

REGIONAL WEED MANAGEMENT PLAN

1.1 PLAN TITLE: South West Sydney Regional Water Hyacinth Management Plan

1.2 PLAN PROPONENTS

Regional Weeds Advisory Committee: **South West Sydney Regional Weeds Committee**

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1.3 NAME OF PLANT(S)

WONS N

Botanical name(s): *Eichhornia crassipes*

Common name(s): **Water Hyacinth**

1.4 PLAN PERIOD (not to exceed five years)

Starting date: **July 2003**

Completion date: **June 2008**

1.5 AREA OF OPERATION:

This plan extends over the geographical area covered by the South West Sydney Regional Weeds Committee, which includes the Sutherland, Wollondilly, Camden, Campbelltown, Liverpool, Fairfield and Bankstown LCAs.

1.6 AIM:

To contain, reduce and eradicate existing Water Hyacinth infestations in the South West Sydney region, to prevent these from expanding and spreading to form new infestations elsewhere.

1.7 OBJECTIVES:

1. Ascertain the extent of current and future Water Hyacinth infestations on an annual basis
2. Contain and eradicate rare and isolated Water Hyacinth infestations within 2 years.
3. Contain and eradicate marginal Water Hyacinth infestations within 5 years.
4. Contain and prevent the spread of core Water Hyacinth infestations within 5 years.
5. Increase awareness, identification and appropriate control of Water Hyacinth by both relevant council staff and private landholders.
6. Discourage/prevent the general public from planting Water Hyacinth in dams and ponds.

2.0 STAKEHOLDERS

Signatories and other landholders include Sutherland Shire Council, Wollondilly Shire Council, Camden Council, Campbelltown City Council, Liverpool City Council, Fairfield City Council, Bankstown City Council, the state government agencies NSW Agriculture and NSW National Parks & Wildlife Service, and relevant private landholders.

3.0 BACKGROUND and GENERAL FACTS

3.1 Weed Biology/Ecology

Water Hyacinth is a free-floating perennial herb that can grow from 10cm to 1m in fresh water. It has a very dense growth on open bodies of water and it forms rafts, which can become very heavy. It prefers still or slow moving bodies of water and water with high nutrient levels.

The leaves are shiny, glossy and glabrous. The shape of the leaves varies from long, narrow and erect standing up to 60 cm, to round in shape growing up to 30cm in diameter with the leaf edges curled upwards. The leafstalk grows up to 50cm and has bladder-like swellings, either bulbous or elongated, which enable the plant to float on the water. The flowers are a distinctive and showy bluish purple colour. The funnel shape flowers are borne on spikes up to 50cm long and there are 3 to 15 flowers per stalk. The roots are hairlike, and dark coloured and emerge from a crown or rhizome. They trail free in the water and can grow up to 1m long. The seed is more or less ovoid, 1.0 to 1.5 mm long, with many longitudinal ribs. The seeds can remain dormant for up to 15 years.

Water Hyacinth was introduced to Australia as an aquatic ornamental plant in the 1890's. It quickly demonstrated its weed potential even in temperate parts of Australia and became a pest in major rivers and creeks. Water Hyacinth does not grow in brackish water, this is important to note for areas with tidal creeks or rivers, for example Liverpool and Fairfield.

3.2 Method of Spread

Water Hyacinth mainly reproduces from asexual propagation. It produces new plants from terminal buds. These new plants produce stolons, which form daughter plants at their apices. The plant numbers can double in five days. New plants flower when only 3 or 4 weeks old. One plant can produce enough growth to cover 600 square meters.

Plants grown from seed germinate in spring and rapidly grow when temperatures increase. Flowering commences in January or February and continues until the aerial growth dies off from lower temperatures, particularly autumn frosts. The perennial crown survives winter and produces new aerial growth in spring. After flowering the flower heads bend over into the water and develop fruit submerged in the water. The seeds drop to the bottom of the water into mud and are initially dormant for 11 to 12 weeks. The seeds will germinate the following Spring depending on light availability. If the seed is in dry mud it can remain dormant for up to 15 years.

3.3 Description of the Problem

The general public is often unaware that Water Hyacinth is a noxious weed and sometimes use it as an ornamental plant in ponds and dams, obtaining the plants from other locations or commercial businesses illegally selling. In these situations, there is a significant risk that the plant may accidentally or intentionally enter creeks and rivers directly or via the stormwater system.

Water Hyacinth is a fast growing aquatic weed that prefers to grow in still or slow-moving fresh water in tropical, subtropical and occasionally temperate areas. It forms a dense mass and can choke rivers and creeks. This has a negative effect on recreational activities. It also destroys native habitats, depletes water bodies of oxygen, increases water loss and provides a breeding ground for mosquitoes.

3.4 Reason for the Plan

This plan has been developed in order to implement a coordinated approach to managing Water Hyacinth in the south western region of Sydney. This weed has the potential to cause significant environmental damage and degradation, as well as economic loss.

Water Hyacinth is widespread across the South West Sydney region and continuing to spread, however, the number of infestations are currently limited with many of these in isolated locations. This plan aims to contain, reduce and eradicate existing weed infestations, to prevent these from expanding and spreading to form new infestations elsewhere.

If Water Hyacinth is not controlled and eradicated, it will spread to areas where it is not currently a problem. For this reason, neighbouring local governments in the region have committed to a coordinated approach. This includes those LCAs who currently have no known infestations, as they will monitor and survey for new infestations on an on-going basis.

The null hypothesis approach would lead to the spread of Water Hyacinth to new areas throughout the region, including LCAs where it does not currently occur, causing significant impacts on aquatic environments, recreational activities and the aesthetic appearance of the area. If Water Hyacinth is not controlled it becomes a thick dense mass in the waterways which traps litter and other debris, and reduces water quality. It also becomes impossible for boats with outboard motors to move through the waterway. The high levels of nutrients in the region's waterways from urban stormwater pollution and sewage overflows exacerbates this problem, as it creates ideal conditions for Water Hyacinth to thrive. Water Hyacinth infestations also have negative impacts on aquatic biodiversity through habitat replacement, such as outcompeting valuable wetland species, and deoxygenation of the water. More specifically, in the Liverpool and Fairfield LGAs the Cabramatta Creek Wetlands in Warwick Farm/Fairfield would be detrimentally affected if there was to be no action taken. This area is a valuable and unique wetland and the surrounding endangered ecological community is classified Sydney River Flat Forest under the Threatened Species Conservation Act (1995).

In the South West Sydney region, Alligator Weed is often found where Water Hyacinth is growing. There has been a Regional Alligator Weed Management Plan since 1997 and funding has been provided for Group Projects to assist in the implementation of this regional plan. The committee believes that it will be more effective and cost efficient to manage the W1 aquatic weeds together in an integrated manner as they grow in similar locations and can undergo combined treatments wherever possible. Thus this plan complements the existing Alligator Weed plan, and the draft Ludwigia and Salvinia plans.

3.5 Distribution of the infestations

Bankstown LGA

No known infestations of Water Hyacinth.

Camden LGA

Water Hyacinth is found in Spring Farm and South Creek.

1. Spring Farm (UBD Map 344) has an infestation in a small creek.
2. There is an isolated case of Water Hyacinth in South Creek near Bringelly Road, Leppington (UBD Map 265 B15).

Otherwise, have had Water Hyacinth infestations in Bonds Creek in the past, but has not been found here in last couple of years.

Campbelltown LGA

No known infestations of Water Hyacinth. There was one infestation in the past but this has been eradicated.

Fairfield LGA

The only known infestation is in Cabramatta Creek Wetland, near Antonioetta Street, Cabramatta.

Liverpool LGA

Water Hyacinth is found in the following locations:

1. In the Georges River from approximately the Australian Defence Force down to the Liverpool Weir near Newbridge Road, Liverpool.
2. Cabramatta Creek from approximately Freeman Oval, Warwick Farm to Durrant Oval, Warwick Farm.
3. The infestation has spread at the confluence point of Brickmakers Creek and Cabramatta Creek downstream of Brickmakers Creek to approximately Lawrence Hargrave Road.

Sutherland LGA

There have only been two infestations of Water Hyacinth and both have been in ponds.

Wollondilly LGA

There have been two infestations of Water Hyacinth in Wollondilly LGA - both have been in dams. It has been controlled in one dam and the other dam is to be removed for housing development.

4.0 LEGISLATIVE and REGULATORY SITUATION

4.1 Current Declaration

Water Hyacinth is a declared W1 noxious weed under the Noxious Weeds Act 1993 in Bankstown, Camden, Fairfield, Liverpool and Sutherland LCAs. With a W1 noxious weed, *the presence of the weed on land must be notified to the local control authority and the weed must be fully and continuously suppressed and destroyed.*

Water Hyacinth is listed as a W2 noxious weed in the Campbelltown and Wollondilly LCAs. A W2 noxious weed *must be fully and continuously suppressed and destroyed.*

4.2 Declaration Changes

As part of this Regional Weed Management Plan it may be proposed that Campbelltown and Wollondilly LCAs change their noxious weed declaration for Water Hyacinth from W2 to W1 so they are consistent with the other LCAs in the South West Sydney region. However, this won't be done until the extent of Water Hyacinth infestations, and thus the impact of changing the declaration, are known following the surveys and inspections to be carried out as part of this plan.

5.0 CONSIDERATIONS and OPPORTUNITIES

5.1 Opportunities to be exploited

To assist in the implementation of this plan, alternative sources of funding will be sought from other state and federal government departments, including the Department of Land and Water Conservation through its various regional funding programs for Catchment Blueprint implementation.

5.2 Species Management

There are various methods to control Water Hyacinth: chemical, mechanical and biological control. In areas with small, isolated infestations the most effective strategy is to physically remove the infestation and allow it to dry out on the banks of the waterway. Rakes or nets can be used to drag the plant across the water surface to the water's edge.

For large infestations, chemical control is more cost effective than mechanical control. The recommended herbicides for Water Hyacinth are Reglone® and Glyphosate®. They are both non-selective herbicides, Reglone® is a contact herbicide and Glyphosate® is translocated. The optimum time to spray the weed is when it is actively growing. However, the decaying plant matter is unsightly and can have a negative impact on the environment, particularly in slow moving water.

Mechanical control can be undertaken by means of an aquatic weed harvester. The machine collects the weed and deposits it onto a sealed truck or the banks of the waterway, according to the situation. This method improves the aesthetic appearance of the waterway immediately and the weed mass is instantly removed, therefore not adding to the nutrient load in the water.

Biological control is a long term management option for the weed and should be integrated with other forms of control. Two insects, a weevil and a moth, have been released for biological control of Water Hyacinth in New South Wales. They control the weed by burrowing into the plant and allowing water and bacteria to eventually rot the plant. Neither agent has been released in the South West Sydney region.

The most effective management of any noxious weed is prevention, hence the introduction of this plan to prevent the spread of Water Hyacinth between LCAs. The most appropriate control method depends upon the infestation and site and often a combination of the control methods is required. As with all noxious weed control follow up maintenance is essential for ongoing control.

5.3 Extension and Education

Education and extension activities will be undertaken to increase the skills of relevant council staff, bushcare volunteers and private landholders in the identification and control of Water Hyacinth, and make them aware of its regional importance. This will be carried out by:

- Undertaking regional aquatic weed field days and training workshops;
- Training staff and volunteers;
- Media articles in local newspapers;
- On-site advice to private landholders with Water Hyacinth infestations;
- Production and distribution of aquatic weed brochures to private landholders with potential for Water Hyacinth infestations;
- Contact with relevant nurseries and other commercial enterprises to discourage the sale of Water Hyacinth plants, and encourage the use of alternative ornamental aquatic plants that do not have weed potential.

5.4 Links to other Strategies

This plan complements the regional Water Hyacinth plan developed by the Sydney West / Blue Mountains Regional Weeds Committee, and meets several 'Desired Outcomes' of the **NSW Weeds Strategy**:

- Prevention of new weed problems in New South Wales through promoting awareness of new and potential weed risks and the preparation of guidelines and codes of practice to facilitate the early detection and control of new weed species;
- Environmental changes which favour weed invasion discouraged;
- The development and implementation of programs to reduce environmental degradation and the loss of biodiversity through weed invasions. This can be achieved through monitoring river systems and wetlands to identify aquatic weed problems at an early stage so that they can be controlled with minimal environmental damage and implementing control programs for weeds which cause major environmental problems;
- The implementation and monitoring of weed control programs on public and State-owned and Crown Land to ensure that objectives are achieved in an efficient and cost effective manner;
- An effective and efficient system for delivery of noxious weeds control and the enforcement of weeds legislation

This plan also conforms to the Mission Statement for the National Weeds Strategy "...to reduce the detrimental impact of weeds on the sustainability of Australia's productive capacity and natural ecosystems", and to:

Objective 1.2: ensure early detection of, and rapid action against, new weed problems;

Objective 1.3: reduce weed spread to other areas within Australia; and

Objective 3.2: encourage the development of strategic plans for weed management at all levels.

The South West Sydney region falls within the Southern Sydney and Hawkesbury Lower Nepean regions. This plan assists in the implementation of the following Catchment Blueprints:

Draft Hawkesbury Lower Nepean Catchment Blueprint dated June 2002 developed by the Hawkesbury Lower Nepean Local Government Advisory Group (LGAG):

- Management Target 12: Weeds and pests: By 2006 implement adequately funded and closely linked strategies and effective actions plans for all major and potential terrestrial and aquatic weed/pest species.
- Prioritised Management Actions for Biodiversity 6: Resource and implement closely linked strategies and effective action plans developed on a catchment basis for all major aquatic and terrestrial weeds and pests using environmentally appropriate management practices, and develop contingency plans for potential invasive weeds and pests.

Draft Southern Sydney Catchment Blueprint developed by the Southern Sydney Catchment Management Board:

- Management Target 14: By 2012 the threats posed to aquatic and terrestrial ecosystems by pest species are measureably reduced.
- Management Action 18: Implement closely linked strategies and effective action plans, supported by government for all major aquatic and terrestrial weeds, pests and pathogens using environmentally appropriate management practices, and develop contingency plans for potential invasive weeds and pests.

5.5 Barriers and Contingencies

Effective management of Water Hyacinth will be achieved by overcoming the following barriers through the implementation of the respective Actions detailed in Section 6.0:

- Limited information on present extent of Water Hyacinth (Actions 6.1 and 6.2);
- Land owner complacency (Actions 6.4 and 6.6);
- Lack of awareness of the weed and its effect on the environment (Actions 6.5 and 6.6);
- The public's desire for the plant to be used for ornamental purposes in ponds and lakes (Actions 6.6 and 6.7);
- The longevity of the seed (Actions 6.1 and 6.2); and,
- Licensing requirements from the Environment Protection Authority for spraying over waterways (Action 6.3).
- Stormwater pollution and increased nutrients in waterways encouraging the growth of the weed (Action 6.8)

6.0 ACTIONS and PERFORMANCE INDICATORS

ACTION PLAN FOR CONTROL:	Performance indicators:	Who:	Addresses which objectives:
6.1 Undertake surveys and inspections along waterways on public land for new and existing infestations, especially at sites previously treated/eradicated.	Annual inspections undertaken each summer, with maps produced showing extent of core, marginal and rare and isolated infestations.	All LCAs, NPWS	1. Ascertain the extent of current and future Water Hyacinth infestations on an annual basis.
6.2 Undertake surveys and inspections of private properties in high risk areas, such as those with waterways near past or present infestations.	Annual inspections undertaken each summer, with maps produced showing extent of core, marginal and rare and isolated infestations. No. of properties inspected compared to past.	All LCAs	1. Ascertain the extent of current and future Water Hyacinth infestations on an annual basis.
6.3 Control and eradicate known Water Hyacinth infestations on public land - using best practice management techniques and obtaining EPA licences where required - including the investigation of the use of biological control. High priority will be given to rare and isolated infestations at risk of spread.	Control and eradication undertaken each growing season, with following results: * rare and isolated infestations eradicated within 2 years; * marginal infestations eradicated within 5 years; and * core infestations contained within 5 years.	Camden Fairfield Liverpool Sutherland LCAs	2. Contain and eradicate rare and isolated Water Hyacinth infestations within 2 years. 3. Contain and eradicate marginal Water Hyacinth infestations within 5 years. 4. Contain and prevent the spread of core Water Hyacinth infestations within 5 years.

<p>6.4 Notify private landholders whose properties contain Water Hyacinth of their obligations to eradicate the weed, provide technical advice and assistance, and enforce the Noxious Weeds Act if required.</p>	<p>Control and eradication undertaken with following results: * rare and isolated infestations eradicated within 2 years; * marginal infestations eradicated within 5 years; and * core infestations contained within 5 years</p> <p>No. of letters and notices issued compared to past.</p>	<p>All LCAs</p>	<p>2. Contain and eradicate rare and isolated Water Hyacinth infestations within 2 years. 3. Contain and eradicate marginal Water Hyacinth infestations within 5 years. 4. Contain and prevent the spread of core Water Hyacinth infestations within 5 years.</p>
<p>6.5 Implement training and awareness programs on an annual basis for council staff to improve detection and control.</p>	<p>One regional training and awareness program undertaken annually.</p> <p>20 staff trained per year.</p>	<p>All LCAs</p>	<p>5. Increase awareness, identification and appropriate control of Water Hyacinth by both relevant council staff and private landholders.</p>
<p>6.6 Undertake public education and awareness raising activities and programs.</p>	<p>Media articles 2 per year per LCA.</p> <p>Regional field day 1 per year</p> <p>No. of aquatic weed brochures distributed.</p> <p>Water Hyacinth included in Weedbuster Week displays.</p>	<p>All LCAs</p>	<p>5. Increase awareness, identification and appropriate control of Water Hyacinth by both relevant council staff and private landholders. 6. Discourage/prevent the general public from planting Water Hyacinth in dams and ponds</p>
<p>6.7 Undertake annual inspections of nurseries and other commercial businesses which sell aquatic plants.</p>	<p>No. of inspections undertaken annually.</p>	<p>All LCAs</p>	<p>6. Discourage/prevent the general public from planting Water Hyacinth in dams and ponds</p>

6.8 Identify potential causes of Water Hyacinth infestations e.g. stormwater pollution and increased nutrients and ensure they are being addressed in relevant Stormwater Management Plans.	Issue is addressed in Stormwater Management Plans	All LCAs	4. Contain and prevent the spread of core Water Hyacinth infestations within 5 years.
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7.0 MONITOR and REVIEW PROCESS

All participants in this plan will monitor and review the progress of the plan in their area, against the performance indicators, in their quarterly and annual reports. The plan will also be reviewed annually to allow for any additional/new information.

All infestation sites will be monitored, and follow-up treatments undertaken where required, as part of the on-going implementation of the action plan.

8.0 BENEFITS

The benefits of implementing this regional plan are that it:

- provides for the sustainable, coordinated long-term control and eradication of Water Hyacinth in the South West Sydney region;
- prevents significant environmental damage and degradation, as well as economic loss, which would occur if this weed is not controlled;
- is achievable, as the number of infestations are currently limited with much potential for success;
- Will prevent the spread of Water Hyacinth to areas where it is not currently a problem, especially to those LCAs where there are no known infestations.
- Complements and works in conjunction with the Sydney West / Blue Mountains Regional Weeds Committee's regional plan for Water Hyacinth;
- Allows for joint management with the other high priority aquatic weeds Alligator Weed, Ludwigia and Salvinia.

9.0 RESOURCES

Parsons, W.T. and Cuthbertson, E.G. (1992). **Noxious Weeds of Australia**. Melbourne: Inkata press.

Control of Noxious Weeds Handbook (1999) published by NSW Agriculture.

Blood, Kate (2001). **Environmental Weeds: A field Guide for SE Australia**. CRC Weed Management Systems, Melbourne.