

## REGIONAL WEED MANAGEMENT PLAN

<b>1.1</b>	<b>PLAN TITLE: AFRICAN BOXTHORN CONTROL IN THE NEW ENGLAND AND NORTH WEST REGIONS OF NSW</b>
------------	--

<b>1.2 PLAN PROPONENTS</b>	
<b>Regional Weeds Advisory Committee:</b>	Northern Inland Weeds Advisory Committee
<b>Address:</b>	c/- PO Box 63, GUNNEDAH NSW 2380
<b>Contact Person:</b>	Lee Amidy - Gunnedah Shire Council
<b>Telephone Number:</b>	6740 2225
<b>Facsimile Number:</b>	6740 2219
<b>E mail address:</b>	leeamidy@infogunnedah.nsw.gov.au
<b>Signature: Chairman</b>	<b>Date: Submitted 30 Oct 2004</b>

<b>1.3 NAME OF PLANT(S)</b>	<b>WONS</b>	<b>Y/N</b>
Botanical name(s): African boxthorn	<i>Lycium ferossimum</i>	

<b>1.4 PLAN PERIOD (not to exceed five years)</b>	
<b>Starting date:</b> 1 <sup>st</sup> July 2005	<b>Completion date:</b> 30 <sup>th</sup> June 2010

**1.5 AREA OF OPERATION**

This plan covers the western part of the area of the Northern Inland Weeds Advisory Committee and the northern part of the Upper Hunter Weeds Authority as indicated in the attached map (page 14). The total NIWAC area is approximately 100 000 km<sup>2</sup> extending from the Liverpool Range, north to the Queensland border, east to the New England Tablelands and west to Moree and Narrabri Shires. More than half of the NIWAC area is covered by this plan.

- 1.6 AIM**
- TO REDUCE THE IMPACT OF AFRICAN BOXTHORN IN THE NORTH WEST & NEW ENGLAND REGIONS OF NSW**
- 1.7 OBJECTIVES**
1. Reduce the kilometres of roads infested by mature African boxthorn plants (3 yrs old or 2 metres high) by 10% in total (i.e. an average of 2% each year) by 2010.
  2. Reduce the number of small African boxthorn plants on LCA, RLPB and all public land by 50% in total (i.e. by an average of 10% each year) by 2010.
  3. Reduce the density of African boxthorn infestations on private property by one infestation category per property by 2010.
  4. Prevent African boxthorn from establishing on land which is not currently infested.

## **2. STAKEHOLDERS**

### **2.1 Signatories - organisations committed to the objectives/performance measures of this plan**

- Gunnedah Shire Council (GSC);
- Gwydir Shire Council (GwSC) - through North West Weeds;
- Inverell Shire Council (ISC) - through North West Weeds;
- Moree Plains Shire Council (MPSC);
- Moree Rural Lands Protection Board (MRLPB);
- Narrabri Shire Council (NSC) ;
- Narrabri RLPB (NRLPB);
- Northern Slopes RLPB (NSRLPB);
- Tamworth Regional Council (TRC);
- Upper Hunter Weeds Authority (UHWA).

### **2.2 Other stakeholders - interested parties consulted as part of this planning process.**

All LCAs and RLPBs in the NIWAC region were invited to contribute to this regional plan. State Forests and Department of environment and Conservation (formerly National Parks and Wildlife Service) were also consulted. Those organisations not included as stakeholders chose not to be involved because they either do not have African boxthorn and/or do not consider it a potential problem in their area.

## **3. BACKGROUND & JUSTIFICATION**

### **3.1 Plan justification - reason for this plan**

A coordinated and strategic approach is needed for African boxthorn because the participating organisations believe that control of this weed is achievable. Significant progress has been made in reducing the number and severity of infestations over the last 5 years, since the original Regional Weed Management Plan was written. For example, there are many clean properties in the Narrabri Shire and infestations along creeks and streams in the Tamworth area have been reduced by an estimated 90%. A coordinated approach will provide a common focus to build on these past achievements and further improve the current situation.

#### **3.1.1 Description of the problem**

##### **Current and potential impact of the problem**

Despite the improved regional situation, African boxthorn is still a major problem in the NIWAC region. The original plan submitted in 2000 summarised the area infested as follows:

Tamworth and Liverpool Plains were part of Central Northern County Council when the original plan was submitted.

Organisation	Infestations as @ 2000		Comments - 2004
	Number	Hectares	
Central Northern	130	25	
Gunnedah	1100	100000	
Liverpool Plains	NA	NA	
Moree	2000	600000	
Narrabri	1800	400000	
North West Weeds	300	5000	
Tamworth	NA	NA	Infestations reduced by approximately 90%.
Upper Hunter Weeds Authority	NA	NA	

#### Characteristics of this weed that make it an undesirable plant in our region

- Mature plants are resistant to grazing or browsing because of the spiny nature of the plant;
- African boxthorn tolerates wind-blown salt and drought;
- Plants regenerate rapidly following fire or when top growth is cut;
- This spiny shrub provides habitat for both introduced and native animals;
- Spines damage stock, tyres and footwear; and
- Plants are poisonous and fruit fly breeds in the fruit, together with other insects.

#### Why it is important that this weed is controlled?

If allowed to establish in temperate woodlands, African boxthorn can quickly destroy the biodiversity and significantly impact on native vegetation. By disturbing the natural balance, it creates an ideal habitat for feral animals which place further pressure on biodiversity. Left untreated, African boxthorn can produce large, impenetrable thickets that crowd out desirable native species and harbour feral animals. This also impacts on agricultural production.

### 3.2 Do nothing scenario

Organisations participating in this plan believe that African boxthorn will quickly revert to dense infestations, with serious impacts, if not treated. There is definitely merit in continuing a coordinated regional control program. Local knowledge and experience suggests that, ultimately, it will cost less for many landholders to control many small infestations than it will for fewer landholders to control a few large infestations.

### 3.3 Distribution of infestations - where it occurs.

In the area covered by NIWAC, Boxthorn tends to be a problem in the warmer climates of the slopes and plains. Infestations occur in timbered areas along roadsides, and along watercourse and river flats. Boxthorn is also a major problem on vacant crown land, state forests and other areas of public land.

Infestations are generally scattered in the Narrabri and Liverpool Plains Shires and the area covered by Tamworth Regional Council. The heaviest, and most serious infestations, occur in Gunnedah, Gwydir and Inverell Shires.

Organisation	Distribution
Gunnedah Shire Council	Still a major problem but infestations have significantly reduced over the last five to 10 years.
Liverpool Plains Shire Council	Limited to several creeks and isolated patches in bushland. Control is considered achievable in this area.
Moree Plains Shire (incl. Moree RLPB)	Widespread throughout the Shire.
Narrabri Shire Council	Generally scattered. Heavy infestations (H3) limited to 2 properties with a few properties with M level infestations. There are many clean properties in the Yarrie Lake area, west of Narrabri.
North West Weeds (incl Northern Slopes RLPB)	Widespread in the northern part of the area from Bingara through to North Star near the NSW/Queensland border.
Tamworth Regional Council	Infestations in the Tamworth area are limited to creeks and streams. Infestations in Barraba are heaviest in the town but scattered throughout the rest of the area.
Upper Hunter Weeds Authority.	

The attached map (page 14) gives for an overview of the distribution of infestations.

### 3.4 Biology

African boxthorn is a native plant of the southern coast of Africa. It was initially introduced into Australia in the early 1800s as a hedge plant and now occurs in all states and territories of Australia.

African boxthorn can germinate at any time of the year and, although germination rates are high, survival through the first summer is generally low. Growth is slow initially but speeds up as the root system establishes. Flowering usually only occurs in the second year but is not prolific until the third and subsequent years. Fruiting is most prolific in summer and autumn.

**Flowers** - 10-12mm long on 5-16mm long stalks. Purplish white in colour, darker purple blotches in the centre, with a fragrant smell. The plant produces fleshy, bright orange-red **berries**, 5 to 12 mm long. Each plant produces 35 to 70 **seeds** which are 2.5 mm long and dull yellow in colour. **Leaves** are bright green and smooth, with a blunt tip and smooth margins. African boxthorn can be deciduous, depending on the location and growing conditions. **Stems** are much branched, rigid, and hairless and spine tipped.

### 3.5 Method and rate of spread

African boxthorn reproduces by seed and suckers from root fragments if mechanically disturbed. It is spread by birds, animals, in gravel, mud, contaminated produce and in dumped garden waste. The fruit is readily digested by a number of bird species and plants are often found in "bird poo halos" (Blood 2001).

#### *Current rate of spread in the plan area*

The rate of spread varies throughout the region. In Tamworth Regional Council populations along creeks and streams have been reduced by about 90% (pers comm. Tony Lawler, TRC). Similarly, in Gunnedah Shire, populations have been reduced in the last 5 to 10 years - but Boxthorn is still a major problem.

### 3.6 Species Management

African boxthorn is not an easy plant to kill. Timing is critical as is follow up and the need for good quality water.

**Best time to treat** - anytime during May through to September when plants are actively growing

**Mechanical** - pull out large old bushes using a chain, blade or tyne when the soil is wet and spray regrowth.

**Chemical** - the numerous chemical control options for African boxthorn include: Triclopyr + picloram (various trade names), Access ®, Picloram + 2,4 D (Tordon 75 D ®) Glyphosate 360g/L (various trade names) Triclopyr (various trade names), Tebuthiuron (Graslan ®) and Hexazinone (Velpar L ®). Bushes should be left standing after they have been treated with chemical (bushes are normally dormant for at least 6 months each year). *For further details*

on spray rates and application methods refer to *Noxious and Environmental Weed Control Handbook*.

**Revegetation** - Plant prickly native bushes such as Rosemary's Grevillia (*Grevillia rosmariifoli*), prickly paperbark (*Melaleuca styphelioides*) or any flowering shrubs eg bottle brush (*Callistemon sp*) to provide habitat and groundcover as boxthorn plants gradually die off.

### 3.7 Key land managers

The success of this plan will hinge on the coordinated efforts of many land managers.

**Local Control Authorities** - have a responsibility to control infestations on LCA land, conduct extension activities, inspect private properties and record details of African boxthorn infestations and coordinate the efforts of other stakeholders. They must also enforce the W3 declaration.

**Public land managers** - Given that African boxthorn reproduces if mechanically disturbed, public land managers must also control infestations in order to minimise the risk of spread.

**Graziers** - Control and management on private land is ultimately the responsibility of land managers. Graziers have a vested interest to ensure that all infestations on their land are controlled as soon as possible.

**Northern Inland Weeds Advisory Committee (NIWAC)** - the regional weeds committee will develop policy and encourage all LCAs and RLPBs to adopt this policy. They will also provide a focus for coordination and annual review and monitoring of proposed actions.

## 4. REGULATORY SITUATION

### 4.1 Current declaration

Boxthorn is currently declared as a W3 weed in the following areas: Central Northern and North West Weeds County Councils and Gunnedah, More Plains and Narrabri Shires. It is listed as a W2 weed in the following LCAs: New England Tablelands County Council, Severn and Tenterfield Shires.

### 4.2 Declaration changes

There are no declaration changes as such but it should be noted that the Central Northern County and North West Weeds County Councils were disbanded on 1st July 2004, following changes to local government boundaries. We assume that these new LCAs, namely Liverpool Plains Shire Council (based on the former Quirindi Shire Council boundary), Gwydir Shire Council (incorporating the former shires of Bingara and Yallaroi) Tamworth Regional Council (incorporating the former shires of Barraba, Manilla, Nundle, Parry and Tamworth City Council) and Inverell Shire Council (which formerly operated under the North West Weeds County Council) will also adopt the W3 classification.

## 5 CONSIDERATIONS & OPPORTUNITIES.

### 5.1 Financial support to carry out the plan

All stakeholders listed in this plan will contribute a significant proportion of their own funds towards implementing this regional plan. Department of Primary Industries noxious grant funding will also be accessed. However, given the limited nature of these funds, it is expected that this will only account for a small percentage of total expenditure to implement this plan.

*The Action Plan section of this plan indicates the funding source for specific actions.*

### 5.2 Links to other strategies

This regional plan concentrates on many of the operational aspects of managing African boxthorn. NIWAC also has a regional strategy that deals with strategic issues of regional significance such as extension, coordination and the development of weed related policy for our region. Many of the strategies in the **regional strategy** actually link to this African boxthorn regional plan.

### 5.3 Barriers

**B1. Apathy of landholders**

**B2. Absentee landholders**

**B3. Inaccessibility to some infestations** - vehicular access is restricted when African boxthorn becomes established in heavily timbered country. This severely limits control options.

**B4. Poor understanding and lack of technical skills to formulate and implement appropriate control programs** - mistiming of herbicide application, together with a failure to carry out follow up programs, has limited the effectiveness of control programs to date.

### 5.4 Contingencies

#### Support from DPI for regional plan and subsequent group project applications

Unfortunately, recent applications for assistance for African boxthorn through NSW Agriculture Noxious Grant funding have been unsuccessful. This apparently is because African boxthorn is considered to be a widespread weed in our region and, therefore, not a priority for funding.

However, Weeds Officers still consider Boxthorn to be a significant weed, worthy of a regional approach and continued control. Given this, the participating stakeholders are committed to adopting this regional plan, irrespective of whether it is endorsed by the Department of Primary Industries. Similarly, they will use their own resources for control, irrespective of whether any subsequent group project applications are approved by the department.

#### Loss of habitat

Although African boxthorn provides a harbour for feral animals, it also provides alternative shelter for indigenous animals - this should be considered before removing any plants. Where possible, any such areas should be revegetated with suitable native alternatives.

## **ACTION PLAN**

**FURTHER EXPLANATION OF AIM AND OBJECTIVES AND HOW THEY MEET THE SMART CRITERIA**

- 1. Reduce the kilometres of roads infested by mature African boxthorn plants (3 yrs old or 2 metres high) by 10% in total (i.e. 2% each year) by 2010.**
  - This objective is *specific* - it relates specifically to roadsides but only to mature plants.
  - This objective is *achievable and realistic* - Once established, African boxthorn is very difficult to control. While a higher level of control is possible for small plants, (i.e. those that haven't yet flowered) a 10% reduction is seen as both realistic and achievable in these situations where plant density is higher.
  
- 2. Reduce the number of small African boxthorn plants (less than 2 metres or 3yrs old) on LCA, RLPB and all public land by 50% in total (i.e. by 10% each year) by 2010.**
  - This objective is *specific* - it relates to all public land and only to smaller plants, less than 3 years old.
  - This objective is *achievable and realistic* - Smaller plants are easier to control than older plants and, based on the current situation, local knowledge suggests that this objective is achievable within the given timeframe. The responsibility for the actions required to achieve this objective rests with the stakeholders that have endorsed this plan. Consequently, we have a high degree of influence over their activities.
  
- 3. Reduce the density of African boxthorn infestations on private property by one infestation category per property by 2010.**
  - This objective is *specific* - it relates only to private property. A reduction by one infestation category means a reduction in extent (% of the total property infested) and/or severity (the density of plants).
  - This objective is both *realistic and achievable* - while a reduction in both extent and severity would be preferred, this is not considered to be a realistic or achievable. However, reducing one or the other is seen as the best possible outcome given a) financial constraints b) the widespread nature of boxthorn on some properties and c) the current W3 declaration.
  
- 4. Prevent African boxthorn from establishing on land which is not currently infested.**
  - This objective is *specific* - it relates to both private and public land.
  - Participating stakeholders believe that this objective can be achieved through the adoption of weed control protocols and procedures across the region.

REGIONAL WEED MANAGEMENT PLAN - AFRICAN BOXTHORN (UPDATED AUG 2004)  
ACTION PLAN

**MANAGEMENT & CONTROL STRATEGIES**

*Related objectives: Reduce the kilometres of roads infested by mature boxthorn plants (3 yrs old or 2 metres high) by 10% in total by 2010.*

*Reduce the number of small African boxthorn plants (less than 2 metres or 3yrs old) on LCA, RLPB and all public land by 50% by 2010.*

Both management and control are required for African boxthorn. The specific approach will depend on the level of infestation and its location. Controlling small plants before they flower and fruit will effectively reduce the amount of seed.

				While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by			
NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
1.	Control all small plants on Local Control Authority land.	Plants less than 1 metre high sprayed annually	Relevant LCAs	All roads and areas of public land	April to October annually	ESSENTIAL	DPI regional group project grant LCA funds
2.	Control large infestations on public land	Large infestations bulldozed and followed up with spraying	Relevant LCAs	Core/heavy infestations	April to October annually		DPI regional group project grant LCA funds
3.	Revegetate areas where African boxthorn has been removed by planting suitable native species to provide habitat for any displaced, desirable native animals.	Relevant areas revegetated following removal of African boxthorn .	All public and private land managers	Core infestations - esp. High Conservation Value areas	Ongoing - following other control	ESSENTIAL	
4.	Enforce control according to the W3 noxious weed declaration.	Section 18 Notices served as required  - Section 20 Notices enforced as required	LCAs	All areas	Ongoing	ESSENTIAL	DPI grants LCA funds

**EXTENSION, EDUCATION & AWARENESS STRATEGY**

**Related objective:** *Reduce the density of boxthorn infestations on private property by one infestation category per property by 2010*

**Related Barrier:** *B4 - Poor understanding and lack of technical skills to formulate and implement appropriate control programs.*

Education and awareness can be seen as a both an objective (an end point or outcome) and a strategy (a how to) - for this plan it is included as a strategy. Awareness and extension activities are critical to achieving the objectives in this plan, particularly given the difficulty in controlling African boxthorn and the need for follow up. Extension activities need to be put in place to overcome this barrier.

				While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by			
NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
5.	Promote the need for a continuing, coordinated program to fully control African boxthorn.	2 extension activities/per LCA each year.  Ongoing control adopted by all land managers.	LCAs	All areas	Ongoing - April to October annually.	ESSENTIAL	LCA funds
6.	Inform new and absentee landholders about the threat posed by African boxthorn	All new and absentee landholders specifically targeted and contacted annually.	LCA Weeds Officers	All areas	Ongoing - April to October annually.	HIGHLY DESIRABLE	LCA funds
7.	Promote the use of alternative native species for habitat.	Areas previously infested with African boxthorn suitably revegetated.	LCAs in association with Landcare and community groups	All areas	Ongoing	DESIRABLE	LCA funds  Alternative funds for Bushland Friendly Nursery Scheme project

**SURVEILLANCE & MONITORING STRATEGY AND ACTIONS**

**RELATED OBJECTIVES: ALL**

Surveillance is important to gain a better understanding of the extent and impact of the problem, to monitor any changes in the situation, identify any new outbreaks and allow for early intervention. Without this feedback it is impossible to know if the situation is improving, or getting worse, and to decide how to best direct resources to meet the plan aims and objectives.

				While not included in the DPI format for regional plans these columns are included so every stakeholder can look at the plan and know exactly what they are expected to do and when by			
NO	ACTION (WHAT)	PERFORMANCE INDICATOR	BY WHOM	WHERE	WHEN	PRIORITY	\$ SOURCE
8.	Continue to identify and map infestations on private and public land as part of routine procedures.	Roads in risk areas inspected at least once/year  All infestations mapped and classified following surveillance activities.	LCAs with input from RLPBs	All public land incl. roadsides and TSRs	Ongoing	ESSENTIAL	Council funds
9.	Inspect risk properties and classify infestations using the NIWAC approach i.e. based on extent (estimated % of total property infested) and severity (density of plants).	1/5 of risk properties inspected each year.	Relevant LCAs	All private properties	Ongoing	ESSENTIAL	DPI grant funding
10.	Monitor changes in the number of properties infested and infestation category for each.	Annual reports prepared, detailing the number of properties infested and the total ha for each category.	All stakeholders	NOT RELEVANT	At least annually	ESSENTIAL	Council funds

## **7 MONITORING & REVIEW PROCESSES**

### **How will the performance of each stakeholder be monitored?**

Each stakeholder will be required to report against performance indicators at least annually. Stakeholders will also be required to provide regular updates on the infestations in their area, using a format agreed to by NIWAC. These reports include details of spraying activity and results from inspections including the number of properties inspected, number of infested, the hectares infested and the type of infestations.

Individual reports will be collated into an annual regional infestation report. This regional report will be used to monitor outcomes and to assess if the weed problem has improved or worsened. An example of the annual infestation report is included on page 18.

Stakeholders will also be encouraged to use NIWAC meetings to report on any regionally significant issues.

### **Who will prepare reports and when will the plan be reviewed?**

Reports will either be prepared by the Plan Coordinator, Lee Amidy or the Regional Coordinator.

## **8 BENEFITS - Who will benefit from the implementation of this plan and how?**

- Preventing Boxthorns from establishing and developing dense thickets will reduce the habitat for feral animals. This is an enormous benefit for the rural community in general and, more specifically, the grazing industry as feral animals can contribute to spread of exotic diseases such as Foot and Mouth disease.
- Any reduction in the number of Boxthorns will reduce competition for more desirable native species. This improvement in, and protection of, biodiversity will benefit the entire community.
- Effective management and control of Boxthorn will contribute to the biodiversity and remnant vegetation goals outlined in Catchment Blueprints for the Namoi, Gwydir and Border Rivers Catchments.

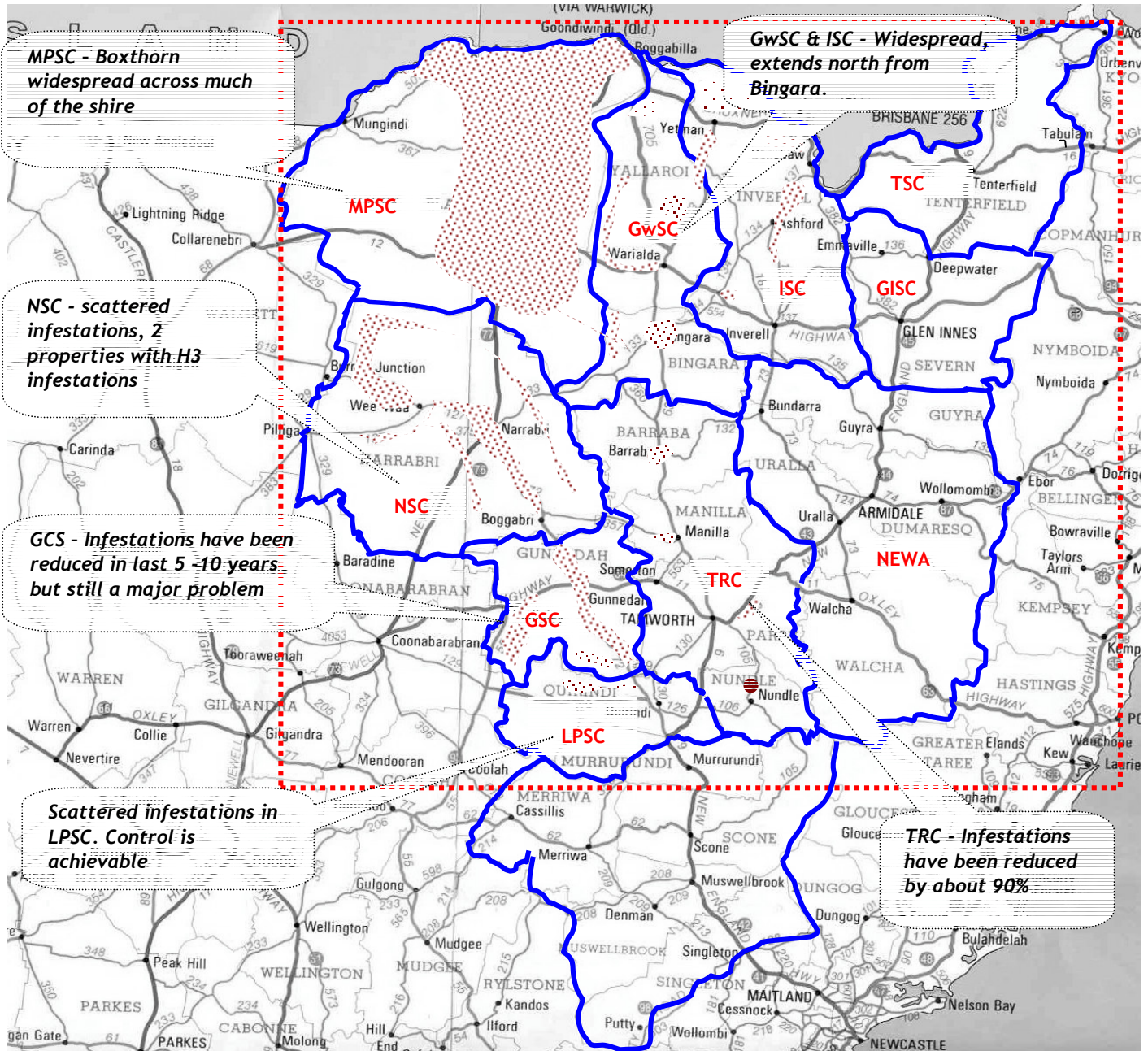
## **11. RESOURCES**

Blood, K (2002) Environmental weeds - a Field Guide for SE Australia, CRC for Weed Management

Namoi Gwydir & New England Noxious Weeds Advisory Committee (2000) African boxthorn plan

NSW Agriculture (2004) Noxious and Environmental weed Handbook 2004-2005 A guide to weed control in non-crop, aquatic and bushland situations.

GENERAL LOCATION OF AFRICAN BOXTHORN IN THE NIWAC REGION



Note: Infestations not to scale. This map is intended to give an overview of the location of African boxthorn in the plan area.

KEY

CODE

LGA Boundaries

GIMC Glen Innes Severn Council

GSC Gunnedah Shire Council

GwSC Gwydir Shire Council

ISC Inverell Shire Council

LPSC Liverpool Plains Shire Council

MPSC Murrumbidgee Plains Shire Council

NSC

NEWA

TRC

TSC

UHWA

NIWAC regional boundary

Narrabri Shire Council

New England Weeds Authority

Tamworth Regional Council

Tenterfield Shire Council

Upper Hunter Weeds Authority

Infestation - not to scale

**NIWAC INFESTATION MATRIX  
USED TO CLASSIFY WEED INFESTATIONS**

			<b>EXTENT</b>				
			<b>Estimated % of total property area (hectares) infested.</b>				
			<b>HIGH</b>	<b>MEDIUM</b>	<b>LOW</b>	<b>RARE/ISOLATED</b>	<b>NOT FOUND</b>
			Over 20 % of the property infested with either one or all of the degrees of infestation	Between 5% and 20% of the property infested with either one or all degrees of infestation	Between 1 and 5% of the property infested with either one or all degrees of infestation	Less than 1% of the area of the property infested with Class 1 or Class 2, or a mixture of the two.	Not found
<b>SEVERITY OR DEGREE</b>	Scattered individual plants	1	H1	M1	L1	R1	NF
	Scattered patches with isolated plants interspersed	2	H2	M2	L2	R2	
	Large, dense infestations	3	H3	M3	L3		