

# STOCKPILING ON A PORTION 240 OF THE FARM ZWARTKOP 356 JR, CITY OF TSWANE, GAUTENG PROVINCE

## FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT



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## LIST OF ABBREVIATIONS

AIS	-	Alien and Invader Species Regulations, 2014 (amended 2016)
APA	-	Animal Protection Act, No 71 of 1962
APSA	-	Agricultural Product Standards Act No 119 of 1990
ASTM	-	American Society for Testing and Materials
BAR	-	Basic Assessment Report
CARA	-	Conservation of Agricultural Resources Act No 43 of 1983
DWS	-	Department of Water and Sanitation
EA	-	Environmental Authorisation
EAP	-	Environmental Assessment Practitioner
EAR	-	Environmental Audit Report
ECO	-	Environmental Control Officer
EIA	-	Environmental Impact Assessment
EMPR	-	Environmental Management Programme
GDARD		Gauteng Department of Agriculture and Rural Development
GN	-	Government Notice
NEMA	-	National Environmental Management Act No 107 of 1998
NEM:AQA	-	National Environmental Management: Air Quality Act No 39 of 2004
NEM:BA	-	National Environmental Management: Biodiversity Act No 10 of 2004
NEM:WA	-	National Environmental Management: Waste Act No 59 of 2008
NRTA	-	National Road and Traffic Act No 93 of 1996
NWA	-	National Water Act No 36 of 1998
OHSA	-	Occupational Health and Safety Act No 85 of 1993
OHSAS	-	Occupational Health and Safety Act Standards
PCB's	-	Polychlorinated biphenyl
PCO	-	Pest Control Officer
PPE	-	Personal Protective Equipment

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## 1. INTRODUCTION

Greenmined Environmental was appointed by – Lomeza Mining Services (Pty) Ltd (herewith, referred to as the “Applicant”) as environmental assessment practitioner (EAP) to conduct an Environmental Impact Assessment (Basic Assessment) for a stockpile area exceeding 1000 square metres to sell the existing material as a commercial product as well as future use for a temporary storage area for commercial sales over portion 240 of the Farm Zwartkop 356 JR, City of Tswane, Gauteng Province.

The above-mentioned property is situated approximately 1.8 km from the residential area Laudium and 2.8 km from Erasmia. The Zwartkops Raceway borders the site to the west, with the S.W.A.T National Firearms Centre bordering the property of the proposed area to the north. The Department of Defence SA Special Forces Joint Operations Division utilize the bordering property for military purposes, with the Department of Transport’s offices and housing infrastructure bordering the proposed property to the south.

The property (Portion 240 of the farm Zwartkop 356JR) was previously used for mining purposes with the existing quarry on site used for the winning of mineral resources in the 1960’s. The M22 (Quagga road) and M24 (Alaric road) pass the property respectively to the west and south east.

The applicant, Lomeza Mining Services (Pty) Ltd, intends to stockpile and sell material as a commercial product on portion 240 of the Farm Zwartkop 356 JR, City of Tswane, Gauteng Province to various clients in the Road and Infrastructure industries.

## 2. BACKGROUND INFORMATION

The proposed project triggers the National Environmental Management Act, 1998 (Act No 107 of 1998) (as amended) and therefore the compilation of an environmental management programme (EMPr) is a requirement in terms of the said act. This EMPr is submitted in terms of Regulation 35 and 36 of the National Environmental Management Act, 1998 (Act No 107 of 1998): Environmental Impact Assessment Regulations, 2014 (as amended 2017) in accordance with Appendix 4 that stipulates the content of an environmental management programme.

### 2.1 DETAIL OF THE APPLICANT

<b>COMPANY NAME</b>	Lomeza Mining Services (Pty) Ltd
<b>CONTACT PERSON</b>	Mr Simon Mkhonza

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## 2.2 PROPERTY DESCRIPTION

<b>PROPERTY DESCRIPTION</b>	Portion 240 of the Farm Zwartkop 356 JR, City of Tswane, Gauteng Province
<b>LOCATION</b>	The proposed area is situated approximately 1.8 km from the residential area Laudium and 2.8 km from Erasmia. The Zwartkops Raceway borders the site to the west, with the S.W.A.T National Firearms Centre bordering the property of the proposed area to the north
<b>FOOTPRINT AREA</b>	15.7 ha
<b>PRODUCTION TYPE</b>	Stockpile area for commercial product

## 2.3 DETAIL AND EXPERTISE OF THE EAP

The Applicant, Lomeza Mining Services (Pty) Ltd, appointed Greenmined Environmental to compile the EMPr as part of the environmental impact assessment process required for the proposed stockpile area. Mrs. S Smit has sixteen years of experience in environmental legal compliance audits, (GIS) geographic information system, mining right and permit applications and applications for environmental authorisations & Water use applications (Full CV is attached as Appendix G to the BAR).

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### 3. PROJECT DESCRIPTION

The proposed site was assessed during the environmental impact assessment process (Basic Assessment) and should site alternative 1 (as proposed in the final Basic Assessment Report) be approved and all activities be contained to the approved footprint, the proposed development will not have a negative impact on any sensitive environments, -infrastructure or -landscapes. The following important environmental attributes were identified within close proximity to the proposed footprint area:

#### **LAND USE:**

Portion 240 of the farm Zwartkop 356 JR is located approximately 1.8 km from the residential area Laudium and 2.8 km from Erasmia. The Zwartkops Raceway borders the site to the west, with the S.W.A.T National Firearms Centre bordering the property of the proposed area to the north. The Department of Defence SA Special Forces Joint Operations Division utilize the bordering property for military purposes, with the Department of Transport's offices and housing infrastructure bordering the proposed property to the south and a conservation area bordering the proposed area to the south-east direction.

The property (Portion 240 of the farm Zwartkop 356JR) was previously used for mining purposes with the existing quarry on site used for the winning of dolomite in the 1960's.

The M22 (Quagga road) and M24 (Alaric road) pass the property respectively to the west and south east.

#### **EXISTING INFRASTRUCTURE:**

As mentioned above, the proposed area will be established adjacent to an existing quarry. The existing infrastructure present on the property consists of the following:

- Access Road

The following infrastructure is present within a kilometre radius from the proposed area:

- Zwartkops Raceway
- S.W.A.T National Firearms Centre
- Residential houses

- M22/R55 Quagga Road
- M24 Alaric Road
- Entrance Gate of the Department of Defence SA Special Forces Joint Operations Division



Figure 1: Google earth image of infrastructure within a 1 km radius from proposed area.

The impact of the proposed area on the infrastructural features of the surrounding area is deemed to be of very low significance as the activities will only consist transporting stockpile material, and the impact will be concentrated within the 15.7 ha footprint area.

### **GEOLOGY:**

The topography of the area is characterised by prominent rocky chert ridges and plains. These landscape features mainly consist of quartzite, conglomerate, shale dolomite and sometimes andesitic lava. Deep red to yellow apedal soils (Hutton and Clovelly forms) occur sporadically, representing the Ab land type.

The proposed activities will not have any impact on the in-situ geology of the site as the activities will only entail the stockpiling of resource material.

### **VEGETATION:**

According to Mucina and Rutherford, 2006 the area is classified as Carletonville Dolomite Grassland (Gh 15). The natural vegetation of the surrounding area is a transitional type between typical grassland of the high inland plateau and the bushveld of the lower inland plateau. The following grass species dominate the area:

- *Trachypogon spicatus* Giant Spear Grass
- *Diheteropogon amplexans* Broad-leaf Bluestern
- *Schizachyrium sanguineum* Red Autumn Grass
- *Tristichya leucothrix* Hairy Trident Grass
- *Panicum natalense* Natal Panicum
- *Digitaria tricholaenoides* Purple Finger Grass

Various forbs and succulents are also found in the area, with woody vegetation occurring as sheltered islands within the grassland.

According to the Biodiversity Assessment conducted by MORA Ecological Services (Pty) Ltd (Appendix G1), the study site has been severely disturbed due to previous mining activities. Very few patches of natural vegetation remain within the property boundaries. The site shows low sensitivity, and no species of conservation concern were observed. However, disturbance should be limited strictly to the specified activities associated with the stockpiling. The client should appoint an ecologist to compile an Alien Management Plan and it should be implemented during operation of the site.

According to SANBI's Gauteng C-Plan 3.3 (Terrestrial CBA) map a section of the proposed area falls within an ecological support area. However, this area has been previously disturbed, and no sensitive landscapes remain within the application as it was previously used for mining purposes. A small section 1.9 ha (12% of the application area) has not yet been disturbed and should be regarded as a no-go area (please refer to Appendix C – Layout map).

#### **FAUNA:**

Due to the disturbed nature of the site no fauna is resident on or within the proposed area. Should fauna enter the site they would be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed.

#### **AIR QUALITY AND NOISE:**



The site-specific air quality is representative of the air quality of the general area, being affected by the residential activities and roads in the area. Sources of dust on the site during the operational phase will be haul vehicles that transport material to and from the stockpile area. Dust pollution during windy spells is significant and difficult to suppress. Dust will be generated by the proposed operation but will be localised within the confines of the site. Dust suppression measures should be implemented to prevent excessive dust generation.

The noise levels of the area are highly impacted due to the Raceway and Shooting Range in the area. The two major roads passing the site also contribute to the noise levels of the area. The haul vehicles, that will work and travel in and around the proposed area, is expected to generate noise levels that will compare to the noise levels generated by the other activities in the vicinity of the area.

#### **ARCHAEOLOGICAL AND CULTURAL INTEREST:**

Due to the disturbed nature of the site no sites of archaeological or cultural importance were identified during the site inspection. Consultation with the interested and affected parties also did not identify any potential area of concern. As the proposed activity will entail stockpiling of sourced material, the activity is not anticipated to have a negative impact on any archaeological or cultural aspects.

#### **SURFACE AND GROUND WATER:**

The proposed activities are not anticipated to have a negative impact on the surface or ground water of the area. The Hennops River passes the site to the south but is more than 2 km away. As the proposed activity will entail stockpiling of sourced material no activity-related waste is anticipated to originate from the site that could cause contamination of surface or ground water. The mitigation measures proposed in the EMP should however be implemented to manage accidental spillage that may originate from mechanical failures.

As per the Stormwater Management Plan (Appendix G2), the considers the Pre-Development and Post-Development flows to investigate the impact of the proposed development on the existing bulk stormwater infrastructure and the erosion caused to existing watercourses. The difference of the pre and post development flows shows a 3% increase in stormwater flow. This will have a minimal impact on infrastructure downstream of the site.

#### **VISUAL EXPOSURE:**

This application is for the re-use of previously mined material and will more likely increase the visual quality of the area than have a negative impact. The applicant intends to stockpile and sell material as a commercial product, upon which the area will be rehabilitated. The current visual impact of the existing dolomite dump will therefore be eliminated through the implementation of this project and will not have an increased visual impact.

The aesthetic quality of the area is not pristine as it was previously disturbed by mining activities and is currently used for various purposes. The proposed activity will therefore not have a cumulative negative visual impact on the surrounding environment. The applicant should however ensure that housekeeping is managed to standard, as this will mitigate the visual impacts during the operational phase of the activity.

Upon closure the site will be rehabilitated and levelled to ensure that the visual impact on the aesthetic value of the area is kept to a minimum. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, it may be required that all exposed areas should be seeded to enhance vegetation recovery.

#### **SOCIO-ECONOMIC:**

Additional workers to be appointed on this proposed site will be sourced from the local community. Workers will daily be transported to the site. The operation of the proposed activities on the property will assist in the rehabilitation of the previously discarded mine heaps, as well as make use of the stockpiled dolomite on the site. The discarded material could be used to generate income as well as provide material to the construction and business industries thereby generating income and directly contributing to the economy of the area.

#### **ACCESS ROADS:**

The existing access road to the site will be used. Should upgrades be required the following will be adhered to:

- The route will be selected that a minimum number of bushes or trees are felled and existing fence lines will be followed as far as possible.
- Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.

#### 4. COMPOSITE MAP

Please refer to the DBAR attached as Appendix A – Site Plan

#### 5. DESCRIPTION OF IMPACT MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

##### 5.1 CONSTRUCTION PHASE

The proposed project will not consist of a construction phase as this application is for the future commercial operation of existing and future stockpiles on an already disturbed footprint. The applicant will make use of the existing access roads as well as the site offices (containers) and weighbridge.

##### 5.2 OPERATIONAL PHASE

During the operational phase the applicant intends to stockpile material from another source in which front-end-loader (FEL) will load the sourced material directly onto the trucks of clients. All activities will take place within the boundaries of the application. The following potential impacts were identified the operational phase:

###### **Positive Impacts:**

- Employment opportunity created as a result of the proposed activities.

###### **Negative Impacts:**

- Visual intrusion associated with the stockpiled material and vehicles transporting the material
- Weed and invader plant infestation of the area.
- Loss of material due to ineffective storm water handling.
- Dust nuisance from stockpiled material and vehicles transporting the material
- Degradation of access roads
- Noise nuisance caused by vehicles
- Contamination of area with hydrocarbons or hazardous waste materials.
- Soil Erosion

##### 5.3 DECOMMISSIONING PHASE

The decommissioning phase will entail the rehabilitation of the site. Upon cessation of the proposed activities, the area will be fully rehabilitated. It is proposed that the stockpile area will have been worked out and the area should be level. Spoil material

that cannot be used by the applicant will be dumped into the existing quarry pit in order to assist with the rehabilitation of the pit. All roads used will be repaired or rehabilitated if not needed by the landowner. The applicant will comply with the minimum closure objectives as prescribed by the competent authority and detailed below:

**Rehabilitation of the proposed area**

- The area will be landscaped and profiled with acceptable contours and erosion control measures.
- The area shall be fertilized if necessary to allow vegetation to establish rapidly. If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, it may be required that the site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.

**Rehabilitation of office areas:**

- Stockpiles will be removed during the decommissioning phase and the area ripped.
- On completion of operations, all structures or objects shall be dealt with accordingly:
  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
  - The site shall be seeded if necessary with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the office sites, before and during the proposed operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information.
- On completion of the operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 300mm and graded to an even surface condition.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, it may be required that the area shall then be fertilized to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix if necessary.

**Final rehabilitation:**

- Rehabilitation of the surface area shall entail landscaping, levelling, land preparation, seeding (if required), and weed / alien clearing.
- All infrastructure, equipment, temporary offices and other items used during the period will be removed from the site.
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the proposed area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.
- Weed / Alien clearing will be done in a sporadic manner during the life of the activities. Species regarded as Category 1 weeds according to CARA (Conservation of Agricultural Recourses Act, 1983 – Act 43; Regulations 15 & 16 (as amended in March 2001) need to be eradicated from the site.

**Positive Impacts:**

- Reduced visual impact on the surrounding environment.

**Negative Impacts:**

- Soil erosion
- Dust nuisance caused during sloping and landscaping activities
- Noise nuisance caused by machinery
- Contamination of area with hydrocarbons or hazardous waste materials
- Loss of reinstated topsoil due to the absence of vegetation
- Infestation of the area by weed and invader plants

**5.4 THE PROCESS FOR MANAGING ANY ENVIRONMENTAL DAMAGE OR ECOLOGICAL DEGRADATION**

Due to the small-scale nature of the project and the disturbed status of the receiving environment, it is believed that the risk of environmental damage or pollution is of low significance. If site management implement the mitigation measures prescribed in this document, it is believed that the impact on the receiving environment can be adequately controlled, and that the activity will not result in ecological degradation.

**5.5 IMPACTS TO BE MITIGATED IN THEIR RESPECTIVE PHASES**

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
Visual intrusion associated with the stockpiled material and vehicles transporting the material	Operational phase	15.7 ha	<ul style="list-style-type: none"> <li>■ The site needs to have a neat appearance and be kept in good condition at all times.</li> <li>■ Upon closure the site needs to be rehabilitated and sloped to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.</li> <li>■ All activities must take place within the boundaries of the site.</li> </ul>	Management of the proposed area must be in accordance with the: <ul style="list-style-type: none"> <li>■ NEMA, 1998</li> </ul>	Throughout the operational and decommissioning phase
Weed and invader plant infestation of the area  Infestation of the reinstated area with invader plant species.	Operational phase & Decommissioning phase	15.7 ha	<ul style="list-style-type: none"> <li>■ A weed and invader plant control management plan must be implemented at the site to ensure eradication of all listed invader plants in terms of Conservation of Agricultural Act (Act No 43 1983).</li> <li>■ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:</li> <li>■ "The plants can be uprooted, felled or cut off and can be destroyed completely."</li> </ul>	Invader plants must be managed in accordance with the: <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEM:BA 2004</li> </ul> Invasive Plant Species Management Plan (please see section 13)	Throughout the operational and decommissioning phase

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			<ul style="list-style-type: none"> <li>■ "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."</li> <li>■ The temporary topsoil stockpiles needs to be kept free of weeds.</li> </ul>		
Loss of material due to ineffective storm water handling	Operational phase	15.7 ha	<ul style="list-style-type: none"> <li>■ Storm water must be diverted around the topsoil heaps, stockpile areas and access roads to prevent erosion and loss of material.</li> <li>■ Runoff water must also be diverted around the stockpile areas with trenches and contour structures to prevent erosion of the work areas.</li> <li>■ The activities must be conducted only in accordance with the Best Practice Guideline that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water Affairs (DWA), and any other conditions which that Department may impose</li> <li>■ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.</li> <li>■ Dirty water must be collected and contained in a system separate from the clean water system.</li> </ul>	Storm water must be managed in accordance with the: <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEMA, 1998</li> <li>■ NWA, 1998</li> </ul>	Throughout operational phase

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			<ul style="list-style-type: none"> <li>■ Dirty water must be prevented from spilling or seeping into clean water systems.</li> <li>■ The storm water management plan must apply for the entire life cycle of the activities and over different hydrological cycles (rainfall patterns).</li> <li>■ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into the storm water management plan.</li> </ul>		
<p>Dust nuisance from stockpiled material and vehicles transporting the material</p> <p>Dust nuisance caused during sloping and landscaping activities</p>	<p>Operational phase &amp; Decommissioning phase</p>	<p>15.7 ha</p>	<ul style="list-style-type: none"> <li>■ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents.</li> <li>■ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.</li> <li>■ Speed on the access roads must be limited to 40km/h to prevent the generation of excess dust.</li> <li>■ Roads must be sprayed with water or an environmentally friendly dust-allaying agent that contains no PCB's (e.g. DAS products) if dust is generated above acceptable limits.</li> </ul>	<p>Dust generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NEM:AQA. 2004 Regulation 6(1)</li> <li>■ National Dust Control Regulations, GN No R827</li> </ul> <p>ASTM D1739 (SANS 1137:2012)</p>	<p>Throughout the operational &amp; decommissioning phase</p>



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			<ul style="list-style-type: none"> <li>All stockpiles must thoroughly be soaked to ensure dust suppression on the site.</li> </ul>		
Degradation of access roads	Operational phase	15.7 ha	<ul style="list-style-type: none"> <li>Newly constructed access roads (if applicable) must be adequately maintained so as to minimise dust, erosion or undue surface damage.</li> <li>Storm water should be diverted around the access roads to prevent erosion.</li> <li>Erosion of access road: Vehicular movement must be restricted to existing access routes to prevent crisscrossing of tracks through undisturbed areas. Rutting and erosion of the access road caused as a result of the activities should be repaired by the applicant.</li> </ul>	<p>The access road must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>NRTA, 1996</li> </ul>	Throughout operational phase
Noise nuisance caused by vehicles  Noise nuisance caused by machinery	Operational phase & Decommissioning phase	15.7 ha	<ul style="list-style-type: none"> <li>The applicant must ensure that employees and staff conduct themselves in an acceptable manner while on site.</li> <li>All vehicles must be equipped with silencers and maintained in a road worthy condition in terms</li> </ul>	<p>Noise generation must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>NEM:AQA. 2004 Regulation 6(1)</li> <li>NRTA, 1996</li> </ul>	Throughout the operational and decommissioning phase

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Overloading of trucks impacting road infrastructure	Operational phase	15.7 ha	<ul style="list-style-type: none"> <li>■ Site management must ensure that the load of the trucks, prior to leaving the site, A weighing devise must be installed at the proposed area to prevent overloading.</li> <li>■ Proof of load weights must be filed and be available for auditing by relevant officials.</li> </ul>	<p>Overloading of trucks must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> <li>■ Proof of load weights must be available for auditing purposes</li> </ul>	Throughout operational phase
Contamination of area with hydrocarbons or hazardous waste materials	Operational phase & Decommissioning phase	15.7 ha	<ul style="list-style-type: none"> <li>■ No processing area or waste pile may be established within 100m of the edge of any river channel or other water bodies.</li> <li>■ Should any emergency vehicle repairs be done all spills must be disposed of in a 200 litre closed container/bin found inside the emergency service area.</li> <li>■ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognised facility.</li> <li>■ Spills must be cleaned up immediately to the satisfaction of the Regional Manager by removing the spillage together with the polluted soil and by disposing of them at a recognised facility.</li> <li>■ Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste.</li> </ul>	<p>Waste must be managed in accordance with the:</p> <ul style="list-style-type: none"> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> <li>■ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>■ NEMA, 1998 (Section 30)</li> </ul> <p>Regulation 8(1) of the Waste Classification and</p>	Throughout the operational and decommissioning phase

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			<ul style="list-style-type: none"> <li>■ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point and collected on a regular basis and disposed of at a recognised landfill site. Specific precautions should be taken to prevent refuse from being dumped on or in the vicinity of the area.</li> <li>■ Biodegradable refuse generated must be handled as indicated above.</li> </ul>	Management Regulations published in GN No. R. 634 of 23 August 2013	
Soil erosion	Operational phase & Decommissioning phase	15.7 ha	<ul style="list-style-type: none"> <li>■ The necessary measures will be put in place to limit erosion from the stockpiles and to divert storm water away from the stockpiles.</li> <li>■ Runoff water will be diverted around the site with trenches and contour structures to prevent erosion of the work areas.</li> <li>■ Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.'</li> </ul>	Soil erosion must be managed in accordance with the: <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEMA, 1998</li> <li>NWA, 1998</li> </ul>	Throughout the operational and decommissioning phase

**6. IMPACT MANAGEMENT ACTIONS AND OUTCOMES**

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ACTIVITY	POTENTIAL IMPACT	TIME PERIOD FOR IMPLEMENTATION	MITIGATION TYPE	STANDARD TO BE ACHIEVED
<b>OPERATIONAL PHASE: Transporting of stockpile material</b>	Visual intrusion associated with the stockpiled material and vehicles transporting the material	Operational phase	Control: Implementing proper housekeeping	<b><u>Visual Intrusion:</u></b> NEMA, 1998
	Dust nuisance from stockpiled material and vehicles transporting the material		Control: Dust suppression	<b><u>Dust generation:</u></b> NEM:AQA, 2004 Regulation 6(1) National Dust Control Regulations, GN No R827 ASTM D1739 (SANS 1137:2012)
	Noise nuisance caused by vehicles		Control: Noise control measures	<b><u>Noise generation:</u></b> NEM:AQA, 2004 Regulation 6(1) NRTA, 1996
	Weed and invader plant infestation of the area		Modify & Control: Implementing S1 instead of S2 and demarcation and management of approved footprint boundary.	<b><u>Fauna and flora:</u></b> NEM:BA, 2004 CARA, 1983
	Loss of material due to ineffective storm water handling		Control: Implementing proper storm water management at the site.	<b><u>Erosion, storm- and waste water control:</u></b> CARA, 1983 NEMA, 1998

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ACTIVITY	POTENTIAL IMPACT	TIME PERIOD FOR IMPLEMENTATION	MITIGATION TYPE	STANDARD TO BE ACHIEVED
				<ul style="list-style-type: none"> <li>■ NWA, 1998</li> </ul>
	Degradation of access roads		Control & Remedy: Implementing road maintenance when needed.	<u><b>Access Road Management:</b></u> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>
	Overloading of trucks impacting road infrastructure		Control: Proper site management	<u><b>Site management:</b></u> <ul style="list-style-type: none"> <li>■ NRTA, 1996</li> </ul>
	Contamination of area with hydrocarbons or hazardous waste materials		Control & Remedy: Implementing proper housekeeping and immediate action when spills occur.	<u><b>Waste Management:</b></u> <ul style="list-style-type: none"> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> <li>■ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>■ NEMA, 1998 (Section 30)</li> </ul>
	Soil erosion		Control & Remedy: Implementing decommissioning mitigation measures.	<u><b>Soil Erosion Management:</b></u> <ul style="list-style-type: none"> <li>■ CARA, 1983</li> <li>■ NEMA, 1998</li> <li>■ NWA, 1998</li> </ul>
<b>DECOMMISSIONING PHASE:</b> <b>Rehabilitation of area</b>	Contamination of area with hydrocarbons or hazardous waste materials	Decommissioning phase	Control & Remedy: Implementing proper housekeeping and immediate action when spills occur.	<u><b>Waste management:</b></u> <ul style="list-style-type: none"> <li>■ NWA, 1998</li> <li>■ NEM:WA, 2008</li> </ul>

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ACTIVITY	POTENTIAL IMPACT	TIME PERIOD FOR IMPLEMENTATION	MITIGATION TYPE	STANDARD TO BE ACHIEVED
				<ul style="list-style-type: none"> <li>✦ NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)</li> <li>✦ NEMA, 1998 (Section 30)</li> </ul>
	Dust nuisance caused during sloping and landscaping activities		Control: Dust suppression	<p><b><u>Dust generation:</u></b></p> <ul style="list-style-type: none"> <li>✦ NEM:AQA, 2004 Regulation 6(1)</li> <li>✦ National Dust Control Regulations, GN No R827</li> </ul> <p>ASTM D1739 (SANS 1137:2012)</p>
	Noise nuisance caused by machinery		Control: Noise control measures	<p><b><u>Noise generation:</u></b></p> <ul style="list-style-type: none"> <li>✦ NEM:AQA, 2004 Regulation 6(1)</li> <li>✦ NRTA, 1996</li> </ul>
	Infestation of the reinstated area with invader plant species.		Control & Remedy: Implementing road maintenance when needed.	<p><b><u>Access Road Management:</u></b></p> <ul style="list-style-type: none"> <li>✦ NRTA, 1996</li> </ul>

**7. MECHANISMS FOR MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREON, INCLUDING:**

- ✧ Monitoring of Impact Management Actions
- ✧ Monitoring and reporting frequency
- ✧ Responsible persons

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- ⌘ Time period for implementing impact management actions
- ⌘ Mechanism for monitoring compliance

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
<p><b>OPERATIONAL &amp; DECOMMISSIONING PHASE</b></p>	<p><b><u>Visual characteristics</u></b> Visual intrusion associated with the stockpiled material and vehicles transporting the material</p>	<ul style="list-style-type: none"> <li>■ Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Contain activities to the boundaries of the permitted area.</li> <li>■ Ensure that the site have a neat appearance and is kept in good condition at all times.</li> <li>■ Rehabilitate and level the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
	<p><b><u>Groundcover</u></b> Weed and invader plant infestation of the area</p>	<ul style="list-style-type: none"> <li>■ Designated team to cut or pull out invasive plant species that germinate on site;</li> <li>■ Herbicide application equipment.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the Environmental Control Officer.</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> </ul>

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	<p>Infestation of the reinstated area with invader plant species.</p>		<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ All invasive plant species that germinate within the boundary of the proposed area must be controlled in terms of NEM:BA, 2004 and CARA, 1983.</li> <li>■ Invasive plant species must be managed in accordance with the guidelines of the EMPr throughout the operation phase of the project.</li> <li>■ Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:                             <ul style="list-style-type: none"> <li>▪ "The plants can be uprooted, felled or cut off and can be destroyed completely."</li> <li>▪ "The plants can be treated with an herbicide that is registered for use in connection therewith and in accordance with the directions for the use of such an herbicide."</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>
	<p><b><u>Erosion &amp; Stormwater monitoring:</u></b></p> <p>Loss of material due to ineffective storm water handling</p>	<ul style="list-style-type: none"> <li>■ Storm water management structures such as berms to direct storm- and runoff water around the stockpiled area (when needed).</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>



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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	Soil erosion		<p>Officer during the annual environmental audit.</p> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Divert runoff water with trenches and contour structures to prevent erosion of the work areas.</li> <li>■ Adequate drainage and erosion protection in the form of cut-off berms or trenches will be provided where necessary.</li> <li>■ Grade or landscape eroded areas</li> </ul>	
	<p><b><u>Air Quality:</u></b></p> <p>Dust nuisance from stockpiled material and vehicles transporting the material</p> <p>Dust nuisance caused during sloping and landscaping activities</p>	<ul style="list-style-type: none"> <li>■ Dust suppression equipment such as a water car.</li> <li>■ Signage that clearly reduce the speed on the access roads.</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul> <p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).</li> <li>■ Ensure continuous assessment of all dust suppression equipment to confirm</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>its effectiveness in addressing dust suppression.</p> <ul style="list-style-type: none"> <li>■ Limit speed on the haul roads to 40 km/h to prevent the generation of excess dust.</li> <li>■ Minimise areas devoid of vegetation.</li> <li>■ Flatten and cover loads to prevent spillage and windblown dust during transportation.</li> <li>■ Take weather conditions into consideration upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts.</li> <li>■ Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012).</li> <li>■ Implement best practice measures during the transporting of material from site to minimize potential dust impacts.</li> </ul>	
	<p><b><u>Monitoring of Roads</u></b></p> <p>Degradation of access roads</p> <p>Overloading of trucks impacting road infrastructure</p>	<ul style="list-style-type: none"> <li>■ Grader to restore the road surface when needed.</li> <li>■ Weigh truck prior to leaving the site</li> </ul>	<p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR.</li> <li>■ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management.</li> <li>■ Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Divert storm water around the access road to prevent erosion.</li> <li>■ Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas.</li> <li>■ Repair rutting and erosion of the access road caused as a direct result of the activities.</li> <li>■ Prevent the overloading of the truck by installing a weighing device and file proof of load weights for auditing purposes.</li> <li>■ Speed on the access road must be limited to 40 km/h for operational/decommissioning vehicles</li> </ul>	
<p><b>OPERATIONAL &amp; DECOMMISSIONING PHASE</b></p>	<p><u>Noise Ambiance:</u> Noise nuisance caused by vehicles &amp; machinery</p>	<p>Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996</p>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</li> <li>■ Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ All operational/decommissioning related vehicles must be equipped with silencers and maintained in a road worthy</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996),</p> <ul style="list-style-type: none"> <li>■ Best practice measures shall be implemented in order to minimize potential noise impacts,</li> <li>■ The Applicant must ensure that employees, and staff conduct themselves in an acceptable manner while on site,</li> <li>■ No loud music may be allowed on site,</li> </ul>	
<p><b>OPERATIONAL &amp; DECOMMISSIONING PHASE</b></p>	<p><b><u>Waste monitoring</u></b></p> <p>Contamination of area with hydrocarbons or hazardous waste materials</p>	<ul style="list-style-type: none"> <li>■ Sealable waste receptacles;</li> <li>■ Oil spill kit;</li> <li>■ Abulation facilities</li> <li>■ Waste disposal spreadsheets to be completed throughout, operational and decommissioning phases and proof of safe disposal filed for auditing purposes.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</li> <li>■ Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Should any emergency vehicle repairs be done all spills must be disposed of in a 200 litre closed container/bin found inside the emergency service area. If emergency repairs are needed on equipment, drip trays must be present.</li> <li>■ The Applicant must have at least one spill kit available on site, and at least one employee must be trained in the use of it,</li> <li>■ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer.</li> </ul>

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>removed from the site, either for resale or for appropriate disposal at a recognized facility.</p> <ul style="list-style-type: none"> <li>■ Hazardous waste must be contained in a 200 litre closed container/bin to be stored within a bunded area from where it must be removed by a registered hazardous waste handling contractor to a suitable registered landfill site,</li> <li>■ Should any spillage occur, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed to the hazardous waste storage area where it must be incorporated into the existing waste handling system. Proof of safe disposal must be filed,</li> <li>■ All chemicals must be stored according to the storage instructions stipulated on the safety data sheet or at least within a bunded area, on an impermeable surface, that is access controlled.</li> <li>■ Drip trays must be used under all stationary machinery. The Applicant must ensure the drip trays are sealed and properly managed at all time</li> <li>■ Suitable covered receptacles must be available at all times and conveniently placed for the disposal of waste.</li> <li>■ Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc.,</li> </ul>	

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SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES	MONITORING AND REPORTING FREQUENCY and TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			<p>must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the proposed area. Proof of disposal must be available for auditing purposes.</p> <ul style="list-style-type: none"> <li>■ Biodegradable refuse must be handled as indicated above.</li> <li>■ Re-use or recycling of waste products must be encouraged on site.</li> <li>■ Employees must make use of the ablution facility at the site.</li> </ul>	
<p><b>OPERATIONAL &amp; DECOMMISSIONING PHASE</b></p>	<p><u>Monitoring of health and safety aspects</u></p>	<ul style="list-style-type: none"> <li>■ Stocked first aid box;</li> <li>■ Personnel protective equipment.</li> </ul>	<p><u>Responsibility:</u></p> <ul style="list-style-type: none"> <li>■ Site Manager to ensure compliance with the guidelines as stipulated in the EMPr.</li> <li>■ Compliance to be monitored by the Environmental Control Officer.</li> </ul> <p><u>Role:</u></p> <ul style="list-style-type: none"> <li>■ Workers must have access to the correct personal protective equipment (PPE) as required by law,</li> <li>■ All operations must comply with the OHSAS, 1993 (as amended).</li> </ul>	<p>Applicable throughout site operational-, and decommissioning phases.</p> <ul style="list-style-type: none"> <li>■ Daily compliance monitoring by site management. Annual compliance monitoring of site by an Environmental Control Officer..</li> </ul>



## 8. FREQUENCY OF ENVIRONMENTAL AUDIT REPORT

Regulation 34 of the NEMA:EIA Regulations, 2014 (as amended 2017) requires the holder of an environmental authorisation (EA) to submit an environmental audit report (EAR) to the relevant competent authority. The regulations stipulate (Regulation 34(2)(d)) that the EAR must be conducted and submitted to the competent authority at intervals as indicated in the EA.

The Applicant commits to submitting the EAR on the proposed activities at the intervals stipulated in the EA, or at least annually, to GDARD for perusal. The EAR will be compiled in compliance with the provisions of Regulation 34 of the NEMA EIA Regulations, 2014 pertaining to auditing of environmental authorization and associated documents.

## 9. ENVIRONMENTAL AWARENESS PLAN

### 9.1 MANNER IN WHICH EMPLOYEES WILL BE INFORMED OF ANY ENVIRONMENTAL RISK

Once approved, a copy of the Environmental Management Programme will be handed to the site manager. Issues such as stockpile handling, site management, waste handling and safety aspects will be discussed.

An induction meeting will be held with all the site employees to inform them of the Basic Rules of Conduct with regard to the environment.

### 9.2 MANNER IN WHICH RISKS WILL BE DEALT WITH IN ORDER TO AVOID POLLUTION OR THE DEGRADATION OF THE ENVIRONMENT

The site manager must ensure that he/she understands the EMPr document and its requirement and commitments before any activity takes place. An Environmental Control Officer needs to check compliance of the processing activities to the management programmes described in the EMPr.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

#### **Site Management:**

- Stay within boundaries of site – do not enter adjacent properties
- Keep tools and material properly stored
- Smoke only in designated areas



- Use ablution facility provided – report full or leaking toilets

#### 📌 **Water Management and Erosion:**

- Check that rainwater flows around work areas and are not contaminated

#### 📌 **Waste Management:**

- Take care of your own waste
- Keep waste separate into labelled containers – report full bins
- Place waste in containers and always close lid
- Do not burn waste
- Pick-up any litter laying around

#### 📌 **Hazardous Waste Management (Petrol, Oil, Diesel)**

- Never mix general waste with hazardous waste
- Use only sealed, non-leaking containers
- Keep all containers closed and store only in approved areas
- Always put drip trays under vehicles and machinery
- Empty drip trays after rain
- Stop leaks and spills, if safe
  - ✓ Keep spilled liquids moving away
  - ✓ Immediately report the spill to the site manager/supervision
  - ✓ Locate spill kit/supplies and use to clean-up, if safe
  - ✓ Place spill clean-up wastes in proper containers
  - ✓ Label containers and move to approved storage area

#### 📌 **Discoveries:**

- Stop work immediately
- Notify site manager/supervisor
- Includes – Archaeological finds, Cultural artefacts, Contaminated water, Pipes, Containers, Tanks and drums, Any buried structures

#### 📌 **Driving and Noise:**

- Use only approved access roads
- Respect speed limits
- Only use turn-around areas – no crisscrossing through undisturbed areas
- Avoid unnecessary loud noises

- Report or repair noisy vehicles

■ **Vegetation and Animal life:**

- Do not remove any plants without approval of the site manager
- Do not collect fire wood
- Do not catch, kill, harm, sell or play with any animal, reptile, bird, fish or amphibian on site
- Do not set snares or raid nests for eggs or young

■ **Fire Management:**

- Do not light any fires on site
- Put cigarette butts in a bin filled with sand for this purpose
- Do not smoke near gas or petrol
- Know the position of firefighting equipment
- Report all fires
- Don't burn waste or vegetation

## 10. REPORTING OF ENVIRONMENTAL INCIDENTS

In the event of an incident as defined in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (as amended) site management must adhere to the following steps:

**Step 1** (Section 30(3)) "The responsible person or, where the incident occurred in the course of that persons employment, his or her employer must forthwith after knowledge of the incident, **report** through the most effective means reasonably available –

- a) The nature of the incident
- b) Any risks posed by the incident to public health, safety and property
- c) The toxicity of substances or by-products released by the incident, and
- d) Any steps that must be taken in order to avoid or minimise the effects of the incident on public health and the environment to –
  - i) the Director General
  - ii) the South African Police Services and the reliant fire prevention service
  - iii) the relevant provincial head of department or municipality, and
  - iv) all persons whose health may be affected by the incident."

**Step 2** (Section 30(4)) “The responsible person or, where the incident occurred in the occurs of that person’s employment, his or her employer, must as soon as reasonably practicable after knowledge of the incident –

- a) take all reasonable measures to **contain** and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to health, safety and property of persons,
- b) undertake **clean-up** procedures
- c) **remedy** the **effects** of the incident
- d) **assess** the immediate and long-term **effects** of the incident on the environment and public health.”

**Step 3** (Section 30(5)) “The responsible person or, where the incident occurred in the occurs of that person’s employment, his or her employer, must **within 14 days** of the incident, **report** to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including –

- a) the nature of the incident
- b) the substances involved and an estimation of the quantity released and their possible acute effect on person and the environment and data needed to assess these effects
- c) initial measures taken to minimise impacts
- d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure, and
- e) measures taken and to be taken to avoid a recurrence of such incidents.”

## 11. INCIDENTS REGISTER

All incidents occurring on the site needs to be added to the incident register, with information and dates when and how the incident was addressed and/or rectified.

<b><u>INCIDENT REGISTER</u></b>					
<b>DEVELOPMENT OF A STOCKPILE AREA ON A PORTION 240 OF THE FARM ZWARTKOP 356 JR, CITY OF TSWANE, GAUTENG PROVINCE</b>					
<b>NAME OF PERSON REPORTING THE INCIDENT</b>	<b>INCIDENT</b>	<b>DATE OF INCIDENT IDENTIFIED</b>	<b>HOW WAS INCIDENT ADDRESSED?</b>	<b>DATE OF RECTIFICATION</b>	<b>SIGNATURE</b>

## 12. EMERGENCY RESPONSE PROCEDURES

SPILLAGE OF DIESEL, HYDROCARBONS OR OTHER CHEMICALS	
<p><b>1. <u>INSPECTOR / OBSERVER:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Report to Foreman and continue observations.</li> <li>⌘ Also check that source causing spillage is decommissioned, and that affected area is isolated to prevent spreading of hazardous substance.</li> <li>⌘ Foreman to inform environmental control officer (ECO).</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Foreman Cell No - _____</li> <li>⌘ ECO Cell No - _____</li> </ul>
<p><b>2. <u>ECO SITE AGENT:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Stop work on the area and take immediate action.</li> </ul> <p><b><u>SMALL LEAK / SPILL:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Take photos of the affected area prior to cleaning it.</li> <li>⌘ Use spill kit to clean the affected area.</li> <li>⌘ Remove the contaminated soil to the hazardous waste storage area and store within bunded area until removed from site.</li> <li>⌘ Inform the site manager</li> <li>⌘ Take photos of the cleaned area and file with Accidents and Incidents (A&amp;I) Register.</li> <li>⌘ Add the incident to the A&amp;I Register with photos as proof.</li> <li>⌘ Ensure that the source of contamination is removed from site until repaired.</li> </ul> <p><b><u>LARGE LEAK / SPILL:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Contain the contamination to the immediate area, to prevent further pollution.</li> <li>⌘ Inform the following: <ul style="list-style-type: none"> <li>• Site manager</li> <li>• Department of Economic, Small Business Development, Tourism and Environmental Affairs – Free State Province</li> <li>• Masilonyana Local Municipality</li> </ul> </li> <li>⌘ Take photos of the affected area prior to cleaning.</li> <li>⌘ Arrange registered HAZMAT contractor to clean and rehabilitate the area.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ ECO Cell No - _____</li> <li>⌘ Site Manager Cell No - _____</li> <li>⌘ GDARD - 011 240 2500</li> <li>⌘ City of Tshwane - (011) 240 2576</li> <li>⌘ Drizit (JHB) - 011 312 0218</li> <li>⌘ Enviroserv - 051 432 2940</li> <li>⌘ Greenmined Environmental 021 851 2673</li> </ul>

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|---|--|
| <ul style="list-style-type: none"> <li>⌘ Add the incident to the Accidents and Incidents (A&amp;I) Register with photos as proof.</li> <li>⌘ Obtain written confirmation of successful cleaning and safe disposal certificate from HAZMAT contractor</li> <li>⌘ Ensure that the source of contamination is removed from site until repaired.</li> </ul> |  |
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## FIRE

### 1. **OBSERVER:**

- ⌘ Report to Foreman and extinguish fire if safe to do so.
- ⌘ If not, assist any person in immediate danger to safety and continue observations from a safe distance.
- ⌘ Foreman to inform Fire fighter and remove any equipment or tools that might be in danger.

- ⌘ Foreman Cell No - \_\_\_\_\_
- ⌘ Fire Fighter Cell No - \_\_\_\_\_

### 2. **FIRE FIGHTER:**

- ⌘ Inform the following parties:
  - ECO
  - Site manager and request help from landowner if needed.
  - Call Fire Brigade if necessary.
- ⌘ Organise employees to extinguish the fire and issue firefighting equipment and PPE.
- ⌘ Fight fire with fire beaters and extinguishers.
- ⌘ Only restart work once the fire has been snuffed.
- ⌘ Check that fire was properly snuffed and no glowing embers are left.
- ⌘ Determine loss and report to site manager.
- ⌘ Add incident to the A&I Register with photos as proof.
- ⌘ Only restart work when area was cleared by ECO/Site Manager.

- ⌘ ECO Cell No - \_\_\_\_\_
- ⌘ Site Manager Cell No - \_\_\_\_\_
- ⌘ Landowner Cell No - \_\_\_\_\_
- ⌘ Phillip-Nel Fire Station 012 358 1905

### 3. **SITE MANAGER:**

- ⌘ Inform landowner and request help if needed.
- ⌘ Evaluate loss and report to landowner.

SNAKE BITE	
<p><b>1. <u>OBSERVER:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Notify foreman and move victim away from danger.</li> <li>⌘ Identify snake if safe to do so.</li> <li>⌘ Foreman to calm victim and inform first aider.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ Foreman Cell No - _____</li> <li>⌘ First Aider Cell No - _____</li> </ul>
<p><b>2. <u>FIRST AIDER:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Calm victim, have the person lie down and remain as still as possible. Keep affected limb below the heart.</li> <li>⌘ Remove clothing around wound as well as restrictive items such as rings or shoes.</li> <li>⌘ Flush wound with plenty of water to wash away any remaining poison.</li> <li>⌘ Cover the wound with loose, sterile bandage.</li> <li>⌘ Do not cut, press or suck area.</li> <li>⌘ Keep airway open and do not give victim alcohol or other liquids to drink.</li> <li>⌘ Arrange for someone to call ahead informing the hospital of the snake bite victim on the way. Request ambulance if necessary.</li> <li>⌘ Transport victim to nearest medical facility.</li> <li>⌘ Inform the following parties: <ul style="list-style-type: none"> <li>• ECO</li> <li>• Site Manager</li> </ul> </li> <li>⌘ Only restart work once the area was declared safe by the ECO/Site Manager.</li> <li>⌘ Add incident to the A&amp;I Register.</li> </ul>	<ul style="list-style-type: none"> <li>⌘ First Aider Cell No - _____</li> <li>⌘ ECO Cell No - _____</li> <li>⌘ Site Manager Cell No _____</li> <li>⌘ Laudium Clinic 012 374 2399</li> <li>⌘ Ambulance Life Line Medical 012 332 0700</li> </ul>
<p><b>3. <u>SITE MANAGER:</u></b></p> <ul style="list-style-type: none"> <li>⌘ Inform landowner and request help if needed.</li> <li>⌘ Evaluate loss and report to landowner.</li> </ul>	

## 13. INVASIVE PLANT SPECIES MANAGEMENT

### 13.1 WHAT IS A PROBLEM PLANT?

According to the book, Problem Plants of South Africa (Bromilow 2001) a weed is a plant in the wrong place at the wrong time. Problem plants are described as vigorous growers that are easily adaptable and mostly exotic or foreign in origin. Weeds usually are pioneer plants that invade disturbed areas such as stockpile areas, overburden and topsoil stockpiles and firebreaks. Invasive plants are plants that have been imported and has the ability to invade the natural vegetation.

The National Environmental Management: Biodiversity Act, 2004 (Act No 10 of 2004) (NEMBA) came into effect in June 2004 in order to manage and conserve the South African biodiversity within the framework of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA). The Alien and Invader Species (AIS) regulations was subsequently published in terms of section 97(1) of NEMBA in August 2014 and amended in July 2016. The AIS regulations, 2014 grouped plants into four categories and prescribes the subsequent management of each category.

- Category 1a: Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited.
- Category 1b: Invasive species which must be controlled and wherever possible, removed and destroyed. Any form of trade or planting is strictly prohibited.
- Category 2: Invasive species, or species deemed to be potentially invasive that may be grown if a permit is obtained.
- Category 3: Invasive species which may remain in prescribed areas or provinces. Further planting, propagation or trade, is however prohibited.

In order to identify invasive plants that need to be controlled/eradicated from site, the plants specified in these groups must be used as a guideline.



## 13.2 WHAT TO DO WITH PROBLEM PLANTS?

Working for Water provides the site manager with an implementation tool to control problem species and keep the site free of invasive plants:

Step 1: Conduct Site Assessment;

Step 2: Set objectives based on resources available and priorities:

- Prioritize management of plants according to the categories stipulated in the AIS regulations.

Step 3: Develop and implement an action plan to achieve objectives:

- The plan must be long term and should include a clearing plan that includes follow up actions for rehabilitation of the cleared area.
- The site plan should include a map showing the areas invested with problem plants.
- Lighter invested areas should be cleared first to prevent the build-up of seed banks, while the control plan works progressively towards the areas with denser stands.
- Educate workers on the species that needs to be eradicated, as well as the specific method to be used.
- Conduct control of invasive plant species.
- Remove plant remains to a suitable disposal area.
- Prevent dispersal of seeds.
- Strive for collective management and planning with neighbors to prevent seed dispersal of problem plants across boundaries.

Step 4: Monitor performance and change actions if necessary

- Conduct monthly inspections to enable early detection of grow back.

## 13.3 CONTROL METHODS

The control methods to be implemented on site will depend on the specific problem plants that invaded the site. The best success is generally achieved through a combination of chemical and mechanical control methods with continuous follow-up actions. Site management must take care that the clearing methods used do not encourage further invasion through unnecessary disturbance of soil or naturally vegetated areas. The Department of Water and Sanitation's Working for Water

section provides guidelines to the preferred clearing methods for most problem plants. This information can be obtained from their website: <http://www.dwaf.gov.za/wfw/Control/>. The selection of appropriate methods of control shall be based on the species to be controlled, the size of the plants, the density of the stand, the accessibility of terrain and environmental safety.

The Department of Water and Sanitation proposes that the following methods of control for age or size target plants:

#### Seedlings

Hand pulling or hoeing:

- Hand pulling/hoeing should be carried out in sparse stands.
- Seedlings should be severed below the soil surface or removed from the soil. Soil disturbance should be minimized to reduce re-germination.
- Herbicides:
- Herbicides can be used on dense stands.

#### Saplings

Hand pulling or hoeing:

- Where appropriate saplings can be removed manually as described above.

Herbicides:

- Foliar sprays can be carried out depending on the density of the stand. Fan nozzles should be fitted for overall spraying and solid cone nozzles for individual plant treatment. Spraying should be restricted to plants waist high or lower. Ensure there is sufficient foliage to carry the herbicide to the root system.
- Basal stem treatments of suitable herbicides in diesel can be carried out to the bottom 250 mm of the stem. Applications should be by means of a low pressure, coarse droplet spray from a narrow angle solid cone nozzle.
- Cut stump treatments can be used where stems are cut as low as practical. Herbicides are applied in diesel or water as recommended for the herbicide. Applications in diesel should be to the whole stump and exposed roots and in water to the cut area as recommended on the label.
- The application of herbicides should only be sprayed/used on site by a registered pest control officer.

Mature Trees (trees above shoulder height or robust bushes 12 – 1 months or older)

Ring Barking:

- Bark must be removed from the bottom of the stem to a height of 0.75 – 1.0 m. All bark must be removed to below ground level for good results.
- Where clean de-barking is not possible due to crevices in the stem or where exposed roots are present, a combination of bark removal and basal stem treatment should be carried out.

Frilling or partial frilling:

- Cuts should be made through the bark into the sapwood by means of a light axe and a suitable herbicide must be applied into the cuts.

Basal stem treatments:

- Suitable herbicides should be applied in diesel to the base of the stem and to any exposed roots. Stems with a diameter up to 50 mm should be treated to a height of 250 mm and stems above 50 mm diameter to a height of 500 mm. This method is only suitable for stems up to 100 mm in diameter.

Cut stump treatment:

- Stumps should be cut as low as practical and the herbicide applied. Applications in diesel should be to the whole stump and exposed roots and in water to the cut area as recommended on the label.


When herbicides are chosen as the preferred control method the guidelines of Working for Water (DWS) as stipulated in the Policy on the Use of Herbicides for the Control of Alien Vegetation must be followed:


- Herbicides selected for control shall be registered for use on that species under the conditions specified.
- Protection of the environment is of prime importance. Riparian areas must be protected and only herbicides that are approved may be used. Washing of equipment or disposal of waste spray mixture is prohibited in or near water courses where contamination of water can occur.
- Empty herbicide containers must be disposed of as hazardous waste and may not be used for any other purpose.
- Equipment must be washed where there is no danger of contamination of a water source or natural vegetated area.
- Product and spray mixtures should be stored so that it is inaccessible to the public. Site management must ensure that the Safety Data Sheet of the product is available on site.

- The application of herbicides should only be sprayed/used on site by a registered pest control officer.


13.4 PROPOSED MANAGEMENT/CONTROL METHODS FOR MOST COMMON INVASIVE PLANT SPECIES



NB: The proposed control methods are only recommendations based on information available to the environmental consultant at the time. The environmental consultants employed at Greenmined environmental are not registered pest control operators (PCO) and in the circumstances the site should ensure that the expert advice and opinion of a registered PCO is sought prior to the commencement and implementation of control methods pertaining to invasive species.

Species	Photo	Herbicides	Eradication method
<p>Black locust Category 2</p>		<p><b>Foliar Spray:</b>  Confront 360 SL Plenum 160 ME</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul>


Species	Photo	Herbicides	Eradication method
			<p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>
<p>Bugweed Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Confront 360 SL Starane 200 EC Tomahawk 200 Roundup Max 680 WG Tumbleweed 240 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>





Species	Photo	Herbicides	Eradication method
<p>Castor-oil Plant</p> <p>Category 2</p>		<p><b>Cut Stump / Frill:</b></p> <p>Confront 360 SL Plenum 160 ME Chopper 100 SL Hatchet 100 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Fountain Grass</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Roundup</p>	<p><b>Herbicides</b></p> <ul style="list-style-type: none"> <li>■ The species can be controlled by the usual industrial herbicides used on road sides.</li> </ul>
<p>Gum Tree</p> <p>Category 2</p>		<p><b>Cut Stump:</b></p> <p>Plenum 160 ME (L7702)</p>	<p><b>Mechanical eradication</b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage</li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b>Herbicides</b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>




Species	Photo	Herbicides	Eradication method
<p>Inkberry Category 1</p>		<p><b>Cut Stump / Frill:</b></p> <p>Chopper 100 SL Hatchet 100 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Lantana Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Plenum 160 ME Roundup Max 680 WG Tumbleweed 240 SL Glyph 360 SL Roundup Turbo 450 SL Hatchet 100 SL Mamba Max 480 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Large Cocklebur</p> <p>Kankerroos</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Roundup</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Large Thorn-Apple</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Roundup</p> <p><i>These plants are annual and die once seeds have ripened. Still it is very important to remove the dead plants as leaving them will result in vigorous grow-back the following season.</i></p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>




Species	Photo	Herbicides	Eradication method
<p>Mexican Poppy</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Access 240 SL</p> <p><i>These plants are annual and die once seeds have ripened. Still it is very important to remove the dead plants as leaving them will result in vigorous grow-back the following season.</i></p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Privet Category 3</p>		<p><b>Cut Stump:</b> Chopper 100SL (L3444) Hatchet 100SL (L7409)</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage</li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Redeye / Rooikrans</p> <p>Category 2</p>		<p><b>Foliar Spray (Seedlings):</b></p> <p>Confront 360 SL Starane 200 EC Tomahawk 200 Ranger 240 EC Garlon 4 EC</p> <p><b>Cut Stump / Frill (Mature Plant):</b></p> <p>Lumberjack 360 SL Timbrel SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>

Species	Photo	Herbicides	Eradication method
<p>Red Sesbania</p> <p>Category 1</p>		<p><b>Foliar Spray (Seedlings &lt;1m):</b></p> <p>Roundup 360 SL Roundup Max 680 WG Glyph 360 SL Mamba 360 SL Mamba Max 480 SL Springbok 360</p> <p><b>Foliar Spray (Seedlings 1 – 2 m):</b></p> <p>Roundup Max 680 WG Glyph 360 SL Mamba 360 SL Roundup 360 SL Garlon 4 EC</p> <p><b>Foliar Spray (Adult):</b></p> <p>Roundup Max 680 WG Chopper 100 SL Hatchet 100 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage (before seed ripens)</li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>




Species	Photo	Herbicides	Eradication method
<p>Spear Thistle / Scotch Thistle</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Confront 360 SL Plenum 160 ME Access 240 SL</p> <p><i>These plants are annual and die once seeds have ripened. Still it is very important to remove the dead plants as leaving them will result in vigorous grow-back the following season.</i></p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>


Species	Photo	Herbicides	Eradication method
<p>Syringa Category 3</p>		<p><b>Cut stump / Frill:</b></p> <p>Confront 360 SL Plenum 160 ME Chopper 100 SL Hatchet 100 SL Access 240 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage</li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>

Species	Photo	Herbicides	Eradication method
<p>Thorned Bitter Apple</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Roundup Access 240 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>

Species	Photo	Herbicides	Eradication method
<p>Wattle species</p> <p>Category 2</p>		<p>Seedlings – 1m</p> <p><b>Foliar Spray:</b></p> <p>Confront 360 LS                      Starane 200 EC                      Tomahawk 200 EC                      Volvoxypyr 200 EC                      Roundup 360 SL                      RoundUp Turbo 450 SL</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants:                             <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>



Species	Photo	Herbicides	Eradication method
<p>Wild Tobacco</p> <p>Category 1</p>		<p><b>Foliar Spray:</b></p> <p>Access 240 SL 2,4,5-trichlorophenoxyacetic acid (2,4,5-T)</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p style="text-align: center;"><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>

Species	Photo	Herbicides	Eradication method
<p>Yellow Firethorn</p> <p>Category 3</p>		<p><b>Cut Stump / Frill:</b></p> <p>Access</p>	<p><b><u>Mechanical eradication</u></b></p> <ul style="list-style-type: none"> <li>■ Pull out during seedlings stage <b>(before seed ripens)</b></li> <li>■ Disposal of eradicated plants: <ul style="list-style-type: none"> <li>▪ Dispose with general waste,</li> <li>▪ Use in areas prone to erosions,</li> <li>▪ Donate wood to community.</li> </ul> </li> <li>■ If seeds have ripened, pull out plants while making sure seeds do not fall out.</li> <li>■ Place plants in a black plastic bag and dispose of at an incineration facility to be destroyed.</li> <li>■ File proof of delivery to the facility.</li> <li>■ Alternatively the removed plants can be buried in a trench of at least 1m deep. Grow-back will need to be controlled in this area, preferably with herbicides.</li> </ul> <p><b><u>Herbicides</u></b></p> <ul style="list-style-type: none"> <li>■ Apply as specified by supplier</li> </ul>

Rehabilitation of Reclaimed Area

Denuded area where eradication of weeds was done needs to be rehabilitated to ensure soil conservation and prevent erosion of topsoil. Denuded areas also have a much higher potential of re-infestation than areas that has been vegetated with indigenous plant species.

It is proposed that a seed mix of the following replacement plants be used to fill areas where the weeds / invader plants were eradicated from:

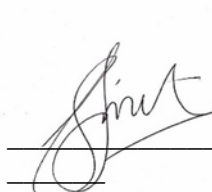
<b>SUMMER SEED MIX</b>		
<b>Grass species</b>	<b>Common Name</b>	<b>Application Rate (kg/ha)</b>
<i>Eragrostis tef</i>	Teff	5
<i>Eragrostis curvula</i>	Weeping Love Grass	10
<i>Chloris gayana</i>	Rhodes Grass	10
<i>Cenchrus ciliaris</i>	Blue Buffalo Grass	2
<i>Cynodon dactylon</i>	Couch Grass	10

<b>WINTER SEED MIX</b>		
<b>Grass species</b>	<b>Common Name</b>	<b>Application Rate (kg/ha)</b>
<i>Lolium multiflorum</i>	Italian Rue Grass	10
<i>Eragrostis curvula</i>	Weeping Love Grass	10
<i>Chloris gayana</i>	Rhodes Grass	5
<i>Cenchrus ciliaris</i>	Blue Buffalo Grass	2
<i>Cynodon dactylon</i>	Couch Grass	3

**UNDERTAKING**

The EAP herewith confirms

- a) the correctness of the information provided in the reports
- b) the inclusion of comments and inputs from stakeholders and I&AP's
- c) the inclusion of inputs and recommendations from the specialist reports where relevant, and
- d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected  in



Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

October 2022

Date:

**-END-**