



ECO ROUTE ENVIRONMENTAL CONSULTANCY

MAINTENANCE MANAGEMENT PLAN

MAINTENANCE ON PORTION 5 OF THE FARM HAGGAS NO. 145, DR BEYERS NAUDÈ MUNICIPALITY



October 2017

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GENERAL INFORMATION

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BBBEE status	Not registered		
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Site Description

Province	Eastern Cape
District Municipality	Sarah Baartman District Municipality
Local Municipality	Dr Beyers Naudè Municipality
Nearest town(s)	Willowmore
Farm name(s) and number(s)	Onder Hagas
Portion number(s)	Portion 5 of the Farm 145

1. INTRODUCTION

This Maintenance Management Plan, hereafter referred to as MMP, has been compiled in order to comply with the regulations of the National Environmental Management Act, (Act 107 of 1998), as amended, and the National Environmental Management Act: EIA Regulations 2017. This MMP has been developed to manage the environmental impacts relating to the maintenance work which needs to be undertaken on the farm Onder Haggas, as well as any future on-going maintenance requirements according to the activities which will be listed below. The MMP must be approved by the Eastern Cape Department of Economic Development, Environmental Affairs and Tourism/ DEDEAT prior to the commencement of maintenance work.

During the undertaking of maintenance work, the property owner and maintenance team involved must adhere to the Duty of Care principle outlined in Section 28 of NEMA (National Environmental Management Act, Act 107 of 1998), which reads as follows:

Duty of care and remediation of environmental damage

"(1) Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment"

2. CONDITION ASSESSMENT

The following photographs indicate some of the current conditions on the property which require maintenance work:





3. PROPOSED MAINTENANCE WORK

It is proposed that the following maintenance work will be undertaken:

1. Clearance of siltation out of farm dams and the fixing of dam walls

The removal of the siltation and flush sand in the dams will be removed by the TLB, tip trailer and at times with a bulldozer, depending on quantity.

The removal of the siltation and flush sand in the divert furrows (diversionary furrows) will be removed by TLB.

Mechanical methods will be used for maintenance works as manual/ hand labour is not always available in the area. Only areas where a TLB cannot enter, will manual labour be used.

2. The cleaning, maintenance and fixing of irrigation channels

The removal of the siltation and flush sand in the channels (furrows) will be removed by the TLB and by hand where necessary.

3. The repair of pipelines and maintenance for the transportation of water from dams and furrows

Most pipelines are underground; however, if there is a burst in a pipe it will be maintained by hand.

4. The repair and maintenance of 2 boreholes

If possible, repairs will be done by hand. Special care will be taken to ensure no unwanted spillage will occur in the surrounding area of the borehole.

5. Windmill repair and maintenance

The windmill will be repaired by hand and cleaned mechanically. Special care will be taken to ensure no unwanted spillage will occur in the surrounding area of the windmill.

6. Maintenance and repair of all farm roads, including erosion on roads

- Two-spoor roads will be maintained by hand.
- Grated roads will be grated by tractor and grader
- The mountain road will have concrete for +/- 250 metres

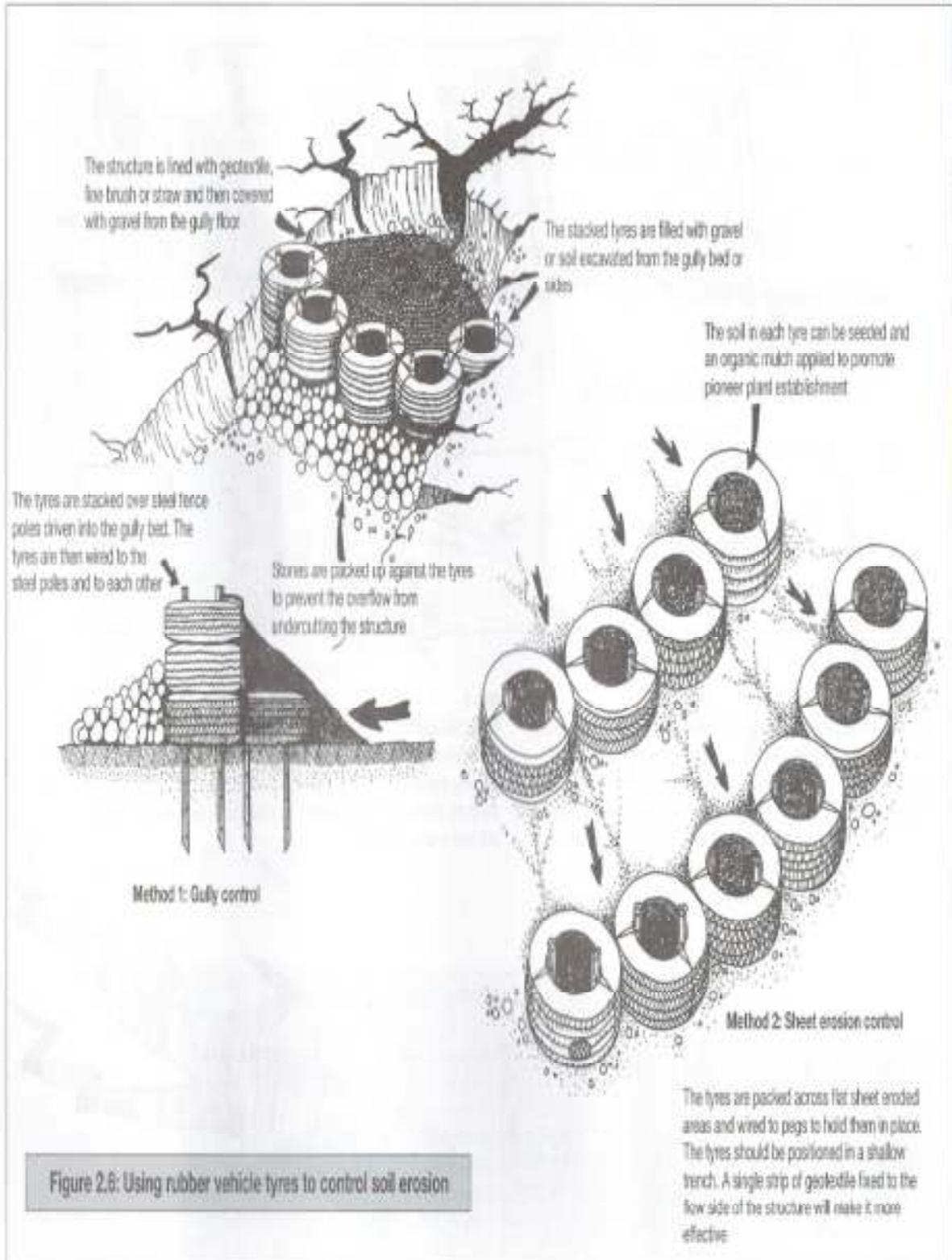
7. Alien management plan

In terms of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) ("CARA") landowners must prevent the spread of alien invasive plants on the property. The level of alien infestation is therefore not to be seen as reducing the sensitivity of a site, nor is the subsequent removal of alien vegetation from a property regarded as a mitigation measure due to this is a legal requirement.

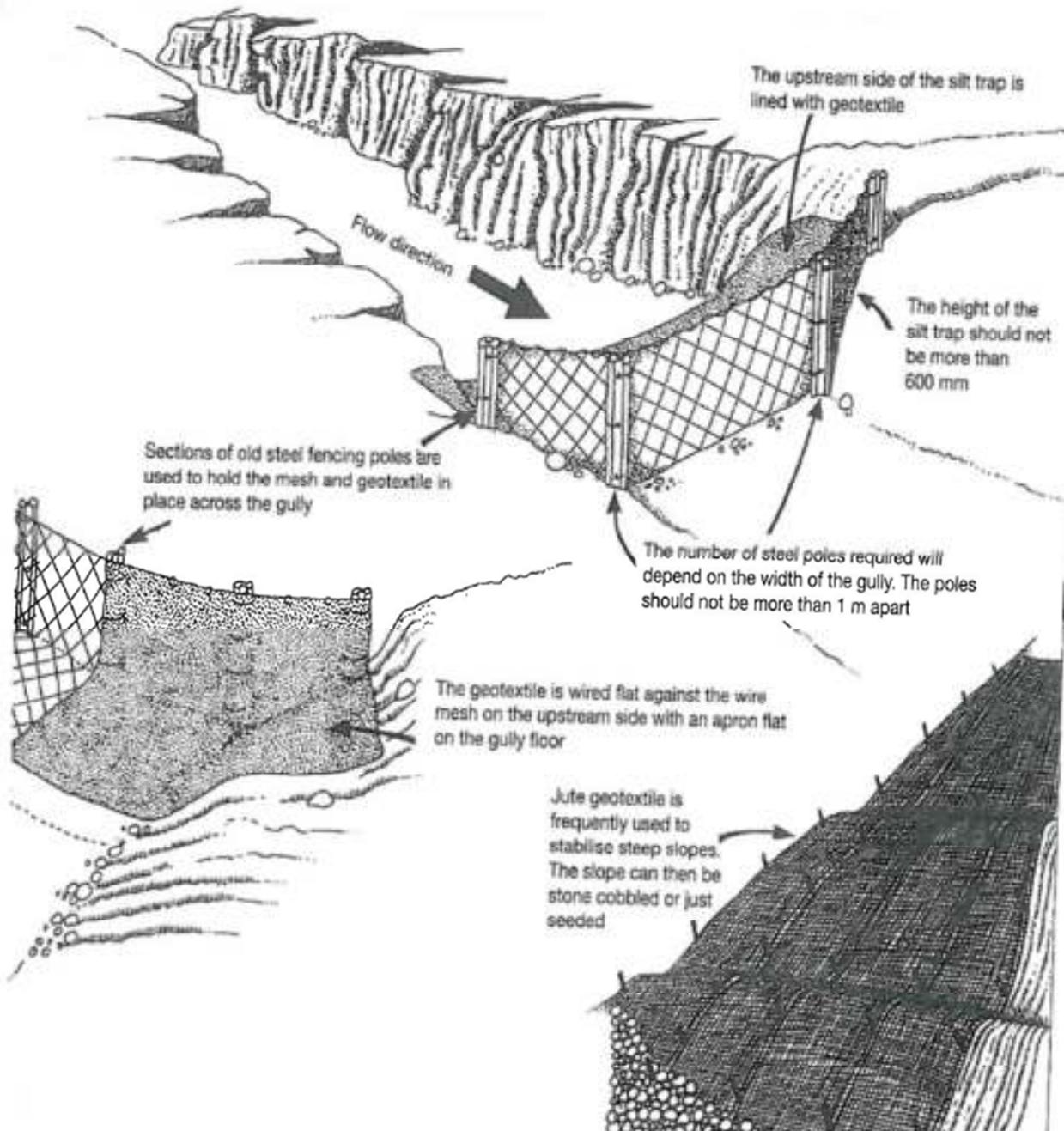
A guideline to removing Alien Invasive Plants/ AIPs has been provided in this document. Assistance identifying AIPs may be sought from a Botanical Specialist.

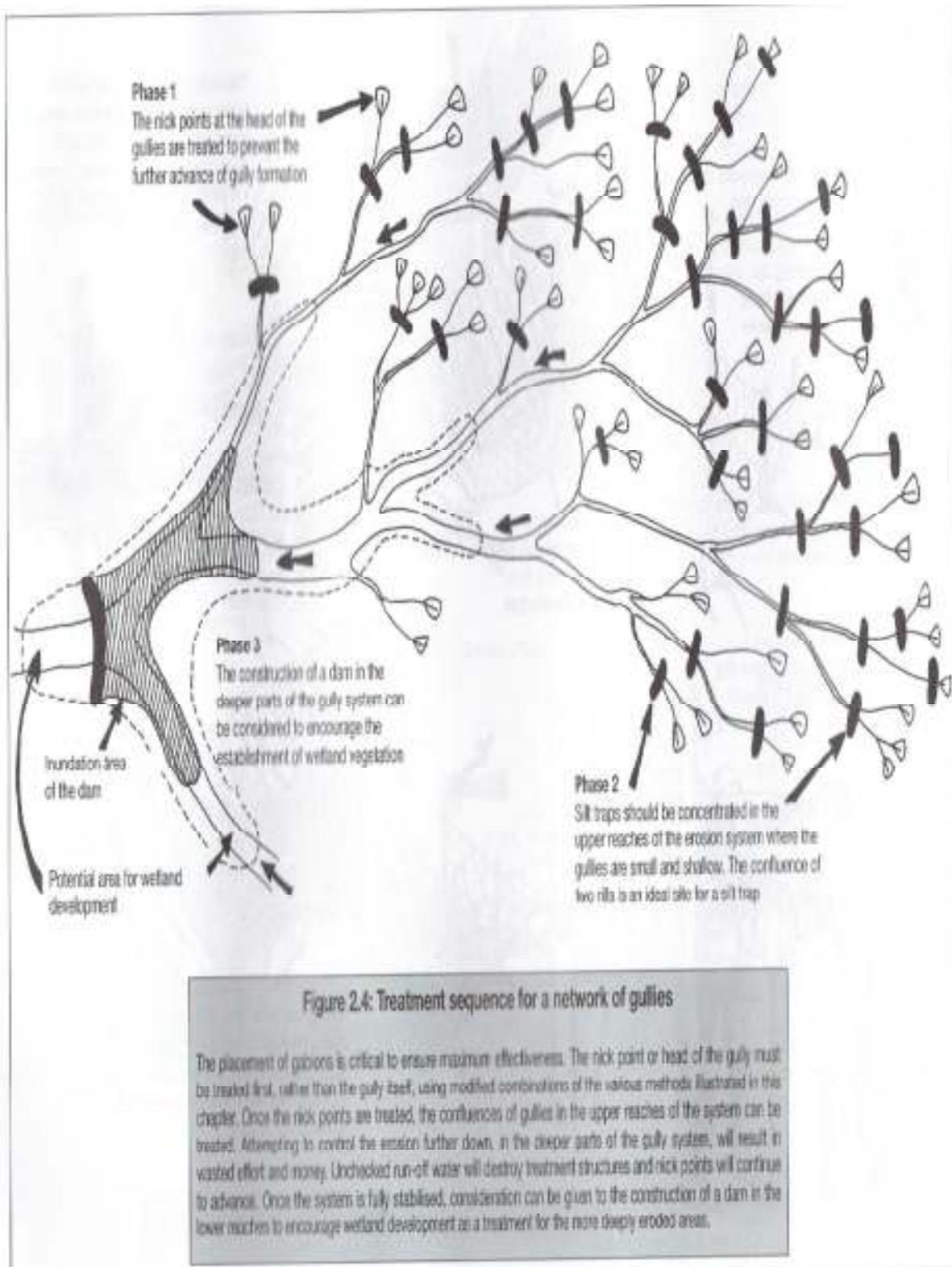
8. Erosion management plan

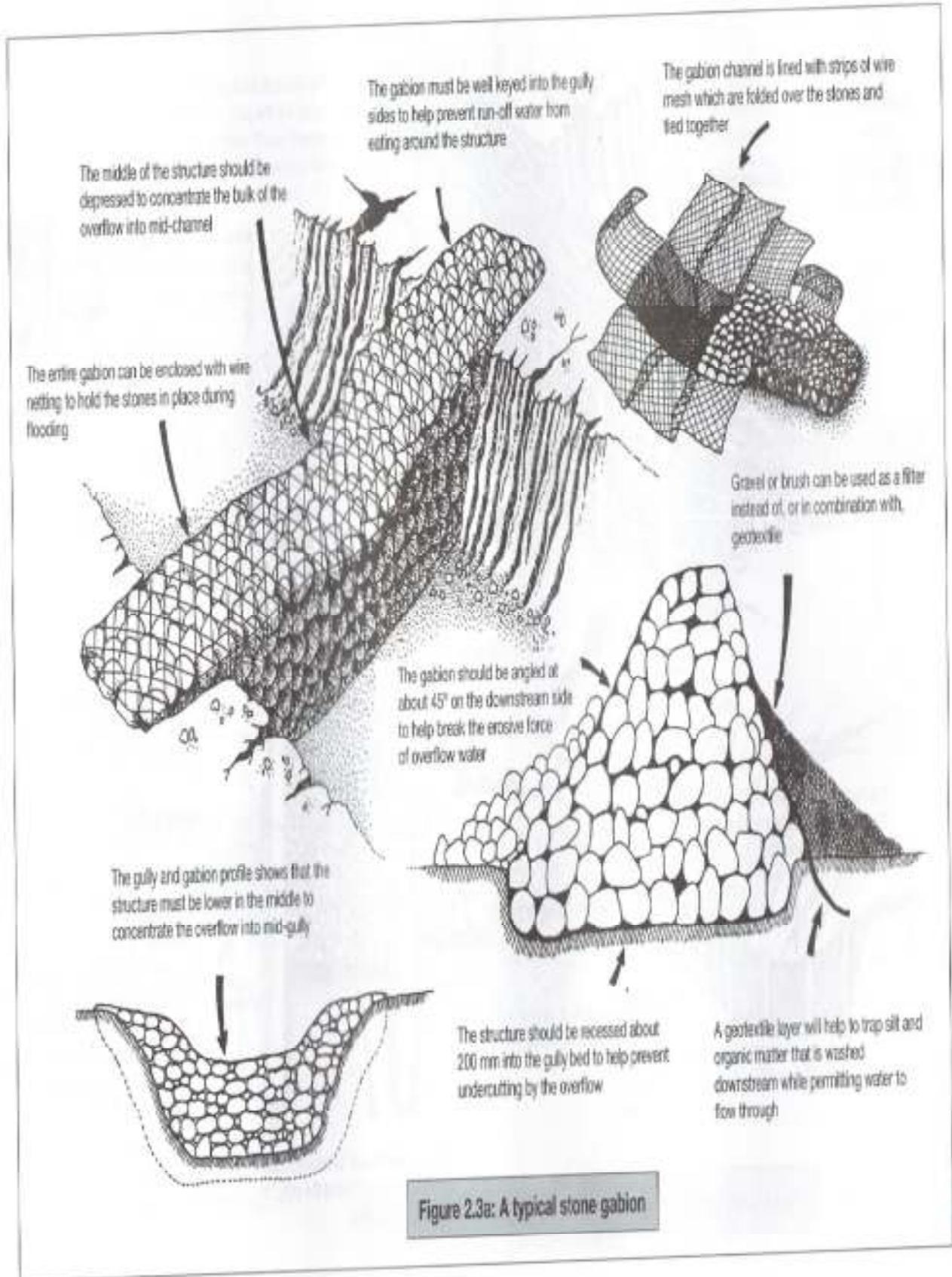
Due to the property's topography, the property is vulnerable to erosion. Therefore, some or all the following methods of erosion management must occur on the site:



GULLY AND RILL EROSION CONTROL MEASURES







9. Storm water control measures on the mountain pass

A proper drainage system for storm water and run-off is to be constructed in consultation with a specialist engineer.

10. Solar panels erection and maintenance at farm house and boreholes

When erecting solar panels, care must be taken to minimise the area which is excavated for the placement of solar panels. The placement of solar panels must not be undertaken in an area which will obstruct the natural flow of water.

Special care will be taken to ensure no unwanted spillage will occur in the surrounding area of the borehole.

4. IMPACTS AND MITIGATION MEASURES

Nature of Impact	Mitigation Measure
Soil erosion	Erosion management methods must be put in place to rehabilitate/maintain the area
Sedimentation of dam due to cleared areas and erosion	Erosion management methods must be put in place to rehabilitate/maintain the area
Loss of vegetation	All identified protected plants must be transplanted prior to maintenance works. Indigenous vegetation must be planted in all areas where maintenance work will take place.
Disturbance of fauna during maintenance works	If any fauna is located in the area of maintenance works, these fauna must be moved to a safe area.
Contamination of the land due to accidental spills of hazardous materials during maintenance activities	All cement mixing must be undertaken on an impermeable surface. If any cement has spilled onto the soil, the contaminated soil must be collected and disposed of. No vehicles may be refuelled on site. Any machinery that requires refuelling e.g. cement mixers; must be refuelled on an impermeable surface.
Disturbance of the area due to earthworks	All areas which are disturbed during maintenance earthworks must be rehabilitated.

5. MAINTENANCE MANAGEMENT PLAN

1. METHOD STATEMENTS

The following Method Statements must be provided by the Contractor:

- Details on the design and construction of maintenance areas.
- Details on the location, layout and maintenance of the construction camp/ storage area.
- Details on the location, layout and preparation of cement / concrete mixing activities / areas.
- Fire Management Plan

2. ENVIRONMENTAL PROTECTION

- All “No Go Areas” must be demarcated and no activity of any kind will be allowed in the demarcated areas.
- Killing, poaching and harassment of all animals is strictly prohibited. All possible care should be taken to minimize the impact on wildlife in the area.
- Vegetation shall not be unnecessarily disturbed and damaged.
- No Indigenous trees may be cut or removed without a permit from the Department of Agriculture, Forestry and Fisheries.
- A contingency plan must be established to cope with the event of a fire, soil erosion or accidental pollution.
- No fires may be lit by the contractor or employees anywhere on the property.

3. SITE DEMARCATION

- The boundary of the site must be agreed with the ECO and demarcated; all activities must be conducted within this area.
- Plants to remain must be marked with danger tape
- Construction and other activities, such as eating, washing and ablution will be restricted to special demarcated areas.
- The contractor must ensure that all his machinery and materials remain within the demarcated site boundaries.

4. RESTRICTED AREAS

- The contractor must limit all movement (vehicle and pedestrian) to the demarcated construction site and access routes.
- All other areas are classified as “restricted”.
- No members of the public or any unauthorised persons should gain access to the site without seeking permission from the property owner.

5. CONTRACTOR'S OFFICE AND BUILDING MATERIAL DEPOT

- The contractor's site must be situated in an accessible and non-sensitive area. It must be demarcated, security fenced and fully rehabilitated after the completion of the general contract.
- The office and depot areas must be located within easy access from the road and in a non-sensitive part of the property.
- The contractor shall ensure that all delivery drivers are informed of all procedures and restrictions applicable to them and that the deliveries of materials are supervised during the offloading by a responsible person that understands the Maintenance Management Plan.
- All building materials brought on site must be stored in the contractor's camp and if necessary out of the rain and wind to prevent sedimentation and spillage onto the site.
- Any stockpiling of gravel, cut, fill or any other material must be stored at least 50 meters away of any sensitive or demarcated areas.

6. FACILITIES

TOILETS

- Sufficient toilet facilities (1 toilet per 15 workers) must be made available by the contractor and sited in approved locations.
- The toilets must be placed out of the public eye and be of a transportable nature.
- Chemical toilets are preferable and the toilets must be regularly (once a week) and efficiently serviced and kept in a hygienic state.
- Adequate toilet paper must be provided.
- Discharge of toilet waste into or onto the environment is strictly prohibited.

REFUSE

- The contractor must prevent the spread of refuse within and beyond the site.
- Refuse includes all solid waste such as cement, rubble, timber, other building material off cuts and waste. As well as food packaging, cans, plastic etc.
- All waste must be collected, contained and removed.
- An integrated waste management approach, which is based on waste minimisation and incorporates reduction, recycling, re-use and disposal, where appropriate, must be employed.
- Waste bins / containers must be used, and these must be provided with lids.
- The contractor must ensure that his employees deposit all waste in the waste bins.
- Bins must be emptied on a regular basis
- All waste must be disposed of off-site at the Municipal facilities.

POLLUTION CONTROL

- No diesel or petrol to be stored on site.
- In case of changing oil or lubricants on site, the contractor shall have drip trays available to collect any oil, fluid, etc.
- The contractor shall remove all oil-petrol and diesel-soaked sand immediately and discard of it as hazardous waste.
- Any hazardous waste substances must be disposed of off-site at a licensed landfill site.
- Cement and concrete are regarded as highly hazardous to the natural environment, due to the very high pH of the material, and the chemicals contained therein. The contractor shall therefore ensure that:
 1. Dry cement is stored above ground level and any spillage is immediately cleared.
 2. Concrete is mixed on mortar boards, and not directly on the ground
 3. The visible remains of concrete are physically removed immediately and disposed of as waste. Washing into the ground is prohibited.

EMERGENCY PROCEDURES

- The contractor shall establish emergency procedures for events such as fire, leakage of chemicals or other harmful substances.
- The contractor shall be responsible for training of all employees with regards to these procedures.

FIRE REGIME

- A Fire Management Plan must be in place.
- Fire breaks along the sides of the property is essential.

- The placement of water hydrants in strategic positions is necessary.
- The firefighting equipment must be maintained on a regular basis.

7. SITE WATER MANAGEMENT

- Storm water runoff is a major environmental issue in the area; the contractor must ensure that the existing storm water drainage system is not impaired in any way.
- A proper drainage system for storm water and run-off is to be constructed in consultation with the site engineer.
- Reasonable measures to control the damaging effects of storm water run-off must be taken. Special care must be taken on excavation sites.
- The contractor must ensure that erosion and or pollution of ground or surface water does not occur as a result of site activities.
- The contractor shall ensure that polluted runoff is not discharged overland.
- Natural runoff shall be diverted away from the work site and storage areas.

8. SOIL EROSION

Erosion control of the property is of utmost importance. The site is vulnerable because of its topography and erosion control must be planned for from the onset.

- Although all alien vegetation is to be removed it is important to maintain vegetative areas as a basic prevention with regard to soil erosion.
- It is therefore advised to remove alien vegetation systematically as development progresses.
- Areas should be re-vegetated with suitable indigenous species as soon as possible.
- Retaining structures are to be erected in order to prevent any major soil erosion.
- The structures must be able to hold vegetation where possible. Only indigenous plant species to be used.

9. ALIEN VEGETATION CONTROL

- All alien plant specimens must be removed and controlling measures instituted to prevent re-growth.
- All construction material including sand must be from an alien plant free source, to ensure no alien seeds are brought into the area. Any alien plants accidentally introduced must be eliminated.

10. REMOVAL OF VEGETATION AND EXCAVATION OF SOIL

- Any excessive removal of vegetation other than is strictly necessary within the specified maintenance area will have to be rehabilitated.
- Any soil excavated and not utilized in the process of maintenance should be spread over a large area in the vicinity of the excavation.

11. EARTHWORKS

- All areas where earth works are to take place are to be clearly marked by the use of hazard tape on stakes, and any disturbance must be restricted to these areas.

- All topsoil is to be removed from the earthworks and stockpiled in a site where it will not be compacted or eroded. Silt screens should be erected using Bidum A4.

6. ALIEN INVASIVE PLANTS MANAGEMENT PLAN

Legislation

The National Environmental Management Act, no. 107 of 1998, creates a duty of care towards the environment. Within the preface of this Act, it is stated thus:

“Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development: the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must co-operate with, consult and support one another.”

Any person or business found to be responsible for illegally introducing an invasive plant or species, and allowing it to spread, may be compelled, by this Act to desist with their actions and remove the source of invasion.

The Conservation of Agricultural Resources Act, no. 43 Of 1983 (CARA) was passed to protect soil, water resources and vegetation. This included measures to manage and control weeds and invader vegetation species. The CARA regulations declare several species of “weeds” or “invader plants.” These species have been divided into three categories:

Category 1a Listed Invasive Species:

Category 1a Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the National Environmental Management: Biodiversity Act/ NEMBA (Act 10 of 2004) as species which must be combatted and eradicated.

A person in control of a Category 1a Listed Invasive Species must-

- (a) comply with the provisions of section 73(2) of the NEMBA;
- (b) immediately take steps to combat or eradicate listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA; and
- (c) allow an authorised official from the Department to enter onto land to monitor, assist with or implement the combatting or eradication of the listed invasive species.

If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 1b Listed Invasive Species:

1) Category 1b Listed Invasive Species are those species listed as such by notice in terms of section 70(1)(a) of the NEMBA as species which must be controlled.

2) A person in control of a Category 1b Listed Invasive Species must-

- (a) control the listed invasive species in compliance with sections 75(1), (2) and (3) of the NEMBA.
- (b) must allow an authorised official from the Department to enter onto the land to monitor, assist with or implement the control of the listed invasive species, or compliance with the Invasive Species Management Programme contemplated in section 75(4) of NEMBA.
- 3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 2 Listed Invasive Species:

- 1) Category 2 Listed Invasive Species are those species listed by notice in terms of section 70(1)(a) of the NEMBA as species which require a permit to carry out a restricted activity within an area specified in the Notice or an area specified in the permit, as the case may be.
- 2) Unless otherwise indicated in the Notice, no person may carry out a restricted activity in respect of a Category 2 Listed Invasive Species without a permit.
- 3) A landowner on whose land Category 2 Listed Invasive Species occurs or person in possession of a permit, must ensure that the specimens of the species do not spread outside of the land or the area specified in the Notice or permit.
- 4) Unless otherwise specified in the Notice, any species listed as Category 2 Listed Invasive Species that occurs outside the specified area contemplated in sub-regulation (1), must, for purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to Regulation 3 above.
- 5) Notwithstanding the specific exemptions relating to existing plantations in respect of Listed Invasive Plant Species published in Government Gazette No. 37886, Notice 599 of 1 August 2014 (as amended), any person or organ of state must ensure that the specimens of such Listed Invasive Plant Species do not spread outside of the land over which they have control.
- 6) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Category 3 Listed Invasive Species:

- 1) Category 3 Listed Invasive Species are species that are listed by notice in terms of section 70(1)(a) of the NEMBA, as species which are subject to exemptions in terms of section 71(3) and prohibitions in terms of section 71A of the NEMBA, as specified in the Notice.
- 2) Any plant species identified as a Category 3 Listed Invasive Species that occurs in riparian areas, must, for the purposes of these regulations, be considered to be a Category 1b Listed Invasive Species and must be managed according to regulation 3 below.
- 3) If an Invasive Species Management Programme has been developed in terms of section 75(4) of the NEMBA, a person must combat or eradicate the listed invasive species in accordance with such programme.

Should any invasive plant species occur, other than those stated in The Act, the land user must control them by species-specific control methods. Caution should ALWAYS be taken when dealing with noxious chemicals, and care should be taken to cause the least amount of harm to the environment.

Ways to Eradicate Alien Vegetation

This alien eradication and control program comprises the following three steps:

Step 1

The first step of the Alien Plant Eradication Programme will be to undertake an inception and educational meeting, where the people employed to undertake this activity are able to identify the correct species as aliens and the manner in which to remove and control them.

Step 2

The second step will be to identify the Alien Invasive Species and start a process of removing the individuals that occur on the site. The removal of the alien species must be in a stepwise manner and be undertaken within a single area at a time. This will ensure that all individuals are removed at the same time to reduce re-infestations. Below are a number of methods that may be employed to undertake the activity of removing alien plant species. These methods are dependent on the size and nature of the plant that is to be removed.

Mechanical Methods

Hand-pulling

This method of removal is only really an option during the summer months and when the alien plant species that are requiring removal are very small, and their root system is not very well established. The only precautionary note here is that many alien plant species may look similar to indigenous species when they emerge, so the labour force must be extremely well versed in the individuals that will require removal.

Up-rooting

This method is similar to hand-pulling but is undertaken on slightly older individuals of the target species. It only has one drawback; a relatively large area can be disturbed with the soils being altered and opening the area up to re-infestation.

Lasso & Winch

This method is the upgraded version of the up-rooting, with the same principles applying, that is of trying to remove the entire plant with all the root system attached, to prevent re-growth. This can have a serious destabilizing effect on the receiving environment and should definitely not be undertaken on slopes or sandy soils.

Cutting / Slashing

This method is not a suitable method for control and long term management if used as a stand-alone technique because many of the alien plant species will simply coppice or re-sprout during the summer periods. Many, if not most, alien plants species are annual species, and through their natural life strategy (r-selected) are able to withstand disturbance, even extreme disturbance as in this instance.

Ring-barking

This involves the removal of bark in a 30 centimetre band. This technique is used to desiccate the plant through killing the phloem and xylem and thus preventing transpiration. Further it also facilitates pathogen infestation. It is very effective on large trees if undertaken correctly.

Strip-barking

As with ring-barking, just at a larger scale.

Frilling / Girdling

Girdling and frilling are methods of killing standing trees that may be done with or without an herbicide. Girdling involves cutting a groove or notch into the trunk of a tree to interrupt the flow of sap between the roots and crown of the tree. The groove must completely encircle the trunk and should penetrate into the wood to a depth of at least 1.5 centimetres on small trees, and 2.5 to 4 centimetres on larger trees. Girdling can be done with an axe, panga or chain saw. When done with an axe or panga, the girdle is made by striking from above and below along a line around the trunk so that a notch of wood and bark is removed. The width of the notch varies with the size of the tree. Effective girdles may be as narrow as 2.5 to 5 centimetres on small-diameter trees, and as wide as 15 to 20 centimetres on very large-diameter trees. When a chain saw is used to girdle, two horizontal cuts between 5 and 10 centimetres apart are usually made completely around the tree when no herbicide is used and one horizontal cut is made completely around the tree when herbicide is used.

Frilling is a variation of girdling in which a series of downward angled cuts are made completely around the tree, leaving the partially severed bark and wood anchored at the bottom. Frilling is done with an axe or panga.

By themselves, girdling and frilling are physical methods to deaden trees that require very little equipment and may be done without herbicides. Both techniques require considerable time to carry out, particularly with an axe or panga. The effectiveness of girdling and frilling depends on the tree species and on the size and completeness of the girdle or frill. To be effective, girdles and frills must completely encircle the tree. Because frills can heal-over more easily, girdling is usually more effective.

The effectiveness of both girdling and frilling can be increased by using herbicides. With frilling and girdling, water soluble forms of herbicides are most commonly used to get maximum movement of herbicide within the plant. When using water-soluble herbicides, the herbicide/water mixture is commonly applied by squirting it on the girdle or frill until the cut surface is wet. Hand-held, spray bottles, such as those available at local garden stores, are ideal for applying herbicide to the girdle. Again, note that a single, rather than double chain saw girdle is used when a water soluble herbicide is to be applied.

Chemical Methods

The use of chemicals in controlling and removing of alien plant species should not be excluded as a possible option. Once the alien plant species are more manageable the use of chemicals should be reduced or excluded completely. The best option would be to pursue a combination of mechanical and chemical control in the early stages.

The only negative impact of the use of chemicals is that if used incorrectly may result in plant species being able to develop some form of resistance to the herbicide. If herbicides are used as a foliar spray, drift will cause non-target species to be impacted upon. The only method that should be undertaken is the cutting of the plants prior to the treatment of the remaining stems using a "stem painting" technique.

It is imperative that the herbicides used are dye treated or that the end-user add a dye to ensure that all stems that have been treated are easily identified. Note, the application of the chemical solution must follow directly after the cutting of the vegetation. Therefore, a small area should be selected and all cutting and stem painting be undertaken on that area prior to moving to the next area.

Environmental Safety

In order to minimise the impact of the operation on the natural environment the following must be observed.

- ❖ Area contamination must be minimised by careful accurate application with a minimum amount of herbicide to achieve good control.
- ❖ All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- ❖ Equipment should be washed where there is no danger of contaminating water sources and washings carefully disposed of at a suitable site.
- ❖ To avoid damage to indigenous or other desirable vegetation product should be selected that will have the least effect on non-target vegetation.
- ❖ Coarse droplet nozzles should be fitted to avoid drift onto neighbouring vegetation, e.g. TG-1 or equivalent.
- ❖ The correct protective clothing is to be used in line with manufacturer's instructions and / or the Occupational Health & Safety Act, Act 85 of 1993 (and amendments) and,
- ❖ All MSDS sheets are to be made available on site along with a Medical First Aid Kit.

Disposal of Alien Vegetation

- ❖ Plant material should be used beneficially wherever possible, as opposed to disposing of it at a landfill site where it takes up valuable airspace, or let it further propagate on unchecked, vacant land.
- ❖ Woody and dry material, provided no seeds are present, can be chipped and used as mulch or made available to the local community for firewood.
- ❖ Wet material and aquatic weeds should be combined with other organic matter and composed. Alternatively, it may be possible to use it for basket making, animal feed or other uses.
- ❖ Burning of alien vegetation waste material is prohibited.
- ❖ Burying of alien vegetation waste material in or near the stream, drainage lines, dams, wetlands and their buffer zones is prohibited.
- ❖ Any vegetation which is not viable for use must be disposed of at a registered disposal unit.

CONCLUSION

This MMP has been developed to ensure that the activities proposed for the maintenance work falls within the legal ambit of environmental law. It is also to ensure that no environmental resources in and around the site are negatively impacted. The requirements of this MMP are binding and will be adhered to for all maintenance work undertaken on the farm Onder Haggas no. 145.

ACKNOWLEDGEMENT FORM

Record of signatures providing acknowledgment of being aware of and committed to complying with the contents of this Maintenance Management Plan (MMP), which relates to the environmental mitigation measures for the project outlined below, and the environmental conditions contained in all other contract documents.

PROJECT NAME:

MAINTENANCE ON PORTION 5 OF THE FARM HAGGAS NO. 145, DR BEYERS NAUDÈ MUNICIPALITY

PROPONENT:

Signed: Date:

SITE MANAGER:

Signed: Date:

ENVIRONMENTAL CONTROL OFFICER

Signed: Date: