternatives to Garden Escapes (DAGE)	WRNWAG
1.2.7	Provide all retail outlets with up-to-date declaration list for LGA	LCAs

3.2 GOAL 2 – Educate stakeholders on weed management

Objective 2.1: Ensure land managers are aware of their obligations toward weed management		
ACTIC	DNS	RESPONSIBILITY
2.1.1	Educate stakeholders on their responsibilities under the NWA 1993	NSW DPI, LCAs, WRNWAG
2.1.2	Develop and implement a standard policy of hygiene for visitors to horticultural properties	Horticulturalists in conjunction with service providers
2.1.3	Develop and implement a program within the region whereby new property owners are forwarded a Weeds Information Pack	LCA, WRNWAG
Object	ive 2.2: Provide educational resources for the com-	munity on weed management
ACTIC	DNS	RESPONSIBILITY
2.2.1	Include weed management information on existing web sites	All agencies with existing web sites
2.2.2	Develop and distribute a field identification guide	WRNWAG, RMAP, RLPBs, LMD CMA, LCAs
2.2.3	Inform the community on how to have plants identified by developing and distributing extension material	RMAP, NSW DPI, WRNWAG
2.2.4	Incorporate extension programs in developed weed management plans. See 1.1.3	LCAs, RMAP, WRNWAG, PO
2.2.5	Produce weed management material for the media and relevant publications	LCAs, NSW DPI, WRNWAG, DNR, LMD CMA, RLPBs, RMAP
2.2.6	Facilitate incorporation of weed educational programs within schools, TAFEs and other relevant organisations. Eg; Weed Warriors	LCAs, WRNWAG, Weeds CRC
2.2.7	Develop demonstration sites and run field days to educate landholders on best management practice for priority weeds	NSW DPI, WRNWAG, LCAs, RMAP, DNR, RLPBs



Weed Warriors collecting biological control agents.

3.3 GOAL 3 – Establish and maintain linkages with neighbouring states, agencies and other catchment management authorities

Objective 3.1: Build communication networks		
ACTIC	DNS	RESPONSIBILITY
3.1.1	Establish a tri-state committee to manage common weed problems	All agencies
3.1.2	Identify and list common priority weeds in all three states	Tri-state committee
3.1.3	Develop cross border media campaigns aimed at preventing weed spread	Tri-state committee
3.1.4	Develop joint funding submissions for priority weeds	Tri-state committee



Rangeland Management Field Day

3.4 GOAL 4 – Ensure the LMDC Regional Weed Strategy remains a relevant working document over the long term

Objective 4.1: Stakeholders committed to implementing this Strategy		
ACTIC	DNS	RESPONSIBILITY
4.1.1	Seek funding to implement the Strategy	All stakeholders
4.1.2	Implementation of the Rangeland Incentive Strategy	RMAP, LMD CMA
4.1.3	Recommend all councils employ a competent weeds officer	LCAs, NSW DPI, LMD CMA, DNR
4.1.4	Establish and maintain a Weed Strategy Implementation Group	WRNWAG
4.1.5	Appoint a custodian for the Regional Weed Strategy	Weed Strategy Implementation group
4.1.6	Monitor and review the Strategy	Custodian (see 4.1.5)

4 Other relevant information

4.1 Principle Implementing Committees

4.1.1 RMAP

The Rangeland Management Action Plan Inc (RMAP) was established by the local landholder community who decided that a planned approach to the overall management of the rangelands on the LMDC was necessary. The planning process to develop the RMAP document commenced in 1995. The vision of RMAP is to improve landholder viability while maintaining or enhancing natural resources, biodiversity and cultural heritage for rangelands in the LMDC.

4.1.2 WRNWAG

The Western Riverina Noxious Weeds Advisory Group (WRNWAG) is the leading committee for weed management in the Riverina. The group, formed in 1997, comprises all key stakeholders involved in weed management including Wentworth and Balranald Shires and Rural Lands Protection Boards (RLPBs). WRNWAG's aim is to promote the coordination of weed management with all relevant stakeholders by providing a forum for the interchange of information.

4.2 Links to Other Plans and Strategies

This Strategy is consistent with the concepts outlined in National and State Weed Strategies but offers a greater degree of specific detail to the LMDC.

Level	Strategy / Plan
National	National Weeds Strategy WoNS individual Strategies
State	NSW Weeds Strategy State Weed Plans for individual weeds
Regional	LMDC Regional Weed Strategy Regional Weed Control Plans LMDC Blueprint LMD CAP - Property Vegetation Plans Far West Region - Pest Management Strategy (DEC) Rangeland Management Action Plan
Local LGA's	Local Management Plans Site specific Individual property plans

Table 4.1 – Other relevant manageme	ent strategies and plans
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4.3 Relevant Legislation

A wide range of legislation needs to be considered when implementing weed management activities (Table 4.2). Compliance is dependent on the management activity being undertaken or particular weed problem.

Legislation/Policy	Agency responsible for administration
Noxious Weeds Act 1993 (as amended	NSW DPI
in 2006)	
Rural Lands Protection Act 1998	
Biological Control Act 1985	
Quarantine Act 1908	Australian Quarantine & Inspection
	Service (AQIS) within Department
	of Agriculture Forestry and
	Fisheries
Catchment Management Authorities	Department of Natural Resources
Act 2003	Catchment Management
Native Vegetation Act 2003	Authorities (CMA's)
Crown Lands Act 1989	Department of Lands
Protection of the Environment	Department of Environment
Operations Act 1997	and Conservation
National Parks and Wildlife Act 1974	
Pesticides Act 1999	
Threatened Species Conservation Act 1995	
Environment Protection Biodiversity	Australian Government Department of
Conservation Act 1999	Environment and Heritage
Rural Fires Act 1997	Rural Fire Service of NSW
Local Government Act 1993	State Department of Local
	Government/Local Councils
Occupational Health and Safety Act 2000	Workcover Authority of NSW

Table 4.2 –	Legislation	impacting	on weed	management
		<i>P</i>		



Alligator weed

Appendices

Appendix 1 Weeds identified during consultation

Weed	Scientific name	Weed	Scientific name
African boxthorn	Lycium ferocissimum	Lippia	Phyla canescens
African rue	Peganum harmala	Maltese cockspur	Centaurea melitensis
Alligator weed	Alternanthera philoxeroides	Match-head plant	Psilocaulin tenue
Annual grasses	poa annua	Mesquite	Prosopis sp
Arabian grass	Schismus barbatus	Mexican poppy	Argemone ochroleuca
Athel pine	Tamarix aphylla	Morning glory	Ipomoea sp
Barnyard grass	Echinochloa crusgalli	Narrow leaf hopbush	Dodonaea attenuata
Bathurst burr	Xanthium sp	Noogoora Burr	Xanthium sp
Bitou bush	Chrysanthemoides monilifera	Nut grass	Cyperus bifax or rotundus
Blackberry nightshade	Solanum nigrum	Olives - feral	Olea europaea sp
Black oats	Avena sp	Onion weed	Asphodelus fistulosus
Black roly poly	Bassia quinquecuspis	Paddy melon	Cucumis myriocarpus
Branched broomrape	Orobanche sp	Pampas grass	Cortaderia sp
Bridal creeper	Asparagus asparagoides	Parthenium weed	Parthenium hysterophorus
Brome grass	Bromus sp	Paterson's curse	Echium plantagineum
Buffalo burr	Solanum rostratum	Peppercorn tree	Schinus areira
Bushy groundsel	Senecio cunninghamii	Pig face	Disphyma clavellatum
Californian burr	Xanthium sp	Porcupine grass	Triodia irritans
Camel melon	Citrullus lanatus	Prairie Ground Cherry	Physalis viscosa/virginiana
Camel thorn	Alhagi pseudalhagi	Prickly acacia	Acacia nilotica
Cape weed	Arctotheca calendula	Prickly acacia	Acacia victoriae
Cathead/caltrop/3 corner jack	Tribulus terrestris	Prickly pear	Opuntia sp
Columbus grass	Sorghum x almum	Punty bush	Senna artemisioides subsp. Filifolia
Common heliotrope	Heliotropium europaeum	Rye grass	Lolium sp
Corn gromwell	Lithospermum arvense	Saffron thistle	Carthamus lanatus
Couch	Cynodon sp	Sagittaria	Sagittaria graminea
Crab grass/crow's foot grass	Eleusine indica	Salsify/Jerusalem star	Tragopogon porrifolius
Cumbungi	Typha sp	Scotch thistle	Onopordum acanthium
Devil's claw	Proboscidea louisianica, Ibicella lutea	Silk forage sorghum	Sorghum spp. hybrid cv
Dock	Rumex sp	Silver cassia	Senna artemisioides subsp. Artemisioides
Dwarf cherry	Exocarpus strictus	Silverleaf nightshade	Solanum elaeagnifolium
Evening primrose	Oenothera sp	Skeleton weed	Chondrilla juncea
Fat hen	Chenopodium album	Sour sob	Oxalis pes-caprae
Feather top	Chloris virgata	Sth African desert rice flower	?
Fuschia	Eremophila sp	Spear thistle	Cirsium vulgare
Galvanised burr	Sclerolaena birchii	Spiny burrgrass/gentle annie	Cenchrus sp
Golden dodder	Cuscuta campestris	Spiny emex	Emex australis
Hardhead thistle	Acroptilon repens	Statice	Limonium lobatum
Hoary cress	Cardaria draba	Stinking sage	?
Horehound	Marrubium vulgare	Tree of Heaven	Ailanthus altissima
Horsetail	Equisetum spp.	Tree tobacco	Solanum mauritianum
Ice plant - giant	Mesembryanthemum sp	Turpentine	Eremophila sturtii
Jerusalem thorn	Parkinsonia aculeata	W1 Aquatics	numerous sp
Johnson grass	Sorghum halepense	Ward's weed	Carrichtera annua
Khaki weed	Alternanthera pungens	Wild radish	Raphanus raphanistrum
Kikuyu	Pennisetum clandestinum	Wild sage	Salvia verbenaca
Knapweed - black & spotted	Centaurea sp	willow herb	Epilobium hirtigerum
Lacey Ragwort	/ 	W1110WS	Salix sp
Lantalia	Lantana camara	whe weed	r orygonum aviculare

? - Lack of detailed information available

Appendix 2 Prioritisation process

QUESTIONS - As adapted from Rod Randall's 'Which are my worst weeds?' A simple ranking system for prioritising weeds. (Plant Protection Quarterly Vol. 15(3) 2000).

Plant Name:
Family Name:
Common Name/s:

Section A. Invasiveness of the weed.

Question		Yes	No	? = 2
1. Does this plant have a known history of invasiveness?	1. Yes = 6, No = 0			
 2. Does this plant: i. grow in two or more climate types? ii. grow in two or more soil types? iii. grow in low nutrient soils? iy. survive significant mutilation or damage (grazing, slashing etc)? 	2. Yes = 1, No = 0			
v. tolerate drought?vi. have any natural predators (parasites, fungi etc)?				
 3. Reproductive modes i. vegetative (suckers, rhizomes, stolons, layering, plantlets) ii. seed iii. geotypes (bulbs, corms, bulbils) 	3. Yes = 2, No = 0			
4. Is this plant a prolific producer of propagules? (fruits, seeds, bulbs, corms, vegetative fragments etc.) ie. 1000+ propagules per square metre. Plants that have been cultivated or shredded can also produce many thousands of viable fragments.	4. Yes = 6, No = 0			
 5. Does the plant utilise any of the following modes of dispersal? i. seed or fruit is sticky or has hooks, spines, burrs (hitchhikers) ii. fruit or seed is consumed and seed survives passage (birds, mammals) iii. propagules have wings, parachutes, silks, fluff (wind dispersal aids) iv. as a contaminant of produce (gravel, seed, hay) 	5. Yes = 1, No = 0			

- v. is moved via soil or mulch (road grading, landscaping, soil in potplants)
- vi. fruit or seed is easily transported by water, runoff, etc.

6. Do propagules display any dormancy characteristics? Eg: staggered germination, long periods of dormancy (two or more years), or a disturbance such as cultivation, overgrazing, fire or clearing is needed before large scale germinations occur.

Section worth a maximum of 36 points

6. Yes = 6, No = 0

Section B. Impacts of the weed.

Question		Yes	No	? = 2
1. Does this plant reduce or prevent the establishment, regeneration or development of desired native species? (including fauna as well as flora)	1. Yes = 6, No = 0			
 2. Does this plant affect the quality of products or services by: i. contamination of products (may render a product unsaleable) ii. yield loss (ie. Displacing normal food sources, increased competition) 	2. Yes = 1, No = 0			
iii. loss of tourism value (in commercial operations)	t			
3. Does this plant smother or climb over desirable vegetation or does it develop into dense thickets, monocultures or very dense stands or swards?	3. Yes = 6, No = 0			
4. Does the plant restrict/modify the normal physical movements or behaviour of people or animals, access of vehicles or movement of water?	4. Yes = 6, No = 0			
 5. Is this plant: i. a harbour to pests and / or diseases (that have an impact on other valued species) ii. toxic (to consumer / produces residues that affect plant establishment ie. a iii. unpalatable to stock iv. a cause of dermatitis, asthma, hayfever (effects can be remote to the plant) v. offensive to stock and / or people (can be prickles, exudates, smell) 	5. Yes = 1, No = 0 llelopathy)			
6. What negative environmental effects on ecological systems does this plant l	have?			
 i. increases soil erosion (loss of topsoil, gully erosion) ii. alters fire regimes (increased, decreased, more intense) iii. replaces desirable fauna habitat and / or food sources 	6. Yes = 1, No = 0			
	Section B Score			
Section worth a maximum of 29 points				

Section C. Will that weed spread further? Its potential distribution. LCA:

In determining the potential spread of a plant one should consider its current distribution and how the plant is behaving. The combination of these factors could then be used to determine a score for the plant's potential to spread.



1. Compare these diagrams with the weeds current distribution. Distribution of weed within the region of interest. **This is your shire.**

If weed is not present (tick box)

42 points to Section D.

Diagram best representing the current distribution of the weed (0-18 points):



- 2. Activity factor:
- i. Weed's distribution has been static for some time (10 years +) (3 points)
- ii. Weed is slowly expanding its distribution (10 years +) (6 points)
- iii. Weed is newly introduced (within last 5 years) and spreading slowly (9 points)
- iv. Present for some time (10 years +), has just started to spread rapidly (climate or agriculture reasons) (12 points)
- v. Weed is spreading rapidly (15 points)
- vi. Weed has just been found (known to be a threat, highest priority for action dealt with immediately), no chance to spread (18 points)
- vii. Weed distribution is decreasing.

Activity factor best describing the current situation of the weed (0-18 points)

1. Diagram best representing 'current distribution' 0 - 18 points	
2. 'Activity factor' 0 - 18 points	
Section C Score	

Section worth a maximum of 42 points

Section D. Have you got a 'priority' weed?

This flowchart is used to identify those weeds <u>that with early intervention</u> could be eradicated or at least prevented from spreading further. Plants determined as 'priority' weeds by this process have a 10% loading added to the final ranking score, and will be highlighted within the ranking structure as species where immediate action will produce positive benefits.

It is quite possible that a 'priority' weed status may be conferred on a species that ranks quite low in the final overall results. This does not imply that any effort on these low ranked weeds is not worthwhile; any time a weed can be prevented from establishing or spreading significantly is time well spent.

Determine if this species is a 'priority' weed . . . Yes or No



TOTAL SCORE

Add the scores from Sections A, B and C.	Sum Score:		
Is this species a 'Priority' weed (Section D)?		Yes	No

If this species is a 'priority' weed then multiply the Sum Score by 1.1 (add 10%) to derive the
Final Score and place a 'T' in front of that score.

Final Score	
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Appendix 3 Noxious weeds

The Minister for Primary Industries has responsibility for control of noxious weeds in NSW and for the control of noxious weeds by public authorities and Local Control Authorities (Local Government or Councils).

LCAs have responsibility for control of noxious weeds in the areas under their control but are not responsible for control of noxious weeds by public authorities.

LCAs have powers under the Noxious Weeds Act (NWA) 1993 to enforce control of noxious weeds on private land.

Generally LCAs apply to have weeds declared in their area, however members of the public or community groups can also initiate proposals to change noxious weed declared.

More information about noxious weeds, their declaration status and policies and procedures can be found on the NSW Department of Primary Industries website <u>www.dpi.nsw.gov.au/reader/weeds</u>



Taking Mesquite out!

Common name	Botanical name	Balranald	Broken Hill	Central Darling	Unincorp- orated Area	Wentworth
African boxthorn	Lycium ferocissimum	4	4	4	4	4
African feathergrass	Pennisetum macrourum	5	5	5	5	5
African turnip weed	Sisymbrium runcinatum	5	5	5	5	5
African turnip weed	Sisymbrium thellungii	5	5	5	5	5
Alligator weed	Alternanthera philoxeroides	2	2	2	2	2
Anchored water hyacinth	Fichhornia azurea	1	- 1	1	1	1
Annual ragweed	Ambrosia artemisiifolia	5	5	5	5	5
Arrowhead	Sagittaria montevidensis	5	5	5	5	5
Artichoke thistle	Cynara cardunculus	5	5	5	5	5
Athel tree/Athel pine	Tamarix anhylla	5	5	5	5	5
Bathurst, Noogoora,		5		5	5	5
cockel. California burrs	Xanthium sp.	4	_	_	_	4
Blackberry	Rubus fruticosus (agg Sp)	4*	4*	4*	4*	4*
Black Knapweed	Centaurea nigra	1	1	1	1	1
Bridal creeper	Asparagus asparagoides	5	5	5	5	5
Broomrana	Arobancha spn Exclusiona sp	1	1	1	1	1
Diominape Duminape	Ambuogia confortiolona	5	5	5	1	5
Burr ragweed	Ambrosia confernigiora	5	5	5	5	5
Cabomba	Cabomba sp.	3	5	3	3	5
Camel thorn	Alnagi pseudalnagi	-	4	-	4	-
Cayenne snakeweed	Stachytarpheta cayennensis	<u>)</u>	<u> </u>	<u> </u>	<u> </u>	
Chilean needle grass	Nassella neesiana	3*	4*	4*	4*	5*
Chinese violet	Asystasia gangetica	1	1	1	1	1
Clockweed	Gaura lindheimeri	5	5	5	5	5
Clockweed	Gaura parviflora	5	5	5	5	5
Columbus grass	Sorghum x almum	4	3	3	3	4
Corn sowthistle	Sonchus arvensis	5	5	5	5	5
Devil's claw (yellow flower)	Ibicella lutea	4		-	-	4
Devil's claw (purple flower)	Proboscidea louisianica	4	-	-	-	4
Dodder	Cuscuta spp. Excl native sp.	5	5	5	5	5
East Indian hygrophila	Hygrophila polysperma	1	1	1	1	1
Espartillo	Achnatherum brachychaetum	5	5	5	5	5
Eurasian water milfoil	Myriophyllum spicatum	1	1	1	1	1
Fine-Bristled burr grass	Cenchrus brownie	5	5	5	5	5
Fountain grass	Pennisetum setaceum	5	5	5	5	5
Gallon's curse	Cenchrus biflorus	5	5	5	5	5
Glaucous star thistle	Carthamus glaucus	5	5	5	5	5
Golden thistle	Scolymus hispanicus	5	5	5	5	5
Green cestrum	Cestrum parqui	-	3	3	3	-
Hardhead thistle	Acroptilon repens	4	-		-	
Harrisia cactus	Harrisia sp.	4*	4*	4*	4*	4*
Hawkweed	Hieracium sp.	1	1	1	1	1
Horehound	Marrubium vulgare	-	-	-	-	4
Horsetail	Equisetum sp.	1	1	1	1	1
Hymenachne	Hymenachne amplexicaulis	1	1	1	1	1
Johnson grass	Sorghum halepense	4	3	3	3	4
Karroo thorn	Acacia Karroo	1	1	1	1	1
Khaki weed	Alternanthera pungens	4	1-1-1	-		4
Kochia	Kochia scoparia	1	1	1	1	1
Lagarosiphon	Lagarosiphon major	1	1	1	1	1
Lantana	Lantana sp.	5	5	5	5	5
Long-leaf willow primrose	Ludwigia longifolia	5	5	5	5	5

Table A1 Noxious Weeds List for LMDC

Common name	Botanical name	Balranald	Broken Hill	Central Darling	Unincorp- orated Area	Wentworth
Mesquite	Prosopis sp.	2	2	2	2	2
Mexican feathergrass	Nassella tenuissima	1	1	1	1	1
Mexican poppy	Argemone mexicana	5	5	5	5	5
Miconia	Miconia sp.	1	1	1	1	1
Mimosa	Mimosa pigra	1	1	1	1	1
Mossman river grass	Cenchrus echinatus	5	5	5	5	5
Onion grass	Romulea sp & vars, excl native sp	5	5	5	5	5
Onion weed	Asphodelus fistulosus	4	-	-	_	4
Oxalis	Oxalis sp & vars, excl native sp	5	5	5	5	5
Parkinsonia	Parkinsonia aculeata	2	2	2	2	2
Parthenium weed	Parthenium hysterophorus	1	1	1	1	1
Perennial ground cherry	Physalis virginiana	4	-	-	-	4
Pond apple	Annona glabra	1	1	1	1	1
Prairie ground cherry	Physalis viscosa	4	-	-	-	4
Prickly acacia	Acacia nilotica	1	1	1	1	1
Prickly pears	Opuntia & Cylindropuntia sp.	4*	4*	4*	4*	4*
Red rice	Oryza rufipogon	5	5	5	5	5
Rhus tree	Toxicodendron succedaneum	4	4	4	4	4
Rubber vine	Cryptostegia grandiflora	1	1	1	1	1
Sagittaria	Sagittaria graminea	4				4
Sagittaria	Sagittaria platyphylla/graminea	5	5	5	5	5
Salvinia	Salvinia molesta	2	2	2	2	2
Sand oat	Avena strigose	5	5	5	5	5
Senegal tea plant	Gymnocoronis spilanthoides	1	1	1	1	1
Serrated tussock	Nassella trichotoma	3*	4*	4*	4*	3*
Siam weed	Chromolaena odorata	1	1	1	1	1
Silk forage sorghum	Sorghum sp. Hybrid cv.	4	-	-	-	4
Smooth-stemmed turnip	Brassicxa barreliera subsp oxyrrhina	5	5	5	5	5
Soldier thistle	Picnomon acarna	5	5	5	5	5
Spiny burrgrass	Cenchrus incertus	4*				4*
Spiny burrgrass	Cenchrus longispinus	4*	-	-	-	4*
Spotted knapweed	Centaurea maculosa	1	1	1	1	1
Texas blueweed	Helianthus ciliaris	5	5	5	5	5
Water caltrop	Trapa sp.	1	1	1	1	1
Water hyacinth	Eichhornia crassipes	2	2	2	2	2
Water lettuce	Pistis stratiotes	1	1	1	1	1
Water soldier	Stratiotes aloides	1	1	1	1	1
Willows	Salix sp.	5	5	5	5	5
Witchweed	Striga sp. Excl native sp	1	1	1	1	1
Yellow burrhead	Limnocharis flava	1	1	1	1	1
Yellow nutgrass	Cyperus esculentus	5	5	5	5	5

Table A1 - Noxious Weeds List for LMDC

Class 1 - State Prohibited Weeds

The plant must be eradicated from the land and the land must be kept free of the plant.

Class 2 - Regionally Prohibited Weeds

The plant must be eradicated from the land and the land must be kept free of the plant.

Class 3 - Regionally Controlled Weeds

The plant must be fully and continuously suppressed and destroyed and where applicable (*) the plant must not be sold, propagated or knowingly distributed.

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 and where applicable (*) the plant must not be sold, propagated or knowingly distributed.

Class 5 - Restricted Plants

Plants can not be sold, propagated or knowingly distributed.



Notes