

WEED MANAGEMENT PLAN

SERPENTINE RIVER 2015

Aim: To provide a management plan to eradicate water hyacinth (*Eichhornia crassipes*) from the Serpentine River.

Prepared by:
Andrew Reeves
Development Officer
Department of Agriculture and Food WA
P.O.Box 1231, BUNBURY WA 6231

Serpentine River:

The infestation of water hyacinth (*Eichhornia crassipes*) on the Serpentine River can be considered in three management area, Birege Drain, Wilkinson Road and the Lower Serpentine River.



Figure 1: Infestations of Water hyacinth on the Serpentine River

History

- 1st reported to Darryl Stewart of DAFWA on 31/10/13 in Birege Drain just north of Mundijong Rd which was treated by Watercorp
- 20/3/2014 SJ Landcare reported small infestations near Wilkinson Rd in the Serpentine river. (turned out to be a large infestation) Watercorp were notified and have treated this part of the river in 2014 and 15.
- 1/4/2014 DAFWA conducted some surveillance south of Karnup Rd but had trouble due to deliberate tyre spikes on the river bank. No Water hyacinth was recorded
- 29/5/2015 Received a report with photos of the lower Serpentine river infestation. Department of Housing have engaged a consultant and contractor to spray the area.

Courtesy of Darryl Stewart, DAFWA.

Background

Water hyacinth (*Eichhornia crassipes*) is native to the Amazon basin in South America and was brought to Australia in the 1890s as an ornamental plant.

The first record of water hyacinth was in New South Wales (NSW) in 1895

- Under the National Weeds Strategy, Water hyacinth is one of 32 introduced plants that have been identified as Weeds of National Significance (WONS).
- These weeds are regarded as the worst weeds in Australia because of their invasiveness, potential for spread, and economic and environmental impacts.
- Water hyacinth is a C2 declared pest under the *Biosecurity and Agriculture Management Act 2007*

Agricultural and Environmental significance of water hyacinth

- Blocking irrigation channels and rivers
- Restricting livestock access to water
- Destroying natural wetlands
- Changing the temperature, pH and oxygen levels of water
- Altering the habitats of aquatic organisms
- Restricting recreational use of waterways
- Reducing water quality from decomposing plants
- Destroying fences, roads and other infrastructure when large floating rafts become mobile during flood events, and
- Destroying pastures and crops when large floating rafts settle over paddocks after flood events.

Birege Drain

The Birege Drain infestation is a 2km section bounded by Mundijong Road and King Road.

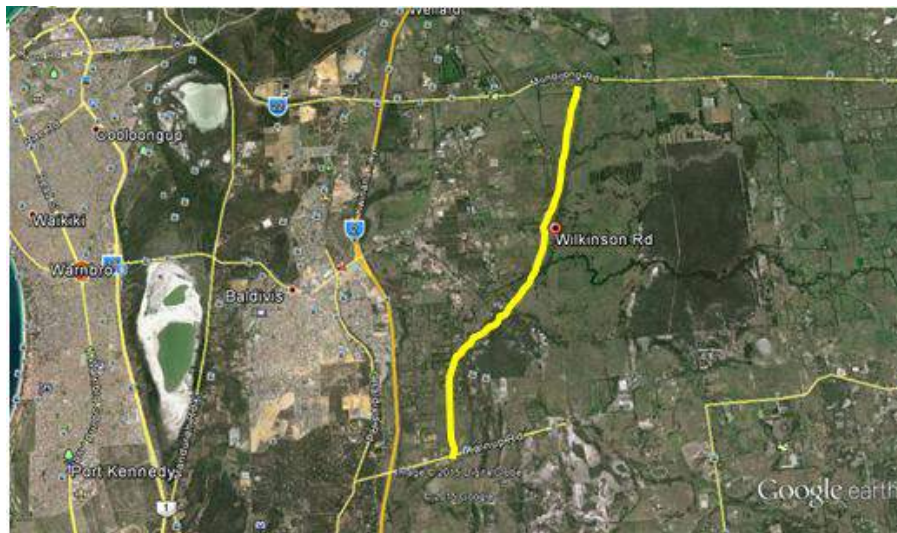
Property ID	3213466
Property Name	
Party Name	WATER CORPORATION - PERTH HQ
Property Area	23.7
Property Type	Drain
Enterprise Type	Not Applicable
LGA	SERPENTINE-JARRAHDALE



Wilkinson Road

The Wilkinson Road infestation is bounded by Mundijong Road and Karnup Road and the Serpentine River has had extensive earthworks along this section and modification to its natural flow. The waterway is extensively a modified drain.

Property ID	3213771
Property Name	
Party Name	WATER CORPORATION PERTH REGION ALLIANCE
Property Area	80.77
Property Type	Drain
Enterprise Type	Not Applicable
LGA	ROCKINGHAM



Lower Serpentine River

The lower Serpentine River is vested as Government Land under the responsibility of the Department of Housing (DoH)/State Housing Commission.

The Certificate of Title from the Department of Land Administration (DOLA) records the property as belonging to the State Housing Commission for lot 802 on deposited plan 37123

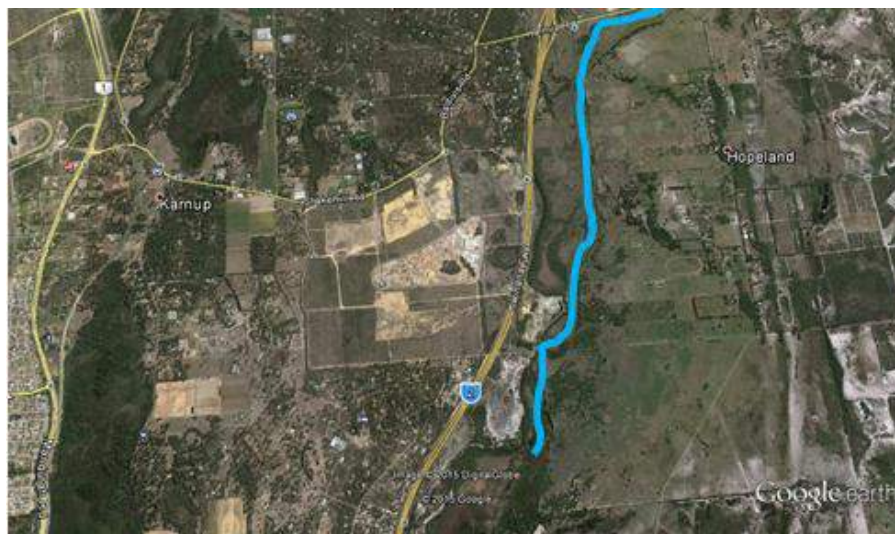
LAND DESCRIPTION:

LOT 802 ON DEPOSITED PLAN 37123

REGISTERED PROPRIETOR: (FIRST SCHEDULE)

THE STATE HOUSING COMMISSION OF 99 PLAIN STREET, EAST PERTH
(A 1589508) REGISTERED 13 AUGUST 2003

Property ID	1228130
Property Name	SERPENTINE RIVER
Party Name	
Property Address	SERPENTINE RIVER NORTH, BARRAGUP WA 6209
Property Area	254.43
APB ID	38493990
Property Type	Government
Enterprise Type	Non Agricultural Land
LGA	MURRAY



Legal requirements

Landholders have a legal obligation to control the declared weed species under the *Biosecurity and Agriculture Management Act 2007*.

Water hyacinth (*Eichhornia crassipes*) is a Prohibited Organism under section 12 of the BAM Act and declared C2 eradication under section 22 of the BAM Act for the whole of the State.

The Western Australia Organism List (WAOL) provides the legislative status of declared organisms in Western Australia.

Table 1: BAM Act declaration status for Water hyacinth (*Eichhornia crassipes*)

Control categories and areas	Keeping category
C2 Eradication	Prohibited
Whole of State	

Source: <https://www.agric.wa.gov.au/organisms>

1. Control

1.1 First Year control:

In first year of control it is recommended that a weed control contractor is engaged to provide the initial treatment of the declared species.

This can be achieved by aerial and ground application of infested areas to kill the majority of the infested area by the use of herbicide application.

This would concentrate upon the following areas.

- Treatment of water hyacinth on Birege Drain by a registered pest control operator to control the infested area.
- Treatment of water hyacinth on the Wilkinson Road infestation by a registered pest control operator to control the infested area. Treatment by aerial application is recommended as the preferred application technique.
- Treatment of water hyacinth on the lower Serpentine River infestation by a registered pest control operator to control the infested area. Treatment by aerial application is recommended as the preferred application technique.

Resources:

- Ground based Licensed Pest Control Operator with capability to treat infestations of water lettuce from ground vehicle. Suitable water tank and chemical hose with reach of 50m+
- Aerial Licensed Pest Control Operator with helicopter capability to treat infestations of water lettuce from the air.

Surveillance:

Four to six weeks after the treatment the area should be re-inspected and any missed plants re-treated. This can be done by the LPCO but is an excellent opportunity to support local community groups to conduct this work. See community engagement.

1.2 Community engagement:

As part of the first year control the community may approach by the landholders to assist with education and community support.

Any community engagement activities should occur 4-6 weeks after treatment by a pest control operator so that treated plants have died and there is no risk of any chemical exposure to volunteers.

This may be achieved by;

- The landholders supporting the Serpentine-Jarrahdale Landcare Group with some resources and funding to provide letters to adjacent landholders advising them of the control and asking them to report any living water hyacinth to the community and DAFWA.
- Information on the control program is provided to the community via social media and other community media outlets.
- The landholders supporting the Serpentine-Jarrahdale Landcare Group with some resources and funding to provide surveillance of the Serpentine River system and physical removal of isolated plants that have not been treated by the herbicide application.
- A press release that focuses on the community working with the landholder to treat the area and remove water hyacinth from the Serpentine River.

Resources:

- Letter to landholders and postage.
- 2 people for 2 days to survey the river for water hyacinth.
- Vehicle, fuel and general expenses.
- Shallow draft boat/aluminium tiney that can navigate along the river/drain.
- Protective clothing and weed collection tools.

2015	Year 1 Control
June 2015	Knock down of infestation using aerial application of herbicide before winter flush of water spreads infestation to new areas.
October / Nov 2015	Follow up treatment using ground based / water based pest control operator to treat any water hyacinth that was missed and treat using herbicide or by physical removal.
December 2015	Surveillance by pest control operator or by having community involvement to confirm 90%+ treatment.

1.3 Second year control

The first year control activities of treatment follow up surveillance should have removed 90%+ of the infestation in the first treatment and surveillance actions.

The most cost effective way to identify the requirements for control in the second year is to undertake aerial control and surveillance using a helicopter.

The aerial surveillance and treatment will identify the areas that need follow up ground spraying by ground based pest control operator 4-6 weeks after the aerial application.

Four to six weeks after the ground application a surveillance activity should be conducted using community group or the services of the ground based pest control operator to re-inspect and treat via herbicide application or physical removal.

2016	Year 2 Control
May/June 2016	Targeting infestation using aerial application of herbicide before winter flush of water spreads infestation to new areas.
October / Nov 2016	Follow up treatment using ground based / water based pest control operator to treat any water hyacinth that was missed and treat using herbicide or by physical removal. Estimated to result in >95% control.
December 2016	Surveillance by pest control operator or by having community involvement to confirm eradication

2.1 Control technique

The most effective treatment is the application of herbicide to treat the majority of the infested area.

Physical removal of small numbers of water hyacinth can be effective as a follow up control method as long as the plants are left on areas where the soil is not damp or wet.

2.2 Timing of Control

The initial control undertaken in May/June 2015 via aerial herbicide application is essential to achieve “knock down” and to reduce the number of plants before there is the potential for a winter “flush” of water along the Serpentine River that moves water lettuce to other areas along the river system.

The timing of control is best conducted when the plants are actively growing. And second control should focus on control in periods when water is available and water temperatures are increasing. The control applications should be undertaken in late October / Early November to kill plants while they are actively growing and water levels are high in the river.

Follow up surveillance should be undertaken by a pest control operator or the community in December, approximately 4-6 weeks after the second treatment to confirm the reduction in plant numbers and physically remove any plants that were missed.

2.3 Herbicides

Herbicide for water hyacinth control

Diquat - Reglone

Herbicide: Diquat (Group L)	
Active ingredient	200g/L diquat
Rates of dilution for spot spraying	1:100
Amount of product/10L water	100mL
Rate of product/ha	10L
Wetting agent dilution	1:400
Time of application	Any time when plants are actively growing and green leaf surface exposed.
More information and other control methods	Repeat after four weeks to kill missed plants and seedlings. Add surfactant if low volume spraying, that is, <100L/ha.

Appendix 1: Timing of Control

	ACTIVITY	January	February	March	April	May	June	July	August	September	October	November	December
1	Herbicide Control*												
1.1	First herbicide treatment												
1.2	Second herbicide treatment												
1.3	Surveillance												

* See herbicide label for special conditions