HilLand Environmental

Environmental Assessment Practitioners

ALIEN CONTROL PLAN AND FARM MAINTENANCE MANAGEMENT PLAN FOR

HOËR LANDBOUSKOOL OAKDALE

ERF 42, RIVERSDALE

In terms of the National Environmental Management: Biodiversity Act (NEM:BA Act No 10 of 2004, as amended), Invasive Species Regulations (October 2020) and National Environmental Management Act (NEMA 2014 EIA regulations, as amended 2017)

Compiled by	HilLand Environmental
HilLand reference	RIV25/1327/10
Date	17 March 2026

ISSUED BY:
HilLand Environmental
P.O. Box 590
George, 6530

Tel: 044 889 0229
Fax: 086 542 5248
E-mail: info@hilland.co.za / cathy@hilland.co.za / environmental2@hilland.co.za
Web site: www.hilland.co.za

Submitted for:
Submission with Final Section 24G report

Conditions of report use
The report is the property of the sponsor and the author, who may publish it, in whole, provided that:

1. That written approval is obtained from the author and that ***HilLand Environmental*** is acknowledged in the publication;
2. That ***HilLand Environmental*** is indemnified against any claim for damages that may result from publication;
3. The contents of this report may not be used for purposes of sale or publicity or advertisement without the prior written approval of ***HilLand Environmental***.
4. ***HilLand Environmental*** accepts no responsibility for failure to follow the recommended programme.
5. ***HilLand Environmental*** accepts no responsibility for deviation or non-compliance of any specifications or guidelines provided in the report.
6. All figures, plates and diagrams are copyrighted and may not be reproduced by any means, in any form, in part or whole.

Table of Contents

INTRODUCTION

HilLand Environmental have been appointed by **Hoër Landbouskool Oakdale – c/o Mr Willem du Buisson**, Erf 42, Riversdale, as Independent Environmental Assessment Practitioners (EAPs), to prepare an Invasive Alien Plant Control Plan (ACP) in terms of the National Environmental Management: Biodiversity Act (Act 10 of 2014) and NEMA: EIA Regulations (2014 as amended).

Erf 42 (here after referred to as the property) is located north of central Riversdale, along the R323. The eastern boundary is the approximate location of the Vette River.

It is an operating agriculture school and most of the property has been cultivated. There is school infrastructure (roads, buildings, sports facilities and other) present and bands of vegetation along the main drainage lines that are in some form of natural state (presently uncultivated).

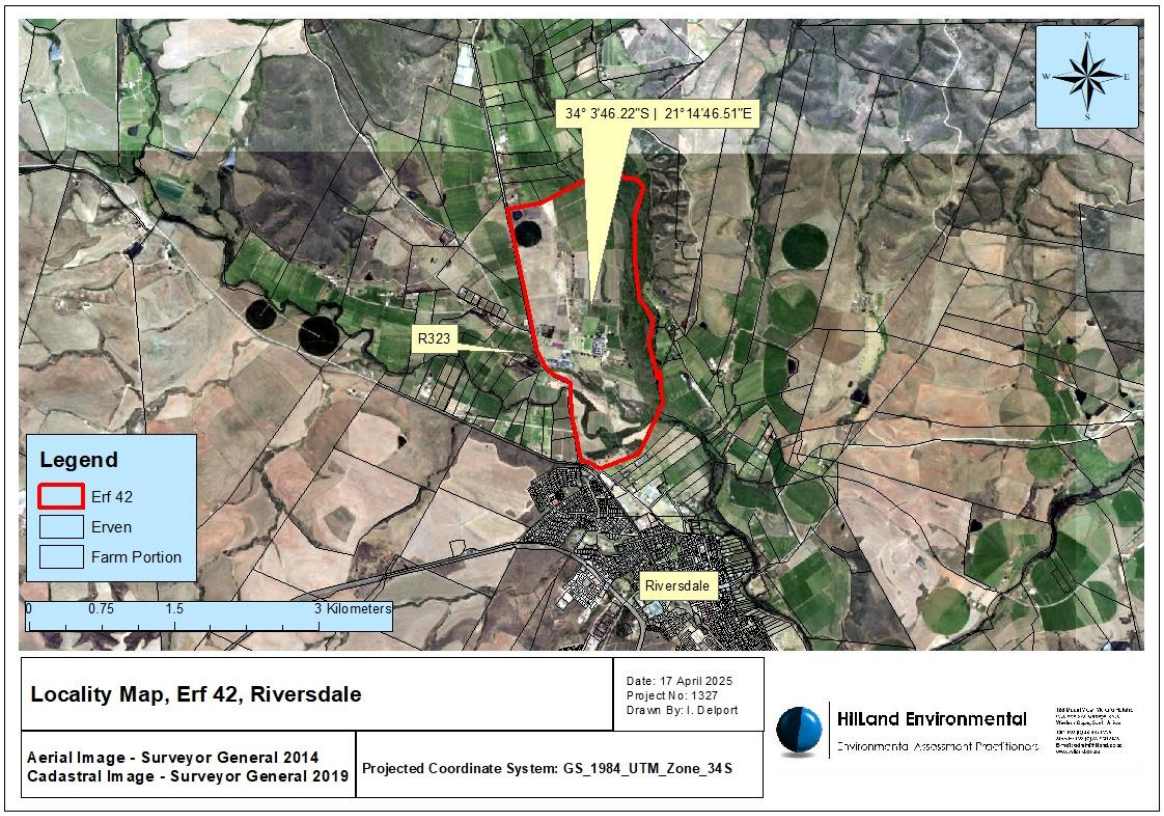


Figure 1: Locality map

The property has a moderate to low infestation level, and a great effort has been made to remove alien invasive species within the wetland areas.

This control plan will assist the management to clear the remaining alien species present through implementation of the correct clearing methods and the ongoing follow-up that will be required.

This control plan is produced in terms of Section 76 of NEM:BA and monitoring, control, and eradication plan guidelines (dated: 30th September 2015)

The key objective is to maintain the ecological integrity of the wetland, riparian and open space areas, therefore, the vegetation management within these areas is proposed in

terms of NEMA specifically to cover activities in listing notice 1 and 3 where clearance of vegetation and management is concerned.

All farm management activities (livestock management, pasture management, crop planting etc) are included in this AC&FMP so that the school, recreational activities, farm management activities, alien clearing and river management activities can all be covered by an adopted Maintenance Management Plan.

Table 1: Property details

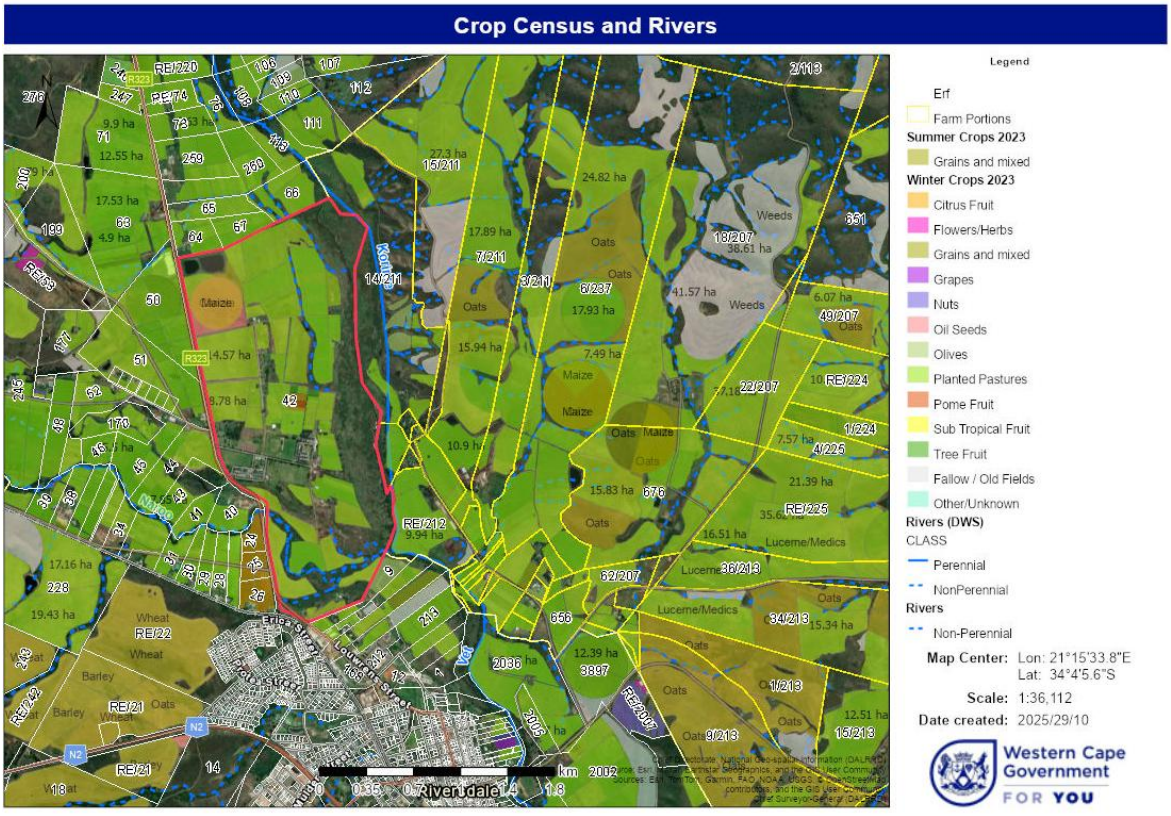
Property number	Erf 42
Land use	Operational agricultural school
Contact person	Mnr. Willem du Buisson SKOOLHOOF Hoër Landbouskool Oakdale Ladismithweg, Oakdale, Riversdal, 6670 Tel: 028 713 2549 Sel: 084 302 6593 E-pos: hoof@oakdale.co.za Webwerf: www.oakdale.co.za
GPS coordinates (middle of the property)	34°3'46.22"S | 21°14'46.51"E

PROPERTY OVERVIEW

Table 2: Photographic record

Various staff houses, school buildings, school hostel, agricultural infrastructure located on the property, surrounded by school fields or cultivation and pastures.

School cycle track – which requires periodic maintenance or mowing to prevent erosion.



Cultivation and pastures as per the 2023 crop census

Existing dams

Riparian area and channel rehabilitation as approved

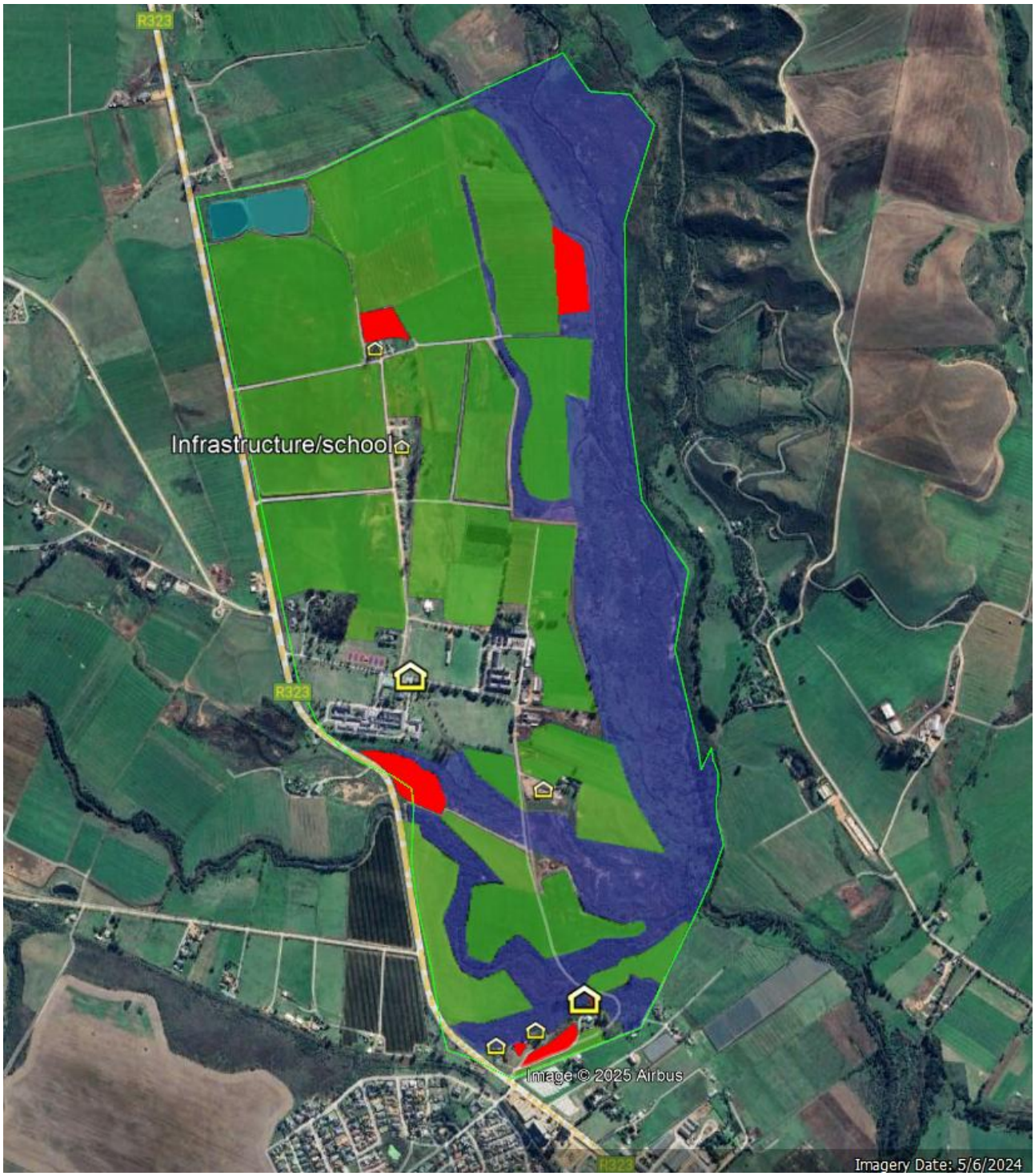


Figure 2a: Management plan showing the pastures and cultivated areas in green and red, riparian areas, wetlands and open spaces in blue, school fields and farm infrastructure marked by houses

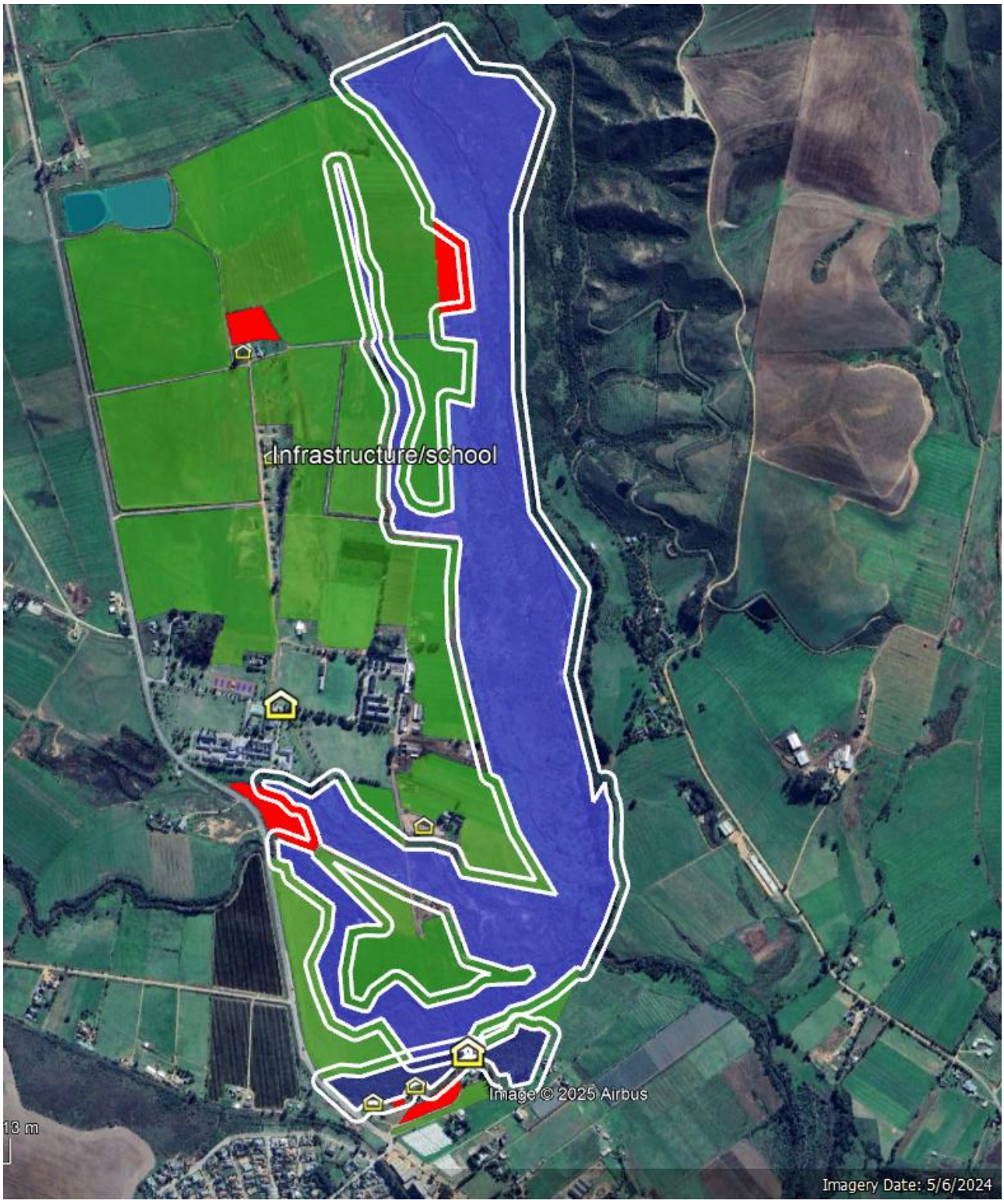


Figure 3b: Management plan showing the pastures and cultivated areas in green and red, riparian areas, wetlands and open spaces in blue, school fields and farm infrastructure marked by houses. This plan shows a 30m buffer area from all wetland areas (highlighted by the white lines). As per the requirement of Garden Route District Municipality, these areas must be 'no-till' zones.

LEGISLATIVE REQUIREMENTS

In terms of the National Environmental Management Act (NEMA) (Act 107 of 1998) and the Environmental Impact Assessment Regulations (2014, as amended) clearance of vegetation is a listed activity which first requires authorisation before being undertaken,

except where being undertaken for maintenance purposes undertaken in accordance with a maintenance management plan.

This plan covers alien vegetation clearing in order to cover the objectives of the alien management control plan required in terms of the National Environmental Management: Biodiversity Act (NEMBA) and management of the cultivated lands for ongoing agricultural use and indigenous vegetation management in accordance with NEMA.

An Environmental Assessment Practitioner (EAP) is to be contacted should any new activities other than ongoing alien clearing and management of the school and farm in the current state be required to ensure that no listed activities in terms of the NEMA EIA Regulations (2014, as amended) are triggered.

ALIEN PLANT CONTROL

PURPOSE AND SCOPE OF THE CONTROL PLAN

The purpose of this plan is to address the clearing and control of alien invasive plants on the property and to manage the agricultural land and natural areas in a sound manner.

The plan is to continue with systematic alien clearing and follow-up to ensure that the alien seedlings emerging are kept under control in the five (5) management units.

A five (5) year plan has been recommended, but ongoing control will be essential due to the high levels of accumulated seed in the soil.

MANAGEMENT UNITS

To effectively implement vegetation management and control of alien species on the property, management units are set out based on the current use of the areas and management method that will be applied. Five (5) management units are assigned to the property.

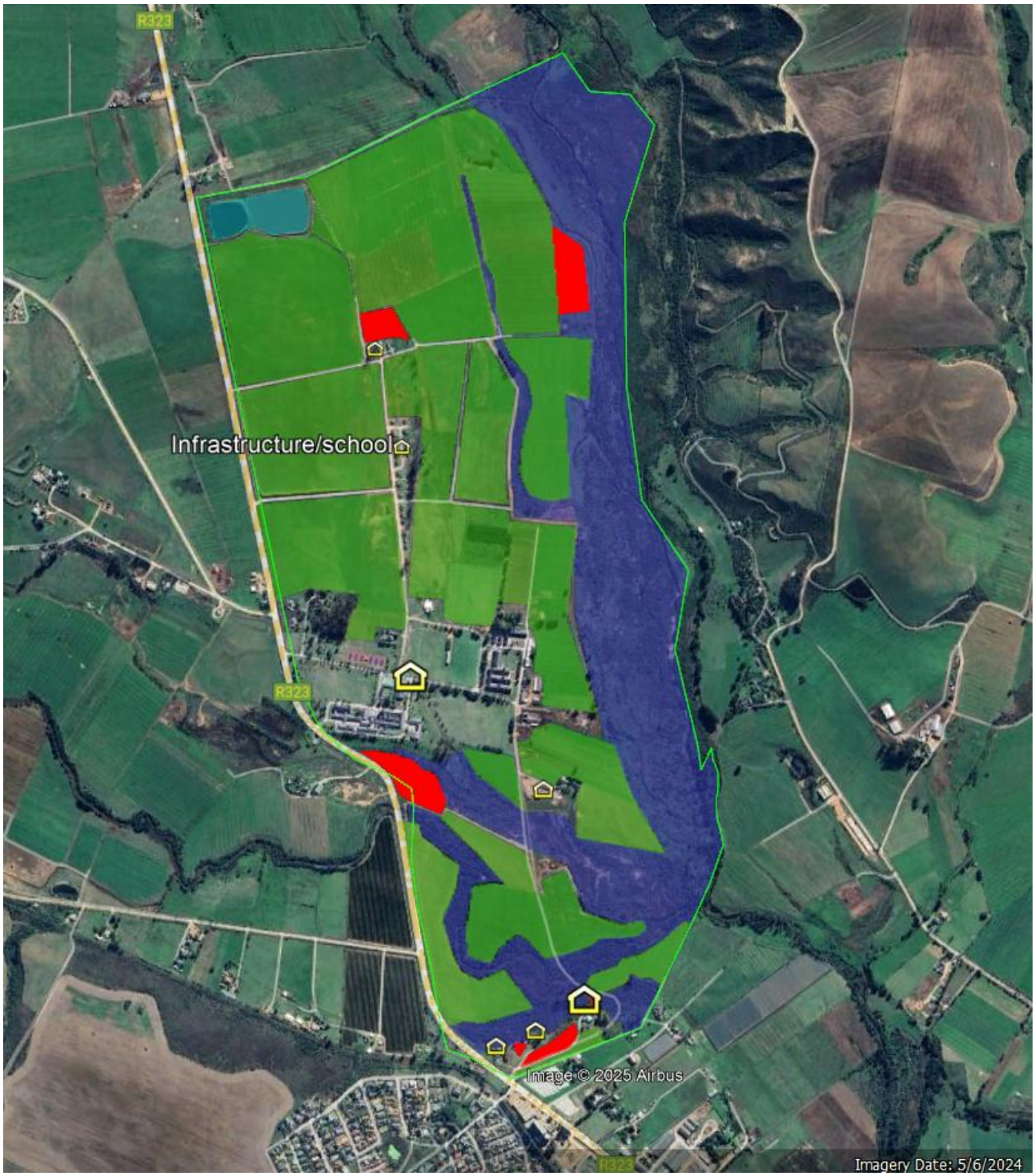
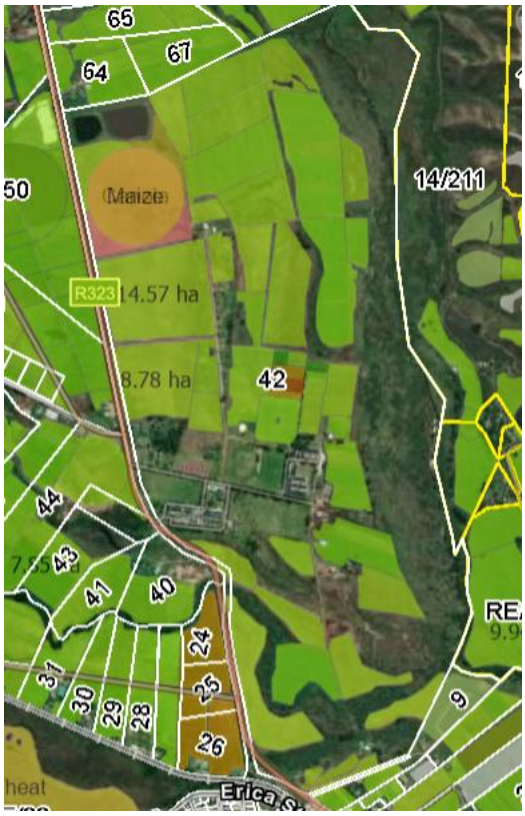


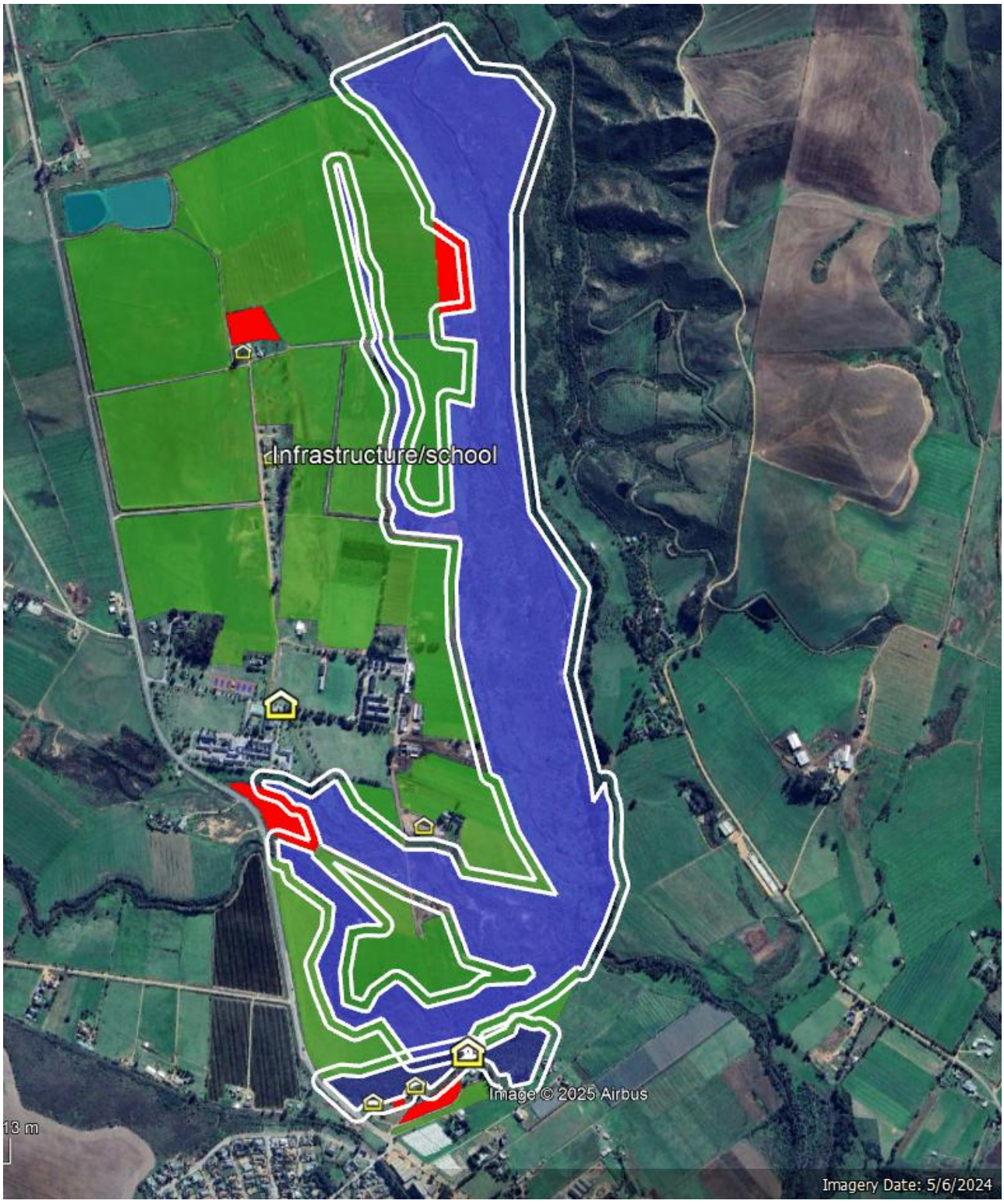
Figure 4: Management unit map

Blue – open space, riparian and wetland areas **Management unit 1**	Alien clearing within these areas is to be **prioritised**. Alien clearing by hand (hand pulling of seedlings and saplings and ring barking mature trees). No disturbance of the topsoil is to take place as part of this alien clearing. Only existing access tracks to be used. Foot access only into the riparian area. Regular follow-up control of alien seedling regrowth will be necessary – hand pulling recommended. Access via existing tracks leading close to the area only.

	Repair to the "weirs" installed in the river channel to protect the wetlands can only be repaired once they are appropriately authorised by DEADP. See rehabilitation report appendix A. School educational and recreational use of this area is non-consumptive and is linked to outdoor education activities and the use of the existing cycling track. Maintenance to the cycle track will be required from time to time but does not include the expansion of the track or making the route longer without first getting approval from DEADP. Regular mowing and erosion control management is anticipated along the route.
Light blue – dams **Management unit 2**	Alien clearing by hand to be implemented in and around the dams Dams not to be enlarged without authorisation If a dam needs to be repaired or maintained in any way, a short method statement must be issued to DEADP in accordance with this Maintenance plan – it must highlight what is to be done, why it is necessary and what will be done with any material that originates from the dams. School recreational use of the water is to be itemised (e.g. Swimming, rowing, obstacle activities etc)
Green – cultivation and pastures **Management unit 3**	These areas are to remain cultivated with ongoing follow-up of alien invasive species regrowth. Access to the areas to remain via the existing tracks. Pastures or cultivation areas are not to be enlarged without the necessary approvals The school practices no-till management and as such continued agricultural use is not limited by a "10-year no ploughing" period. Areas left to revert to natural for a period of 10 years or longer and which are no longer used for agricultural activities, will be regarded as 'indigenous' vegetation and authorisation may be required to cultivate – check relevant regulations at the time in terms of NEMA.
Red – fields **Management unit 3**	Subject to a section24G process currently – but regarded as "green" in terms of this Maintenance plan.
Disturbance areas around the infrastructure, school buildings, gardens, parking, homes, sport fields etc. **Management unit 4**	Ongoing alien clearing to be done by hand. Any new disturbance of topsoil needs to be checked against NEMA EIA regulations to ensure that no listed activity to be triggered. Make sure no disturbance to remaining pockets of indigenous vegetation around homesteads etc.

	Any aesthetic / wind breaks trees / trees that are kept as bee foraging trees, such as the large Gum trees will need a Category 2 permit in terms of NEMBA.





Management plan showing the pastures and cultivated areas in green and red, riparian areas, wetlands and open spaces in blue, school fields and farm infrastructure marked by houses. This plan shows a 30m buffer area from all wetland areas (highlighted by the white lines). As per the requirement of Garden Route District Municipality, these areas must be 'no-till' zones.

Fire breaks

Firebreaks to follow where possible existing roads or tracks and property boundaries or topographical features. It is anticipated that they should be maintained at a minimum of 5m width as a brush cut or mulched route with no disturbance of soil other than where the route is on an existing track. Where the track is narrower than the width of the firebreak

required, the balance of the firebreak should be mowed or mulched, and the soil should not be disturbed.

All firebreaks are to be brush cut routes which meander around any mature indigenous trees and where the topsoil is not disturbed. Firebreaks should be mowed / mulched every 6 months to keep them compliant with the Fire Act and they should be a minimum of 5m wide. Firebreaks must be maintained as approved by the FPA.

The school should be a paid-up member of the FPA.

Ongoing control

Ongoing systematic clearing (including follow-up control) of all management units on the property will be done with follow-up control every 6-months within each management unit already cleared to keep seedling re-growth to a minimum and within hand pulling follow-up height.

Clearing methods will include hand-pulling of seedlings, use of tree poppers, cutting of trees with herbicide application as a follow-up, herbicide foliar application by appropriately skilled herbicide applicators, and ringbarking. Within the agricultural use areas, regrowth can be controlled through the use of mowing or mulching when necessary.

All management and rehabilitation efforts on require a cautious approach to ensure that it does not cause erosion.

Once the initial clearing process has run its course in each MU, the programme will begin running through each management unit maintaining the follow-up seedling alien control.

Cut branches will be collected for firewood or other commercial use and all smaller branches mulched and used to return carbon and organic matter to the system. De-stumping is not required in wetland/riparian/open space areas, cut stumps are to be treated with herbicide where necessary to avoid coppicing.

Stumps within the agricultural areas can be mulched and herbicide added if they coppice – or they can be removed.

The follow-up methods include a combination of manual and herbicide control.

No heavy machinery which disturbs the topsoil will be used to perform alien clearing activities. The mulcher if intended to be used, attaches to a tractor and is designed to NOT disturb the topsoil while mulching the above ground material.

Stumps of alien trees to be treated with the appropriate herbicide and roots are to be left in the soil, no excavation to remove root stumps is permitted as this results in unnecessary damage to the surrounding vegetation and disturbs the soil which stimulates alien seedling growth.

LISTED ALIEN INVASIVE PLANT SPECIES PRESENT

The National Environmental Management: Biodiversity Act (NEM: BA) listed Invasive Alien Plants (IAPs) species present on the property are recorded in the table below, according to scientific names, common-names and the category listed in the NEM: BA Alien and Invasive Species list (October 2014, as amended in 2020). These species are prioritised in accordance with the category in which they are listed and the potential risk of invasion.

Recommendations are given in this report on the control of alien invasive plants present on the property and a monitoring programme will be implemented to detect new and/or secondary invasions. The alien invasive plant species list will be updated frequently to include any new and/or secondary infestations as and when detected within the property.

Table 3: NEM:BA listed (October 2014, as amended 2020) alien invasive species potentially present on the property

(species noted on site are indicated in **bold,** remainder of the species may not been noted during the site inspection, however, are likely to occur on the property)

Plant species	Common name	NEM:BA Category
Acacia mearnsii	**Black Wattle**	**2**
Acacia melanoxylon	Australian Blackwood	2
Acacia saligna	Port Jackson	1b
Cirsium vulgare	**Spear thistle**	**1b**
Datura species	Thorn apple	1b
Eucalyptus species	**Gum species**	**1b**
Hakea sericea	Silkey Hakea	1b
Lantana camara	Lantana	1b
Opuntia ficus-indicata	**Sweet prickly**	**1b**
***Pinus species* (all)**	**Pine species**	**2**
Rubus fruiticosus	Bramble	1b
Solanum mauritianum	**Bugweed**	**1b**

*Please note there may be other NEM:BA listed plant species present within the surveyed area. This table needs to be updated as new/different species are detected.

Table 4: Description of NEM:BA Categories: 1 (a and b), and 2

NEM:BA Category	Description
Category 1 (a and b)	Invasive species falling under this category are prohibited plants, i.e. are illegal to grow or keep and must be controlled / eradiated. These plant species possess characteristics that can prove harmful to humans and/or have a detrimental impact on the environment, people or the economy. These plant species are only allowed in biological control reserves that are designed for the breeding of bio-control agents. Road reserves are not considered biological control reserves and as such these species need to be removed from such area unless specifically permitted to be there.
Category 2	Invasive species falling under this category are planted with a commercial or utility value. These species have certain useful qualities, which include the commercial use of for timber, animal fodder, food, soil stabilisation etc. The species falling under this category are only permitted in demarcated areas, under controlled conditions and in bio-control reserved. However, they are not permitted within 30 m of 1:50 year floodline or a watercourse or wetlands unless it is authorised by the National Department of Water Affairs. Road reserves are not considered demarcated areas or control conditions and as such these species need to be removed from such area unless specifically permitted to be there.

VEGETATION MANAGEMENT AND ERADICATION METHODS TO BE EMPLOYED

When references are made to herbicide application, please ensure the use to the correct herbicides as listed in Annexure B.

Table 5: Methods to be employed for the control of listed species on the property

* This table includes species that can potentially occur on the property, but were not noted during the site inspection			
Group	**Species name**	**Common name**	**Common method of control**
Plant	***Acacia mearnsii***	**Black Wattle**	**Seedling**: Hand-pull **Seedlings, saplings and coppice**: Foliar spray or tree popper **>2 m tall and coppice**: Spot spray **Adult/mature**: Bark strip. Cut stump, frill with herbicide treatment after

	Acacia melanoxylon	Australian Blackwood	Seedling: Hand-pull Seedlings, saplings and coppice: Foliar spray or tree popper Adult/mature: Cut stump or frill with herbicide application – watch for root suckers around a mature tree
	Cirsium vulgare	**Spear thistle**	**All:** Hand pull or foliar spray
	Acacia saligna	Port Jackson	**Seedling and coppice:** hand-pull or foliar spray **Young:** lopping/pruning and herbicide application **Adult:** cut stump and herbicide application
	Datura species	Thorn apple	**All**: Hand-pull or tree popper (before flowering)
	Eucalyptus species	**Gum species**	**Seedling**: Hand-pull **Seedlings, saplings and coppice**: Foliar spray **Adult/mature**: Cut stump or fell with herbicide treatment after
	Hakea sericea	Silkey Hakea	All: Cut branches containing unopened cones are to be place in drum and burnt – or stack burn with seedling control follow-up (burn permit required) **Seedling**: Hand-pull **Seedlings, saplings and coppice**: Foliar spray **Adult/mature**: Cut stump or frill with herbicide treatment after
	Lantana camara	Lantana	**All**: Foliar spray / cut and spot spray
	Opuntia ficus-indicata	**Sweet prickly**	**All:** Stem injection or foliar spray
	***Pinus species* (all)**	**Pine species**	**Seedling:** Hand pull **Young and adult:** Cut
	Rubus fruiticosus	Bramble	**All:** foliar spray
	Solanum mauritianum	**Bugweed**	**Seedling:** hand-pull **Young:** foliar spray **Adult:** cut and herbicide application

TARGETS AND TIMELINE

The alien control plan's main goal is to have eradicated all invasive alien plants by 2030 (5 years), with the incorporation of ongoing follow-up control. The following timeline has been set out for the property:

Proposed Invasive Alien Clearing programme.

Management Unit	Proposed timeframe for initial clearing
1	2025-2027 initial clearing follow-up every 6-months
2	Small area - 2026
3	2027-2028 initial clearing follow-up every 6-months
4	2028-2030 - initial clearing follow-up every 6-months

By the end of these proposed timeframes the infestation of alien vegetation will be revised to establish whether it will be necessary to extend the programme further amend it in any way. It is important to follow up every six (6) months within each management unit to ensure new seedlings are being pulled by hand before they become too large and require cutting and herbicide application.

Vegetation management and control will follow the same time frames. The actions will be completed at the same time as alien clearing.

It should be noted the event of a fire (controlled and uncontrolled) within the area, there could be mass alien seedling germination as they are stimulated by fire and more frequent follow-up control will be required following a fire.

OBJECTIVES AND ACTIONS

The following two objectives will give effect to the overarching objective of becoming NEM: BA compliant.

OBJECTIVE 1: PREVENTION

To put measures in place to prevent the introduction of new NEM: BA listed IAS into the surveyed area (from neighbouring properties), and from spreading from the affected area to neighbouring properties or erven.

PREVENTATIVE ACTION

- No listed invasive and alien plant species shall be planted on the property;
- All invasive and alien plants **MUST** be monitored;
- Control of seedlings after each ecological burn is essential;
- Effective rehabilitation should take place in disturbed areas and prevent any unnecessary disturbances;
- Areas bordering onto neighbouring land will be prioritised for control to prevent existing invasive plants from spreading beyond the boundaries of these property; &
- These prevention measures will be communicated to the respective owners and managers of the property.

OBJECTIVE 2: EARLY DETECTION AND RAPID RESPONSE AND ERADICATION

To put measures in place whereby new and secondary invasive species are detected early and removed before establishing sustainable populations and start spreading (Early Detection and Rapid Response).

EARLY DETECTION AND RAPID RESPONSE AND ERADICATION ACTIONS

- Regularly survey the property to detect any new or emerging listed invasive plant species (using internal tracks – no new tracks may be created);
- Learn more about the SANBI programmes and register as a spotter where applicable;
- Report category 1a species immediately to the Department of Environmental Affairs/Provincial Conservation Agency/Local Municipality/South African National Biodiversity Institute (SANBI) EDRR programme and ask for assistance with the control of the species;
- Do not allow emerging or new species to produce seeds or off-spring, or start growing vegetative, act immediately by removing them;
- Update the species list by including these species and indicate where on the property they were located; &
- Ensure bio-controls are in place where available to assist in the control efforts
- Increase surveillance in the areas after the species were controlled to quickly remove re-sprouting plants or seedlings.

The main objective is to bring the invasive plant infestation on the property under control including the implementation of continual follow up control.

RESPONSIBILITIES AND REQUIREMENTS

The speed of alien invasive plants that will be removed will depend on the work speed and effectiveness of the team assigned to this project. All clearing must be done by following the approved methodology that can be seen in this report.

It is the responsibility of the school management to ensure that the employee(s) (or appointed team) implements the correct methodology and that a record is kept of the progress of the alien clearing and the use of approved herbicides.

It will be the responsibility of the school management to ensure that the recommended erosion control and restoration efforts are employed in order to avoid any environmental damage and to restore the property to natural indigenous vegetation. Furthermore, it will be the responsibility of the school management to make good any damage caused by their actions.

MONITORING AND EVALUATION

It is of utmost importance that control efforts are monitored, a summary of a monitoring framework is included in the table below.

It is important to note that other alien species and more weedy elements like castor oil, thorn apple, spear thistle etc. may become evident over time in the disturbed areas and will need to be controlled by hand puling. The continual evaluation will aid in identifying such species and adding them to the control plan.

Table 6: Monitoring framework

WHAT	FREQUENCY	HOW	RESPONSE
How effective are the control methods?	4-6 months after every operation	Survey and look for re-growth in areas	Continue with suggested methodology and adapt as necessary
Do the infestation levels decrease?	Annually	Survey area, including records of densities and species. Photographic evidence should be taken	Continue with clearance and adapt intervals as needed
How much herbicide has been used?	After every operation	Herbicide records should be kept, see Annexure B	Keep track of the costs and ensure that the right amounts are being used to minimize waste
Does the indigenous vegetation recover in the cleared areas?	Annually	Survey area for indigenous vegetation, keeping track of the variety of species. Photographic evidence can be useful	An increase in indigenous vegetation (high recovery) - control methods are affective. If not - look at clearing methods, clearing intervals or consult an expert
How many jobs were created?	After every operation	Timesheets	Keep it on records
How many person days (PD) were spent per operations	After every operation	Timesheets	Keep track of cost and assist with planning and budgeting. Determine cost per person-day (PD)

REFERENCES

Invasive species of South Africa. 2018. *Invasive species of South Africa.* [ONLINE] Available at: http://www.invasives.org.za/ [Accessed 26 August 2019]

Invasives South Africa. 2022. WFW Species and Herbicide list v14. [ONLINE] Available at: https://invasives.org.za/herbicides/ [Accessed 17 February 2023]

DEADP. 2018. Guidelines for monitoring, control and eradication plans as required by Section 76 of the National Environmental Management: Biodiversity Act, 2004 (Act Ao. 10 of 2004) (NEMBA) for species listed as invasive in terms of Section 70 of this Act

ANNEXURES

ANNEXURE A: CONTROL METHODS

The following Annexure deals with the initial clearance activities along with the proposed methodology. It assumes the following:

- That the recommended methodology that is proposed below is implemented and followed.
- That the funding allows for short- and long-term commencement of the tasks.
- No thorough provisions have been made for natural occurrences for instance wildfires, floods and droughts.
- That person(s) undertaking the task of clearance and control are suitably trained and experienced.

Depending on species, age/size of the plant and growth form, the following methods can be used for the initial clearance of the alien invasive plants:

Hand pulling

This method is the removal on alien invasive plants by hand; it is important to ensure that the roots are also removed. This method can be applied to areas that are sparsely invaded and seedlings present within each unit.

Foliar spraying

This method is the usage of spray equipment, such as a knapsack sprayer, to spray alien invasive plants one meter in height or that is still at a young age. The foliage/leaves of the plants should be sprayed by the herbicide-water mixture up until it starts to run off. This method is most effective early mornings on a wind-still day. It is important that the correct protective equipment (PPE) (refer to Annexure D) should be worn at all times and the proper methodology should be followed. For the use of the correct herbicides, refer to the below table.

Figure 5: Herbicide application to foliage of alien invasive plants (conservation contracts northwest, 2018)

The following Table should be completed to maintain usage record, this will fall under the responsibility of the developer (and HOA / estate manager therafeter).

Table 7: Herbicide control sheet

Herbicide Control Sheet							
Manageable Unit:						Hectares:	
Date	Herbicide (name)	Herbicide (name)	Herbicide (name)	Herbicide (name)	Herbicide (name)	Actipron	Dye

Mechanical control methods

Felling

Trees with a stem diameter of more than 200 mm can be felled with a chainsaw, the remaining stump should be treated with an herbicide application immediately after cutting. All felled tree stumps should be cut into manageable log sizes and be transported manually out of the area (store as firewood). Large stumps can be kept within the units for erosion control and natural decay.

Manual control methods

Trees with a stem diameter of less than 200 mm can be cut down with a chainsaw / bow saw / skill saw, whereas stems with a diameter of less than 100 mm can be cut down with a lopper or can be pulled out using a tree popper. These trees must be cut as low as possible to the ground, as low as 10 cm or lower.

Herbicide cut stump treatment

A two-litre spray marker can be used for small trees and knapsacks for larger trees. The herbicides should be applied to the stumps immediately after felling/cutting (see below figure).

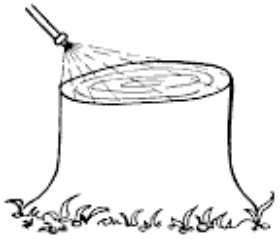


Figure 6: Herbicide application to stump directly after felling / cutting (DEADP, 2018)

Frilling

This method uses a bush knife/axe to make angled cuts downwards into the trees' cambium layer (see below figure for an example of a frilled tree). Cuts should be made around the entire stem. Herbicide is applied to the cutline with a marker dye to show where herbicide has been applied.

Figure 7: Frilled tree (DEADP, 2018)

Ring barking

For this method the bark of the tree is stripped from the bottom (below ground level) to a height of 0.75 - 1 m, by using bush knives or hatchets. If this method is not possible, due to exposed root systems or crevices in the stem, a combination of bark removal and stem treatments should be followed. Herbicide application should follow where the species is known to coppice.

Figure 8: ring barking of tree (invasive species of South Africa, 2018)

Follow up clearing

The preferred method for follow up clearances is **hand-pulling** and **foliar spray**. Follow-up clearance should occur at different times/stages as stipulated in the plan. Large trees that are considered too big for hand-pulling, tree popping or foliar spray, can be cut down, slashed or ring barked – ring barking of larger trees is preferred in forested areas to reduce the damage caused by trying to remove the trees and in areas where they are left to increase the perching sites for raptors.

Table 8: Invasive alien plant species herbicide list (Working for Water, 2022)

Species and common name	Growth form	Herbicide registration status	Size class	Treatment method	Herbicide	Trade name
***Acacia mearnsii* Black wattle**	Sprouting tree	Registered	Seedling	Hand pull	No herbicide needed	
			Seedling	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL, Astra 360 SL
					Fluroxypyr 200 g/L EC	Cardinal 200 EC, FriXon, Solstar, Starane 200 EC, Terminal 200 EC, Tomahawk 200 EC, Voloxypyr 200 EC
					Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
					Glyphosate (as sodium salt) 500g/kg WG	Kilo
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super 132
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon 4, Garlon 480 EC, Nuvagon 480 EC, Tribel 480 EC, Triclon, Trimax E, Tripyr 480 EC, Viroaxe, Vulture 480 EC
					Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon Max 270 EW
					Fluroxypyr 80 + Picloram 80 g/L ME	Plenum 160 ME, Gladiator 160 ME, Mafia 160 ME, Quorum 160 ME
					Triclopyr 600g/kg WG	Triclomax 600 SG
					Fluroxypyr (pyridyloxy compound) 320g/L + Triclopyr (Pyridyloxy compound) 160g/L	Impala 480 EC
			Young	Lopping / Pruning	Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super
			Adult	Bark strip	No herbicide needed	
				Cut stump	Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME, Mafia 160 ME, Quorum 160 ME
					Imazapyr 100 g/L SL	Eco-Imazapyr, Hatchet
					Picloram (as potassium salt) 240g/L SL	Access 240 SL, Adequate 240 SL, Browser, Picloram, Radiate, Scrubber 240 SL

					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
					Picloram (as potassium salt) 50g/kg + Triclopyr (as triethylamine salt) 50g/kg	Kaput 100 gel
					Triclopyr (as pyridine compound) 270g/L + Clopyralid (as pyridine compound) 90g/L	Confront 360 SL, Astra 360 SL
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super132
					Cylindrobasidium laeve	Stumpout
				Frill	Picloram (as potassium salt) 240g/L SL	Access 240 SL, Browser, Picloram 240 SL, Radiate, Scrubber 240 SL
					Triclopyr (as amine salt) 360 g/L SL	Timbrel 360 SL
		Biological control	All	Biological control	Dasineura rubiformis	Dasineura rubiformis
					Melanterius maculatus	Melanterius maculatus
Acacia melanoxylon Blackwood	Sprouting tree	Registered	Seedling	Hand pull	No herbicide needed	
			Seedling	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL
					Fluroxypyr 200 g/L EC	Cardinal 200 EC, FriXon, Solstar, Starane 200 EC, Terminal 200 EC, Tomahawk 200 EC, Voloxypyr 200 EC
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon 480 EC, Tripyr 480 EC
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super 132
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Gladiator 160 ME, Mafia, Plenum 160 ME, Quorum 160 ME, Viktor 160 ME
					Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon max 270 EW
			Young	Lopping / Pruning	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL
					Triclopyr (as amine salt) 360 g/L SL	Timbrel 360 SL
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super 132
			Adult	Cut stump	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL, Astra 360 SL
					Triclopyr (as amine salt) 360 g/L SL	Timbrel 360 SL
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Gladiator 160 ME, Mafia, Plenum 160 ME, Quorum 160 ME
		Biological control	All	Biological control	Melanterius acaciae	Melanterius acaciae
Acacia saligna Port jackson	Sprouting tree	Registered	Seedling	Hand pull	No herbicide needed	
				Aerial application	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL

			Seedling	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL
					Fluroxypyr 200 g/L EC	Tomahawk 200 EC
					Glyphosate (as isopropylamine salt) 240 g/L SL	Tumbleweed
					Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
					Glyphosate (as sodium salt) 500g/kg WG	Kilo
					Glyphosate (as sodium salt) 700g/kg	Kilo Max
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon 4, Garlon 480 EC, Nuvagon 480 EC, Tribel 480 EC, Triclon, Triclopyr 480, Tripyr 480 EC, Ultraweed bush and weed killer, Viroaxe, Vulture 480 EC
					Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon max 270 EW
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super 132
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Gladiator 160 ME, Mafia, Plenum 160 ME, Quorum 160 ME
			Young	Lopping / Pruning	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront
					Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
			Adult	Cut stump	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront 360 SL
					Picloram (as potassium salt) 240g/L SL	Access 240 SL, Browser, Picloram 240 SL, Scrubber 240 SL
					Triclopyr (as triethyl ammonium) 120 g/L + Aminopyralid 12 g/L	Confront super 132
					Picloram (as potassium salt) 50g/kg + Triclopyr (as triethylamine salt) 50g/kg	Kaput 100 Gel
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Gladiator 160 ME, Mafia, Plenum 160 ME, Quorum 160 ME
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack 360 SL, Timbrel 360 SL
		Biological control	All	Biological control	Melanterius compactus	Melanterius compactus
					Uromycladium tepperianum	Uromycladium tepperianum

***Cirsium vulgare* Spear thistle**	Herbaceous	Registered	Young	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME
					Picloram (as potassium salt) 240g/L SL	Access, Browser
		Biological control	All	Biological control	Rhinocyllus conicus	Rhinocyllus conicus

Datura stramonium Common thorn apple	Herbaceous	Registered	Young	Foliar spray	2.4D (as dimethylamine salt) 480g/L SL	2.4-D amine
					Chlorimuron ethyl (as sulfonyl urea) 500g/kg WP	Extreme, Nikanor
					Glyphosate (as isopropylamine salt) 360 g/l SL	Springbok
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo, Muscle up
					Glyphosate (as isopropylamine salt) 180 g/l SL	Glyphosate 180
			Adult	Soil application	Tebuthiuron 250g/L + Bromacil 250g/L SC	Bundu
***Eucalytus grandis* Saligna Gum**	Sprouting tree	Registered	Seedling	Hand pull	No herbicide needed	
			Seedling	Foliar spray	Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Metsulfuron methyl 500g/kg WP	Nikanor
					Metsulfuron methyl 600g/kg WP	Brushoff
					Picloram (as potassium salt) 240g/L SL	Access
					Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
			Young	Lopping / Pruning	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
					Fluroxypyr 80 + Picloram 80 g/L ME	Plenum
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo, Glyphosate WSG
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Metsulfuron methyl 500g/kg WP	Nikanor
					Metsulfuron methyl 600g/kg WP	Climax, Brushoff
					Picloram (as potassium salt) 240g/L SL	Access, Browser

					Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
			Adult	Cut stump / Frill	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Metsulfuron methyl 500g/kg WP	Nikanor
					Metsulfuron methyl 600g/kg WP	Climax, Brushoff
					Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
				Frill	Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
Hakea sericea Silky hakea	Non sprouting tree	Minor use	All	Soil application	Tebuthiuron 200g/kg GG	Limpopo, Molopo
					Tebuthiuron 500g/L SC	Limpopo
		Biological control		Biological control	Aphanasium australe	Aphanasium australe
					Carposina autologa	Carposina autologa
					Cydmaea binotata	Cydmaea binotata
					Dicomada rufa	Dicomada rufa
					Erytenna consputa	Erytenna consputa
Lantana camara Latana	Herbaceous	Registered	Young	Foliar spray	Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME
					Glyphosate (as ammonium salt) 710 g/kg WG	Slash 710
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Mamba
					Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
					Glyphosate (as sodium salt) 500g/kg WG	Kilo, Glyphosate WSG
					Imazapyr 100 g/L SL	Chopper, Hatchet

					Picloram (as potassium salt) 240g/L SL	Access, Browser
			Adult	Cut & Spray	Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Picloram (as potassium salt) 240g/L SL	Access, Browser
				Cut stump	Imazapyr 100 g/L SL	Hatchet
					Picloram (as potassium salt) 50g/kg + Triclopyr (as triethylamine salt) 50g/kg	Kaput 100 Gel
		Biological control	All	Biological control	Aceria lantanae	Aceria lantanae
					Coelocephalapion camarae	Coelocephalapion camarae
					Falconia intermedia	Falconia intermedia
					Hypena laceratalis	Hypena laceratalis
					Lantanophaga pussilidactyla	Lantanophaga pussilidactyla
					Longitarsus bethae	Longitarsus bethae
					Octotoma scabripennis	Octotoma scabripennis
					Ophiomyia camarae	Ophiomyia camarae
					Ophiomyia lantanae	Ophiomyia lantanae
					Orthezia insignis	Orthezia insignis
					Passalora lantanae	Passalora lantanae
					Salbia hemorrhoidalis	Salbia hemorrhoidalis
					Teleonemia scrupulosa	Teleonemia scrupulosa
					Uroplata girardi	Uroplata girardi

Opuntia ficus-indicata Sweet prickly	Cactus		All		Glyphosate (as ammonium salt) 710 g/kg WG	Slash 710
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
		Minor use		Foliar spray	Fluroxypyr (pyridyloxy compound) 320g/L + Triclopyr (Pyridyloxy compound) 160g/L	Impala 480 EC
		Biological control		Biological control	Archlagocheirus funestrus	Archlagocheirus funestrus
					Cactoblastis cactorum	Cactoblastis cactorum
					Dactylopius opuntiae	Dactylopius opuntiae
					Metamasius spinolae	Metamasius spinolae

***Pinus* species Pine**	No herbicide required

Rubus cuneifolius American bramble	Herbaceous	Registered	Young	Foliar spray	Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok, Mamba, Muscle up
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo, Glyphosate WSG
					Glyphosate (as ammonium salt) 710 g/kg SG	Slash 710
					Metsulfuron methyl 500g/kg WP	Nikanor
					Metsulfuron methyl 600g/kg WP	Brushoff
					Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Viroaxe
					Glyphosate (as phosponic acid) 480g/L SL	Mamba DMA
***Solanum mauritianum* Bugweed**	Herbaceous	Registered	Young	Hand pull	No herbicide needed	
				Foliar spray	Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok, Tumbleweed
					Clopyralid 90 + Triclopyr (as amine salt) 270 g/L SL	Confront, Astra
					Fluroxypyr 200 g/L EC	Tomahawk, Voloxypyr, Starane, Frixon
					Picloram (Pyridine compound) 80g/L + Fluroxypyr (Pyridine compound) 80g/L ME	Plenum 160 ME, Gladiator 160 ME
					Glyphosate (as isopropylamine salt) 360 g/L SL	Glyphosate 360, Springbok, Mamba, Muscle up
					Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
					Glyphosate (as potassium salt) 500 SL	Touchdown forte hitech
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo, Glyphosate WSG
					Glyphosate (as sodium salt) 700g/kg WG	Kilo Max
					Glyphosate (as ammonium salt) 710 g/kg SG	Slash 710
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Triclopyr (as butoxy ethyl ester) 240 g/L EC	Ranger
					Triclopyr (as butoxy ethyl ester) 480 g/L EC	Garlon, Triclon, Nuvogon

					Triclopyr (as butoxy ethyl ester) 240 g/L + Aminopyralid 30 g/L	Garlon max
					Picloram (as potassium salt) 50g/kg + Triclopyr (as triethylamine) 50g/kg	Kaput 100 Gel
					Glyphosate (as isopropylamine salt) 480 g/L SL	Seismic
					Imazapyr 100 g/L SL	Chopper, Hatchet
					Picloram (as potassium salt) 240g/L SL	Access, Browser
					Triclopyr (as amine salt) 360 g/L SL	Lumberjack, Timbrel
					Picloram (as potassium salt) 50g/kg + Triclopyr (as triethlyamine salt) 50g/kg	Kaput 100 Gel
					Glyphosate (as sodium salt) 500g/kg WG	Glyphosate 500, Kilo
		Biological control	All	Biological control	Gargaphia decoris	Gargaphia decoris
					Anthonomus santacruzii	Anthonomus santacruzii

ANNEXURE B: FIRE PREVENTION AND PREPAREDNESS (ADAPTED FROM INVASIVE SPECIES CONTROL PLAN GUIDELINES FOR PRIVATE LAND BY L. STAFFORD & DR. M. GEARTNER)

Implement measures to prevent the starting of wildfires, including spreading to neighbouring land and to be ready and able to combat fires on the farm should they occur.

Should landowners / management fail to adhere to the provisions of the **National Veld and Forest Fire Act, 1998 (Act 101 of 1998), (NVFFA)** e.g. preparing of a fire break, notifying about their intention to conduct a burn on their land, or meeting the standards, penalties are involved (NVFA, Sec 19).

In addition, NVFA Sec 19 (5) states that any owner, occupier of person in control of land on which a fire occurs who fails to take reasonable steps to extinguish the fire, or to confine it to that land, or to prevent it from causing damage to property on adjoining land, is guilty of an offence. Bringing alien plant infestations under control is an important step towards preventing fires from spreading to neighbouring land as these fires burn up to 10 times hotter than fynbos fires. Fires in alien invested land are very difficult to control, especially under windy and very hot conditions.

Prepare and maintain a fire break around the property, ensure

- it is wide enough and long enough to have a reasonable chance of preventing a veldfire from spreading to or from neighbouring land;
- it does not cause soil erosion; and
- it is reasonably free of inflammable material capable of carrying a veldfire across it
- Join the Fire Protection Association (FPA)
- Be ready to fight fires by acquiring equipment and having available personnel to fight fires
- In an emergency certain persons and officials will be given permission to enter land and fight fires
- Notify the FPA and neighbouring landowners about fires and take the necessary steps to stop the spread of fires should they occur (for more information see section 18 of The National Veld and Forest Act, 1998 (Act 101 of 1998)

ANNEXURE C: SAFETY, HEALTH AND ENVIRONMENT (SHE) (ADAPTED FROM INVASIVE SPECIES CONTROL PLAN GUIDELINES FOR PRIVATE LAND BY L. STAFFORD & DR. M. GEARTNER)

It is the landowner's/management responsibility to ensure a safe working environment and that the teams working on the property adhere to the minimum safety requirements. This can be achieved by sourcing appropriately trained and experienced teams. The principle of "leave no trace" applies.

The landowner / management should liaise with the contractor to ensure the following minimum SHE requirements are adhered to:

Toilet facilities

- The contractor is responsible for providing a mobile toilet on site for the duration of the work (it is not in all cases possible to provide a mobile toilet, where the field conditions are not suitable for a mobile toilet, human waste should be buried by digging a hole of at least 20 cm deep)
- Clean water must be made available in suitable containers for drinking and mixing herbicides

Team's skills requirements

- Chainsaw operators in possession of valid certificates
- Herbicide applicators certified

Work methods and equipment

- Equipment must be suitable for the work and in good working condition
- Adhere to work methods stipulated in the site specification

Vehicle and driver

- The driver must be in possession of a valid PrDP
- The vehicle must be roadworthy
- Tools must be transported in the trailer, separately from the workers

Safety precautions

- Certified SHE Rep on site
- Certified Safety Office on site
- The SHE Rep must conduct daily safety talks
- The first aid kit must be on site

COID

- The contractor must be in possession and present proof of a valid certificate of good standing with the Compensation Commissioner
- Any incidents must be reported to the landowner/management
- An indemnity form must be signed stating that the contractors excepts full liability for any COID related matters and that the landowner/management will not be held liable should the contractor not comply with minimum standards
- The contractor deals with COID cases and not the landowner /management
- Near misses, incidents and accident register must be kept

Insurance

- The contractor must be appropriately insured for the vehicle and equipment
- The contractor must provide proof of third party and liability insurance
- Sign an agreement whereby the contractor accepts liability for damages in case of negligence

Storage of fuel and herbicides

- Fuel and herbicides must be left in a shady area, away from the resting/eating area
- The area must be clearly marked with bunting
- The bunting must be removed on completion of the job
- Herbicide mixing and refuelling must be conducted on a spill blanket
- A spade must be on site to cover any accidental spillage
- A serviced and functional fire extinguisher must be kept at the fuel refilling area

Preventing fires

- No smoking while working, assign a designated smoking area
- Remove cigarette butts
- No smoking during windy conditions
- Keep 1 fire beater for every team member within reach of the workers
- No chainsaw work during Code Red days - Fire Danger Indices (FDIs) obtainable from FPA

Table 9: Correct PPE that should be worn

Item	Supervisor	Machine operator	General workers SHE Rep; 1st Aid Rep; Driver	Specialized herbicide applicator
Sunhat (follow up operations)	✓	✓	✓	✓
Hard hat (when chainsaws are being used)	✓	✓	✓	✓
Hard hat with visor and certified earmuffs (SABS or EU),	x	✓	x	x
T-shirt	✓	✓	✓	✓
Conti suit	✓	✓	✓	✓
FESA approved chainsaw pants (eleven layers) with broad belt or braces	x	✓	x	x
Whistle	✓	✓	x	x
Safety boots	✓	✓	✓	✓
Gumboots (only when working in riverine/wetland areas)	✓	✓	✓	✓
Chainsaw safety boots	x	✓	x	x
Gloves	✓	✓	✓	✓
Chainsaw operators gloves	x	✓	x	x
Safety goggles	✓	✓	✓	✓
Cape (when using a knapsack)	x	x	x	✓
Mask (when applying herbicides)	x	x	x	✓
Rubber gloves (for mixing herbicides)	x	x	x	✓
Rubber apron (for mixing herbicides)	x	x	x	✓
Rain suit (during rainy conditions)	✓	✓	✓	✓

It is recommended that the requirements are stipulated in the work specifications and the contractor accept accountability in writing.