Guidelines for compiling Invasive Species Control Plans

In compliance with the National Environmental Management Biodiversity Act, 2004 (Act 10, of 2004)

And

Invasive Species Regulations (October 2014)

Prepared by:

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BACKGROUND

The National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) Section 73 requires every person to exercise a Duty of Care relating to invasive species. Sec 73(2) (a) requires a landowner to notify the relevant competent authority, in writing of listed invasive species occurring on that land, (b) take steps to control and/or eradiate the listed invasive species, to prevent it from spreading, and (c) to take all the required steps to prevent or minimise harm to biodiversity. Failing to adhere to these requirements may result in the landowner receiving a directive from the competent authority, compelling such landowner to take the required action or face legal action. The purpose of this document is to assist landowners and practitioners in drawing up Invasive Species Control Plans for private land in line with the National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) and the Invasive Alien Species (IAS) Regulations and IAS Lists (October 2014).

Invasive Species are listed in four categories:

- Category 1a: Take immediate steps to combat, or eradicate where possible.
- Category 1b: Control the listed invasive species.
- Category 2: Keeping species is allowed under Permit conditions. Control outside of the Permit conditions.
- Category 3: Subject to certain prohibitions (e.g. sell). Category 3 plants in riparian areas are treated as Category 1b.

The management of invasive plants (aquatic and terrestrial) can be dealt with by a landowner, but controlling invasive animals is more complex. Landowners are therefore advised to get in touch with their Local Municipality, or Provincial Conservation Agency, or the Department of Environmental Affairs (DEA) for advice and guidance on managing invasive animals. Strict protocols exist for managing invasive animals. For example, before an invasive animal can be culled, the landowner must apply for a permit from the Provincial Conservation Agency. Without a permit, it is illegal to cull invasive animals. Permits are only valid for a certain period and subject to certain conditions. Animal welfare considerations are important and control methods are to be humane. There are also strict protocols for handling invasive fresh-water species (e.g. fish or invertebrates) especially in terms of transfer or release into catchment areas (see IAS Regulation 6 and IAS List Notice 1 (f), (i), (j), (l).

It is therefore suggested that for the purpose of the Invasive Species (IS) Control Plan, landowners record listed invasive animals present on the property and contact their Local Municipality, Provincial Nature Conservation organization, or the Department of Environmental Affairs for guidance. Other coordinating bodies such as the National Invasive Animal Forum and the C.A.P.E. Invasive Animal Forum (in the Western Cape) also coordinate invasive animal programmes by working with relevant stakeholders in provinces. See Annexure F for Useful Contacts.

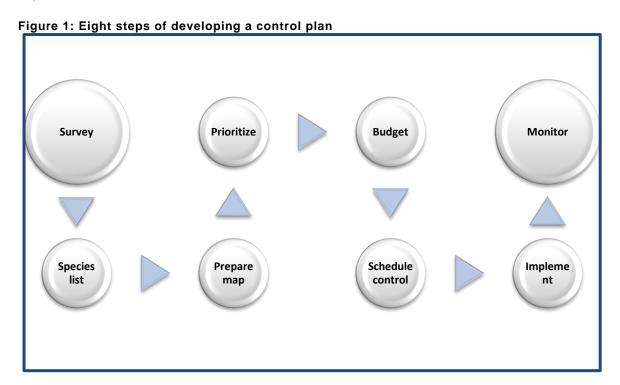
In terms of the NEMBA Regulation 75, landowners are required to manage all listed IAS that occur on their land. However, not all properties require a Control Plan. The Department of Environmental Affairs (DEA) Biosecurity, Directorate Compliance developed criteria whereby Invasive Alien Species (IAS) Control Plans are required. See Table 1: *Criteria for properties requiring IS Control Plans*.

Table 1: Criteria for properties requiring IS Control Plans

Property size	Requirements	Timeframes for clearing

Hectares (ha) Square meters (m²)		
< 0.05 Ha (5000 m²)	Clear and remove plant material to approved Green Garden Waste site	30 days
0.051 – 1 Ha (5001 m² - 10,000 m²)	Clear and remove plant material to approved Green Garden Waste site; or apply for fuel reduction burn (See details below); or chip; or utilize. Or alternatively submit a Control Plan with acceptable timeframes to the Department of Environmental Affairs	90 days (at least by the end of November (start of the fire season)
1.1 – 5 Ha 10,001 m² to 50,000 m²	Clear or submit Control Plan with timeframes acceptable to the Department of Environmental Affairs	120 days to clear or 30 days to submit a control plan
> 5.1 Ha > 50,001 m ²	Submit Control Plan with timeframes acceptable to the Department. Prioritize the urban edge boundaries that are highrisk fire risk. Fire breaks are to be in place. Permits are required to keep category 2 plants except when they are in riparian areas, or where they pose a fire risk, in these cases there are to be treated as category 1b and cleared.	30 days to submit control plan. On approval: Start implementing within reasonable timeframe 5 - 10 years

Figure 1 below illustrates the eight step process of developing an Invasive Species (IS) Control Plan.



CONTENTS OF THE INVASIVE SPECIES CONTROL PLAN

1. Introduction

Provide the following information:

- Details about the property, name or street address;
- A map showing the location of the property within adminstrative boundaries of local or district municipality & province;
- Landuse e.g. residential or agricultural;
- Property size in hectares;
- Name and contact details of the landowner(s);
- The purpose of the control plan (e.g to be compliant with NEMBA by bringing all invasive plants on the property under control by 2020);
- A timeframe: the timeframe for implementation should be realistic depending on the property size, infestation levels, species present and available funding. (Timeframe can range between 3 and 10 years);
- The desired result (e.g remove invasive plants and restore fynbos) should be determined for each site individually.

2. Listed species present on the property

The purpose of this section is to list all the IAS on the property detected during the survey. Populate the table provided for this purpose (Table 2).

Table 2: NEMBA listed (Oct 2014) IAS present on the property

Species	Common name	NEMBA Category

List invasive animals here and contact Local Municipality, Provincial Nature Conservation Organisation or the Department of Environmental Affairs for guidance.

3. Extent and distribution of the invasive species on the property

Invasive plant infestation is reflected as a percentage (%) cover per area. Prepare a map of the area, showing the property boundaries. Then depending on the property size and the level of infestation, if the property is larger than 5ha, divide the property into different manageable units (management units), reflected as polygons on the property map. Assign an alphanumeric identification number using the first three letters of the property name followed by a three digit number, starting at 001. Use natural boundaries (rivers/streams) or infrastructure (roads, fences) to distinguish between the management units. The rationale for dividing properties larger than 5ha into smaller management units, is to make surveying, planning and management easier.

Survey each of the management units, list and describe the species present according to their size (i.e. seedlings, young, mature). Also indicate what proportion (percentage %) of the management unit is covered by the invasive plants, capture the information in Table 2.

Table 3: Total invasive plant infestation per management unit

Management unit	Hectares	Extent of overall invasion (%)	Comment	Priority
Total				

The comments column allows for remarks that are important to remember for example species occurring on the property, date of the last fire etc.

Assign a priority to each of the management units. (High (clear within 6 - 12 months, Medium 12 - 24 months; Low 24 + months)). Reasons for assigning a high priority may include the following: species present (category 1 a, seedlings or young plants (less expensive to control and relatively easier to bring under control; previous clearing occurred, follow up required; site burned in the past year; site poses a fire hazard; biodiversity protection, wetland, fire risk, potential seed pollution to neighbouring land/management unit). The general approach is to start clearing a low infestation level, higher-lying areas or up-stream first. In cases where higher lying, mountainous areas require special skills such as rope-work, the Working for Water Programme can be approached for assistance. Assistance may be available for inaccessible, higher lying areas in the form of specialised (high-altitude teams) or for Category 1a species.

Indicate the presence of invasive animals as it is difficult to determine their numbers. Species such as mallards can be captured by indicating the number of mallards on the property. Other species numbers such as carp cannot be estimated and an indication in which waterbody they occur is sufficient. Animals listed as Category 2 can be kept under permitted conditions.

Insert the map indicating the different management units and name it "Figure 1 Management Unit Map" (if it is the first figure used in the document).

4. Objectives and actions

Objective 1: Control Invasive Plant infestation

Bring the Invasive Plant infestation on the property under control by (e.g. 2020).

This objective is the "crux" of the plan. Determine the 'Desired State' (what will the situation be in the year committed in this plan to reach NEMBA compliance). It states when the invasive plant infestation will be under control. See Table 4 for an example of a Desired State. The Desired States in the table are examples only and need to be adjusted to be relevant for the property.

Table 4: Desired State for Invasive Plants on the property

Category	Desired state – by 2020
	All mature trees are removed; follow- up control programme in
	place. All the management units are in maintenance. Overall
	infestation does not exceed 10% of the property.
Category 1 b trees	(These will include seedlings and re-sprouting trees, mainly gums
	and poplars. Acacia species will be under control with the correct
	control methods and pines and hakea will be under control as
	they do not re-sprout following correct clearing methods.)
Category 1b herbaceous	Less than 2%
species	
Category 1b annual species	Less than 2%
Category 2 species	Permit application will be submitted for all Category 2 species on
	the property

To achieve this objective, a projected budget needs to be compiled to ensure funding is available to achieve the objective within in the timeframe. Annexure A provides a template for such a projected budget. Another important tool in assisting with the achievement of the objective is to compile a Clearing Schedule, when the management units will be cleared, refer Annexure B. Select the most appropriate control method for each of the management units. Refer Annexure C (Control methods) and Appendix D (Duty of Care & Restricted Activities). The different options include:

- Mechanical (chainsaws or brush-cutters),
- Manual (hand-tools, hand pulling),
- Herbicide (foliar or cut-stump),
- Fire (burn standing or stacks),
- Biological (using natural enemies to control invasive plants).

For the best results, mechanical/manual control can be combined with herbicides and/or biological control. Guidelines are provided for control methods Annexure C (Control Methods); Annexure F (Herbicides); and Annexure G (Safety, Health & Environment (SHE)).

Objective 2: Prevention

To put measures in place to prevent the introduction of new NEMBA listed IAS onto the property, and from spreading from the property to neighbouring properties.

Preventative actions

- No listed invasive and alien plant species will be planted
- Areas bordering onto neighbouring land will be prioritized for control to prevent existing invasive plants from spreading beyond the boundaries of the property
- No listed invader animal species will be introduced on the property

 These prevention measures will be communicated to all users of the property (where applicable)

Objective 3: Early Detection & Rapid Response (EDRR) and eradication

To detect emerging IAS through regular surveys and remove them before they become established, produce seeds or offspring and start spreading.

Emerging species refer to those alien species with the potential to become important problems without timely intervention. When the management option of EDRR is implemented, the new or emerging species can be locally eradicated before they produce seeds/increase by growing vegetatively or producing offspring.

Category 1a species will typically fall in this category. The South African National Biodiversity Institute (SANBI), City of Cape Town and eThikweni municipalities have Early Detection and Rapid Response (EDRR) programmes targeting certain emerging species. Landowners can obtain more information from the relevant websites (See <u>Annexure H</u> Useful Contacts) and can apply for assistance should any of the target species occur on their land.

Landowners can also register as a spotter in the City of Cape Town and eThikweni municipal areas for logging target species. Logging target species is advisable as the target species may be controlled by the SANBI EDRR programme or City of Cape Town and eThikweni municipalities at no cost to the landowner.

Early Detection and Rapid Response and Eradication actions

- Regularly survey the property to detect any new or emerging listed invasive plant and/or animal species
- Learn more about the SANBI/City of Cape Town/ eThikweni EDRR 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 vegetatively, act immediately by removing them
- Update the species list by including these species and indicate where on the property they were located
- Increase surveillance in the areas after the species were controlled to quickly remove re-sprouting plants or seedlings.

5. Monitoring

Monitoring assists the landowner to determine whether adequate progress is being made in achieving the objectives within the set timeframes; to detect and remove emerging species before they become established; to ensure the control methods are effective; to monitor expenditure and job creation. Table 5 provides a framework for such a monitoring programme, what to monitor, how often, the methods and how to respond to the results obtained through monitoring.

Table 5: Monitoring framework

WHAT	FREQUENCY	HOW	RESPONSE				
How effective are the control methods	4-6 months after every operation	Survey the cleared areas and look for regrowth. Before and after pictures are very effective. Look out for nontarget effects of herbicide application.	If the survey reveals that the control methods are effective, e.g. low levels of re-sprouting, continue following the herbicide mixtures and control methods. If non-target plants are dying off where herbicides were applied, ensure appropriate training for herbicide applicators, demonstrate the off-target effects to herbicide applicators to ensure they are using the correct methods and herbicides. (Gums are difficult to control and re-sprouting often occurs, therefore shorter follow-up interventions may be required). If the results show that the control methods are not effective, adapt by e.g. cutting lower above ground or changing herbicides or timing of herbicide application.				
Do the infestation levels decrease How much herbicides	Annually During every operation (If	Survey the cleared areas and record species, densities and size. Before and after pictures are very effective. Keep track of cost and ensure no	If the infestation levels are not decreasing, reconsider clearing intervals and look at clearing methods. If infestation levels are decreasing - continue clearing, you are doing well! Track usage over time, it will reveal a certain trend in quantities				
were used	WFW provides the herbicides, a landowner agreement will be signed and the records are to be submitted to WFW)	wastage. Record herbicide usage – see <u>Annexure C</u>	for different infestation levels. Less herbicides should be used when the infestation levels are lower. Record herbicide cost.				
Does the indigenous vegetation recover in the cleared areas?	Annually	Survey the cleared areas and look out for indigenous species variety and presence. Before and after pictures are very effective.	If it does – you are doing well, if not, look at clearing methods, clearing intervals or consult an expert				
How many jobs were created	After every operation	Timesheets	Job creation figures are useful when asking for landowner assistance from WFW or to demonstrate contributions to jobs and socio-economic conditions				

How many person days (PD) were	After every operation	Timesheets	Keep track of cost and assist with planning and budgeting. Determine cost per personday (PD)
spent per			
operations			

Annexure A: Planning and budget

			YEAR 1 YEAR 2						
Management unit	Hectares	PD planned	PD rate	Control cost	R/Ha	PD Planned	PD rate	Control cost	R/Ha

Annexure B: Clearing schedule

Legend:

I = Initial clearing

F 1 = First follow-up

F2 = Second follow-up

F3 = Third follow-up

DS = Desired State

	Management unit	На	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
YEAR 1	WSB001		-						F1					
	WSB002			- 1						F1				
	WSB003						I						F1	

	Management unit	На	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
YEAR 2	WSB001		F2						F3					
	WSB002			F2						F3				
	WSB003						F2						F3	

YEAR 3	Management unit	На	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	WSB001		DS											
	WSB002			DS										
	WSB003						DS							

Annexure C: Control Methods

Following best practice described in this document, ensures compliance with NEMBA Section 75 (1) (2) & (3) in that the means and methods of control are appropriate to the species and environment and are implemented in such a way that it minimizes the risk to biodiversity and the environment.

- Control actions must be taken with caution to cause the least possible harm to biodiversity and the environment (take care not to remove native species or damage them for example by using the incorrect herbicide application; or bulldozing).
- Offspring, propagating material and regrowth should be tackled to prevent species from producing offspring, forming seed, regenerate or re-establish
- 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
- Mechanical and hand tools must be best suited to the work and the size of plants being cleared and in a good working condition

Initial clearing

- Equipment required: Chainsaws, loppers, bow saw, 2\ell handheld herbicide cans.
- Pines and hakea: fell and cut, no herbicides required
- Port Jackson & longleaf wattle: fell and cut, apply herbicide to stumps within 1 minute after cutting or felling. Apply herbicides at applicable rates

Follow up clearing

- Conduct follow up within six months after initial clearing, before plants have the opportunity to produce seeds.
- Pines and hakea: cut, no herbicides required
- Port Jackson & longleaf wattle: cut, apply herbicide to stumps within 1 minute after cutting or felling. Apply herbicides at applicable rates

Mechanical & manual control methods

- Fell trees with a stem diameter of > 200mm with a chainsaw
- Cut trees with a stem diameter of < 200mm with a bow saw or silky saw
- Cut trees and plants with a stem diameter of < 100mm with a lopper
- Cut as low as possible above ground level, ideally 10 cm or below the last growth point.
- Ensure even cuts
- Seedlings can be hand-pulled in sandy soil, important to uproot the entire plant, breaking off will cause it to regrow.

Herbicide application

Ensure herbicide applicators are appropriately skilled.

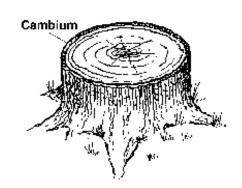
- Wear correct personal protective equipment (PPE)
- Only apply registered herbicides at prescribed rates, follow label instructions

Cut stump treatment:

Use spray can (2l spraymaker) for smaller plants and knapsack for larger trees and apply herbicides to the stump immediately after cutting or felling.

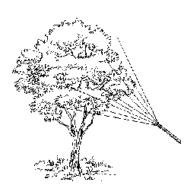
For larger stumps, only apply herbicides to the outer 50mm (cambium).

Minimize collateral damage by applying herbicides using the correct nozzle and pressure.



Foliage treatment

Suitable for plants up to 1m tall. Use a knapsack sprayer with a pressure regulator to evenly apply herbicides at the required mixture.



Precautions during herbicide application:

The risk of herbicide drift exists especially in the vicinity of vineyards/orchards or crops. Apply only under suitable weather conditions at appropriate rates by appropriately or

weather conditions, at appropriate rates by appropriately qualified herbicide applicators.

Treatment is least effective in very hot weather or when the plants are water stressed. Do not apply herbicides during windy conditions to prevent herbicide drift and damaging non-target plans.

Complete herbicide control sheet to maintain usage records

Herbicide Control Sheet									
Site name	Site name					Hectares			
Day	Herbicide (name)	Herbicide (name)	Herbicide (name)	Herbicide (name)	Herbicide (name)	Actipron	Dye		
1									
2									
etc									

Annexure D: Fire prevention and preparedness (where applicable)

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 fail to adhere to the provisions of the **National Veld and Forest Act**, **1998** (**Act 101 of 1998**), (**NVFA**) 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 The National Veld and Forest Act, 1998 (Act 101 of 1998)

Annexure E: Safety, Health and Environment (SHE)

It is the landowner's 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 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
- An indemnity form must be signed stating that the contractors excepts full liability for any COID related matters and that the landowner will not be held liable should the contractor not comply with minimum standards
- The contractor deals with COID cases and not the landowner
- 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

Correct PPE are being worn at all times

Item	Supervisor	Machine operator	General workers SHE Rep; 1 st 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),	Х	✓	х	Х
T-shirt	✓	✓	✓	✓
Conti suit	✓	✓	✓	✓
FESA approved chainsaw pants (eleven layers) with broad belt or braces	Х	✓	х	Х
Whistle	✓	✓	Х	Х
Safety boots	✓	✓	✓	✓
Gumboots (only when working in riverine/wetland areas)	✓	✓	✓	✓
Chainsaw safety boots	Х	✓	Х	Х
Gloves	✓	✓	✓	✓
Chainsaw operators gloves	Х	✓	Х	Х
Safety goggles	✓	✓	✓	✓
Cape (when using a knapsack)	Х	Х	Х	✓
Mask (when applying herbicides)	Х	Х	Х	✓
Rubber gloves (for mixing herbicides)	Х	X	Х	✓
Rubber apron (for mixing herbicides)	Х	X	Х	√
Rain suit (during rainy conditions)	✓	✓	✓	✓

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

Annexure F: Useful contacts

Websites

www.sanbi.org/biodiversity-science/state-biodiversity/biodiversity-monitoring-assessment/invasive-aliens-early-det

www.invasives.org.za

www.environment.gov.za/projectsprogrammes/wfw

www.capetowninvasives.org.za

www.arc.agric.za/arc-ppri

Invasive Animal Contacts

CAPE Invasive Animal Forum: Louise Stafford - louise.stafford@capetown.gov.za

National Invasive Animal Forum: Tim Snow - snowman@bundunet.com

CapeNature: Jaco van Deventer - <u>ivdeventer@capenature.co.za</u>

Cape of Good Hope SPCA: - wildlife@spca-ct.co.za

Department of Environmental Affairs

Invasive Animals: Debbie Sharp - dsharp@environment.gov.za

Compliance: <u>AIScompliance@environment.gov.za</u>

Permitting: <u>AISpermits@environment.gov.za</u>