

INVASIVE SPECIES MONITORING, CONTROL AND ERADICATION PLAN

Management Unit: KORSMAN BIRD SANCTUARY, Ekurhuleni Metropolitan Municipality

AS REQUIRED BY SECTION 76 OF THE NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004) (NEMBA) FOR SPECIES LISTED AS INVASIVE IN TERMS OF SECTION 70 OF THIS ACT

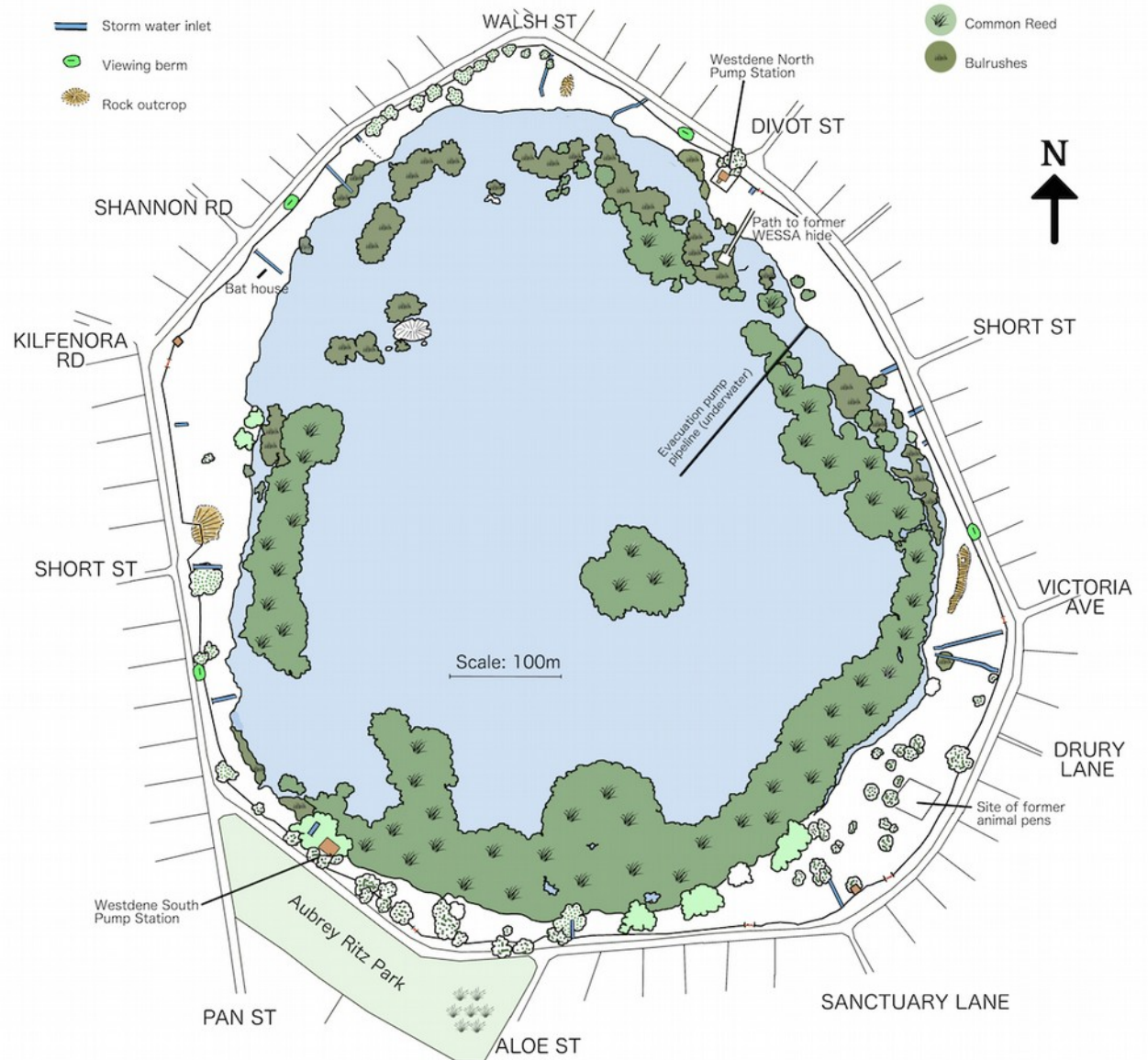
Location:

Korsman Bird Sanctuary
Erf 3660 Benoni Westdene
Encircled by The Drive

Management:

Cared for by Korsman Conservancy, a voluntary organisation, on behalf of and in conjunction with the Ekurhuleni Metropolitan Municipality.

Report compiled by Jane Trembath, Chairperson, Korsman Conservancy.



BACKGROUND and EXECUTIVE SUMMARY

Korsman Bird Sanctuary falls into the Grassland Biome, just within the distribution limit of endangered Soweto Highland Grassland. Only traces of this grassland remain. The Sanctuary area is 49Ha of which approximately 37Ha is wetland.

The key vulnerability to invasion is loss of biodiversity.

- The terrestrial area (grassland) is degraded by kikuyu (encroaching from the verge outside the fence) and many categorised invasive plants and weeds.
 - Alien trees in the grassland were historically planted. Although many have been removed, seed banks remain.
- The wetland and transitional zone invaders are *Phragmites australis* and *Typha capensis*. The stands spread every year, and have been encroaching on the grassland, leading to further terrestrial degradation.
- Vectors are mainly 1. birds which carry in seeds from uncontrolled invasive vegetation in the suburb, and 2. the inlets of the storm water system, of which the catchment is approximately 200Ha.
- The most serious invasive fauna is Common Carp and must be urgently controlled by Ekurhuleni.

The Sanctuary is presently cared for by the volunteers of the non-profit Korsman Conservancy, who have identified 46 categorised invasive plant species and actively managed their removal since 2014.

Large projects of controlling *Phragmites australis* and *Typha capensis* must be conducted in conjunction with Ekurhuleni.

This report contains three tables:

1. Categorised invasive plants
2. Uncategorised but locally invasive plants
3. Fauna.

Deviation from Framework Guidelines 3.4: Before 2014, little removal took place. Where known it is included in Current removal methods.

1. CATEGORISED INVASIVE PLANT SPECIES



Cirsium vulgare infestation, 2013



Manual removal of *Fraxinus americana* sapling forest by tree popper, 2014

	SCIENTIFIC NAME	COMMON NAME	CAT	Extent	Priority	Risk of invasion	Current measures to monitor, control or eradicate Estimated efficacy: 100% = no present specimens.	Indicators of control / success over 5 years
1	Acacia dealbata	Silver wattle	2	1 tree	L	L	None, as tree has not propagated.	None unless tree propagates.
2	Acacia Melanoxylon	Australian Blackwood	2	0%	L	L	100% Controlled since 2015. Saplings: Pulled by hand or tree popper.	Maintenance phase. Monitor seed bank areas.
3	Ageratum houstonianum	Mexican ageratum	1b	0%	L	L	Isolated specimens first discovered in 2016 at Victoria inlet. Hand pulled. 100%.	No plants allowed to go to seed.
4	Alisma plantago-aquatica	Mud plantain	1b	0.1%	L	L	First discovered 2016 in Drury Lane inlet. Manual removal. Infestation is spreading.	No plants allowed to go to seed.
5	Araujia sericifera	Moth catcher vine	1b	0.5%	H	M	Controlled since 2013 by hand pulling. Root section of larger specimens must be removed. 70% reduction in germination in 2016.	Maintenance phase. Monthly monitoring in summer.
6	Azolla filiculoides	Red water fern	1b	N/a	L	L	None, but infestation cleared by itself.	N/A
7	Bryophyllum delagoense	Chandelier plant	1b	1%	M	M	Infestation limited to Victoria St rockery. Controlled since 2016. Hand pulled before flowering but seed and plantlet bank remains. 98% of plants are removed annually. No reduction in annual growth has yet been achieved.	Target will be determined according to ongoing experience.
8	Campuloclinium macrocephalum	Pompom weed	1b	0.1%	H	M	Controlled since 2013. All discovered specimens dug out by root. Annual infestation has declined by 75% in three years.	Maintenance phase to reduce 2021 regrowth by 95% from approximately 60 plants in 2015.
9	Canna indica	Canna	1b	0.1%	L	L	Plants dug out since 2016. 60% efficacy. Infestation limited to area by Westdene South pump station.	Infestation to decline by 90% in 2019 with annual maintenance.
10	Casuarina equisetifolia	Horsetail tree	2	0%	L	L	Trees felled before 2009. Coppicing successfully treated in 2016 and stumps finally killed during annual burn in 2017. 100%.	Target achieved.
11	Cestrum parqui	Chilean cestrum	1b	0.1%	L	L	Dug out 100% of plants of small infestation opposite No 8 The Drive in 2015.	Maintenance phase. Annual monitoring.
12	Cirsium vulgare	Spear Thistle	1b	2%	H	H	Severe infestation controlled since 2013 by manual removal. Infestation already reduced by 95%.	Aim for total extirpation by 2021 with annual management between October and May.
13	Cortadera selloana	Pampas grass	1b	0%	L	L	Sprayed in 2015 by Ekurhuleni Wetlands. 100%.	Target achieved.
14	Cortadera jubata	Purple pampas grass	1b	0%	L	L	Three plants killed by glyphosate spraying in 2015 by Ekurhuleni Wetlands. 100% efficacy.	Target achieved.

15	Cotoneaster	Exact species unknown	1b	0%	L	L	2015: Large specimen in area opposite Aubrey Ritz Park cut by Ekurhuleni Cemeteries and Conservation and stump treated.	Target achieved. Annual inspection for seedlings.
16	Cuscuta campestris	Dodder	1b	0.5%	L	L	Not yet controlled. Method: Plant host must be pulled.	Target to be determined.
17	Datura ferox	Large thorn apple	1b	0.11%	M	L	Controlled since 2013. All specimens manually removed on discovery before seeding.	Maintenance phase. Summer monitoring and removal.
18	Datura innoxia	Downy thorn apple	1b	0.1%	M	L	Controlled since 2013. All specimens manually removed on discovery before seeding.	Maintenance phase. Summer monitoring and removal.
19	Duchesnea indica	False strawberry	1b	1%	L	L	Infestation discovered in 2016 in Walsh St grassland. 0% controlled. Optimum method to be determined.	Remove infestation by 2018/9 and enter maintenance phase.
20	Flaveria bidentis	Smelter's bush	1b	0%	L	L	Isolated specimens discovered in 2016. Manual removal.	Maintenance phase. Summer monitoring and removal.
21	Gleditsia triacanthos	Honey Locust	1b	1 mature tree	L	L	Large trees historically felled (year unknown). 1 large tree remains opposite Aubrey Ritz Park. Saplings manually removed. Extent of seed bank unknown. Remaining tree management to be decided in conjunction with Ekurhuleni.	Maintenance phase of new growth.
22	Iponomea purpurea	Purple morning glory	1b	1%	M	M	Controlled since 2015 by manual removal but seed bank remains. Estimated efficacy 50%. Grows in disturbed areas. Infestations opp Aubrey Ritz and storm water inlets.	Determine percentage of target regrowth reduction with more experience.
23	Iris pseudacorus	Yellow flag iris	1a	0%	H	H	Full extent to be determined. Stands dug out manually since 2016 as ID becomes confirmed. New infestations discovered annually. Infestation expanding. Drury Lane inlet, Aloe St inlet.	Assess full extent by 2018/9. Seeds carried in through storm water inlets.
24	Ligustrum lucidum	Chinese wax-leaved privet	3	1%	L	M	Controlled since 2015. Saplings removed in brush clearing areas. Large seed bank remains and constant re-seeding by birds from many trees in the suburb.	Unable to set target as extent of seed bank and bird reseeded unknown.
25	Linaria genistifolia	Dalmatian toadflax	1b	0%	L	L	Isolated plants discovered in 2015, all hand pulled.	Maintenance phase. Monitoring.
26	Malva dendromorpha	Tree mallow	1b	0%	L	L	Isolated specimens near storm water inlets, hand pulled in 2014. 100% but are reseeded from inlets.	Maintenance phase. Summer monitoring and removal.
27	Melia azedarach	Syringa	1b	0%	L	L	Controlled since 2014. Saplings manually removed.	Maintenance phase. Removal of new growth.
28	Mirabilis jalapa	Four o'clocks	1b	0.2%	H	H	One infestation at Aloe St chestnut, controlled since	Reduce regrowth by 50%

							2014 by manual removal. Reduction 90%. Infestation at Victoria inlet controlled since 2015. Efficacy 75%.	annually to enter maintenance phase by 2019/20.
29	Morus alba	White Mulberry	3	0%	L	L	Controlled since 2014. Saplings manually removed. Seed bank remains and constant reseeded by birds.	Maintenance phase. Annual inspection and removal.
30	Nasturtium officinale	Watercress	2	0%	L	L	Drury Lane and Victoria inlets invasion from storm water. Manually removed since autumn 2018.	New species, no target set.
31	Pennisetum clandestinum	Kikuyu grass	1b	1Ha	H	H	Controlled since 2016. Selected patches and 1m strip along the fence, sprayed with glyphosate. Some sprayed patches burnt in 2016 during ecological burns. 10% of area has been controlled.	Phased removal of 20% per year to total area less than 0.5Ha by 2021.
32	Phytolacca dioica	Belhambra	3	0%	L	L	Manual removal since 2014 of coppiced roots and small plants. Ongoing removal of new growth.	Maintenance phase. Twice yearly inspection and removal.
33	Phytolacca octandra	Inkberry	1b	0%	L	L	Manually controlled since 2014. Ongoing removal of new growth.	Maintenance phase. Summer monitoring and removal.
34	Ricinus communis	Castor oil plant	2	0%	L	L	Occasional specimens 100% manually controlled since 2014.	Maintenance phase. Summer monitoring and removal.
35	Robinia pseudoacacia	Black locust	1b	0.1%	H	H	Controlled since 2012. Infestation has reduced by 90%.	Maintenance phase. Annual target of regrowth reduction 50%. Extirpate by 2021.
36	Salix Babylonica	Weeping willow		5%	H	M	Locally invasive. Infestation controlled by 60% since 2014. Parent trees not treated.	Control 100% small trees and side trunks by 2018/9 to enter maintenance phase of new shoots and fallen branches.
37	Salvia tiliifolia	Lindenleaf sage	1b	0%	M	L	Infestation under trees opposite No 6 discovered in 2015. Manual control and improvement after burning. 50% controlled.	Target is 10% of present seeding by 2012.
38	Sambucus nigra	Elderberry	1b	One tree	L	L	No control. Tree has not propagated.	Tree to remain unless it propagates.
39	Sesbania punicea	Red sesbania	1b	0.2%	M	M	Large trees were historically felled but seed banks remain. Localised infestations of saplings hand pulled since 2013. 100%.	Maintenance phase. Twice yearly inspection and removal.
40	Solanum mauritanium	Bugweed	1b	0.5%	M	M	Controlled since 2013. Ongoing re-seeding by birds from surrounding infested properties.	Maintenance phase. Summer monitoring and removal.
41	Solanum pseudocapsicum	Jerusalem cherry	1b	0.5%	M	M	Controlled since 2013. Infested patches manually removed. 50% reduction in regrowth.	Target reduction in regrowth 90% by 2021.

42	Tipuana tipu	Tipuana	3	1 tree	L	L	None. Tree has not propagated.	None planned unless tree propagates.
43	Toxicodendrum succadenuem	Wax tree	1b	0%	L	L	Occasional specimens 100% controlled by hand since 2014	Maintenance phase. Summer monitoring and removal.
44	Verbena bonariensis	Purple top	1b	3%	M	M	Controlled since 2013. Manual removal. No reduction following massive growth in 2016 and 2017.	Target 90% reduction in grassland by 2021.
45	Verbena brasiliensis		1b	0.5%	M	L	Species identified in 2016. As per Verbena bonariensis.	Target 90% reduction in grassland by 2021.
46	Xanthium strumarium	Large cocklebur	1b	0%	L	L	Manually controlled since 2014. Seed bank remains. Extent of growth reduction presently unknown.	Maintenance phase. Summer monitoring and removal.



Araujia sericifera at Aloe St inlet, 2013



Status in April 2016 – other weeds



After further clearing, May 2016

2. PLANTS UNCATEGORISED, BUT LOCALLY INVASIVE

	SCIENTIFIC NAME	COMMON NAME	Av dens	Priori ty	Risk	Previous control measures / Efficacy	Indicators of control / success over 5 years
1	<i>Acer buergerianum</i>	Chinese maple	0.1%	H	L	Trees historically felled, seed bank remains. Saplings manually removed. 99%.	Maintenance phase. Twice yearly inspection and removal.
2	<i>Bidens pilosa</i>	Spanish blackjack	3%	H	H	Controlled since 2015. Large stands repeatedly slashed by brush cutting between February and May to prevent seeding. Seed bank remains. Efficacy 75%.	Aim to reduce reseeding by 95% by 2021.
3	<i>Erigeron chilensis</i>		3%	H	H	Species identified in 2016. Highly invasive along shore. Large seed bank. Stands slashed by brush cutting. Not possible to hand pull. Infestation expanding.	Aim to reduce infestation by 90% by 2021.
4	<i>Erigeron bonariensis</i>	Fleabane	3%	H	M	Controlled in grasslands since 2015. Hand pulled. Infestation reduced by 50%.	Reduce annual regrowth by 50% to enter maintenance phase by summer 2019/20.
5	<i>Fraxinus americana</i>	American Ash tree	0.1%	H	L	Trees historically felled, seed bank remains. Dense localised stands of saplings manually removed by tree popper. Only effective when entire root removed. 99%.	Maintenance phase. Twice yearly inspection and removal.
6	<i>Heimia myrtifolia</i>		0.1%	H	M	Identified in 2015. Plants and stands manually removed with entire root. Estimated efficacy 95%.	Maintenance phase. Twice yearly inspection and removal.
7	<i>Persicaria hydropiper</i>		1%	H	H	Species identified in 2016. Large stands slashed by brush cutter. Efficacy as yet unknown.	Target to be set. More information about this species needed.
8	<i>Phragmites australis</i>	Common reed	7 Ha (pan) 0.2Ha (land)	M	H	Controlled in 2014/5 by Ekurhuleni – Environmental: Wetlands by spraying. Efficacy 40% on shore after two years of treatment. Infestation continues to spread and requires aggressive control by spraying twice annually. Pan water level must be managed by Water and Sanitation as requested by K.C. High water level causes encroachment into grassland.	Reduce total area by 50%, away from shore line, by 2021. No reeds alive on terrestrial areas by 2019.
9	<i>Physalis angulata</i>		0.5%	L	L	Controlled by hand and slashing since 2016. Large seed bank remains. Extensive growth after burning.	Target 90% reduction by 2021.
10	<i>Populus deltoides</i>	Cottonwood	1%	L	L	Mostly planted outside fence. Specimens inside fence controlled since 2015. Saplings hand pulled. 70% controlled.	Maintenance phase.
11	<i>Rumex crispus</i>	Curly Dock	1%	M	M	Controlled since 2016. Weeds slashed by brush cutter	Reduce infestation by 60% by 2021.

						before seeds ripen. Large seed bank.	
11	<i>Tagetes minuta</i>	Khakibos	1%	M	M	Manually controlled by hand pulling and slashing since 2013. 80% controlled.	Maintain 100% of areas by 2019.
12	<i>Typha capensis</i>	Bulrush	1 Ha (pan) 0.5Ha (land)	H	H	See as per <i>Phragmites australis</i> . Efficacy 50% on shore after two years of treatment. Environmental: Wetlands needs strong support from Ekurhuleni to manage this invasion.	Reduce total area in water by 75% by 2021. No bulrushes alive on terrestrial area by 2019.
13	<i>Ulmus parvifolia</i>	Chinese Elm	0.1%	M	L	Controlled since 2015. Saplings manually removed by tree popper. Seed bank remains.	Maintenance phase. Annual inspection and removal.

3. FAUNA

	SCIENTIFIC NAME	COMMON NAME	Cat	Extent	Priority	Risk of invasion	Current control method / efficacy	Indicators of control / success over 5 years
1	<i>Acridotheres tristis</i>	Common Myna	3	Widespread	L	M	Not yet controlled	To be determined
2	<i>Anas platyrhynchos</i>	Mallard	2	1 pair	H	M	Not yet controlled. GDARD notified.	To be determined. May be part of flock from Homestead Dam.
3	<i>Cyprinus carpio</i>	Common carp	2	Numerous. Estimated to be in the thousands.	M	H	Carp first seen in 2014, since the pan last dried up in 2004. Not yet controlled and numbers constantly increasing.	To be determined with assistance from Environmental: Wetlands.
4	<i>Harmonia axyridis</i>	Harlequin lady beetle	1b	Widespread on oak trees.			Specimens manually controlled when found. Efficacy nil.	Unable to determine