VEGETATION REHABILITATION PLAN

Proposed Etna – Trade Route 88kV Powerline and Switching Station, Johannesburg, Gauteng Province

June 2018

Prepared for:

Nsovo Environmental Consulting

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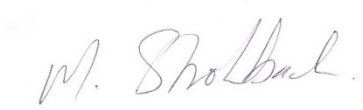
DECLARATION

I, **Marianne Strohbach**, declare that -

- I act as the independent specialist;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the National Environmental Management Act, 1998 (Act No. 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in Regulation 8;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- All the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Marianne Strohbach *Pr. Sci. Nat.* (400079/10 Botany and Ecology)

21 June 2018

Date

Indemnity

This report is based on information provided by the Biodiversity and Wetland Specialist Reports prepared for this project. The findings, results, observations, conclusions and recommendations given in this report are based on the author's best scientific and professional knowledge as well as available information at the time of study. Therefore, the author reserves the right to modify aspects of the report including the recommendations if and when new information may become available from ongoing research or further work in this field, or pertaining to this investigation.

Although the author exercises due care and diligence in rendering services and preparing documents, she accepts no liability, and the client, by receiving this document, indemnifies the author against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with services rendered, directly or indirectly by the author and by the use of this document.

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1 INTRODUCTION

Eskom plant the upgrade of the 88kV powerline (built at 132kV specification) that will connect the existing Etna, Lehae and the Trade - Route substation. Specialist studies for this upgrade along the route were undertaken in 2016. Limosella Consulting was appointed to undertake a wetland and/or riparian delineation and functional assessment, whilst Bathusi Environmental Consulting did the biodiversity assessment. One of the recommendations of the biodiversity assessments was that a pre-construction walk-through be conducted of areas indicated by GDARD as possible habitat for red-listed plant species. Further, at the request of the responsible authorities, a vegetation rehabilitation plan was to be drafted for inclusion in the overall EMPr.

The EMPr sections outlined below, to be included in the overall EMPr, are based on information extracted from the relevant Wetland Delineation Report, the Wetland Rehabilitation Report, the Biodiversity Report as well the Gauteng C-Plan version 3.3.

2 DETAILS AND EXPERTISE OF THE ECOLOGIST

Nsovo has been appointed by Eskom as the independent Environmental Assessment Practitioner (EAP) for the proposed project and meets the general requirements as stipulated in Regulations 13 (3) of the NEMA EIA 2014 Regulation as amended. Nsovo appointed an independent ecological specialist to compile the vegetation rehabilitation plan.

Table 1 below provides the details of the Ecological Specialist and relevant experience.

Table 1: Details of the Ecological Specialist compiling the Rehabilitation Plan

Name of Specialist	Marianne Strohbach
Professional Registration	South African Council for Natural Scientific Professions (SACNASP) Registered for Ecology and Botany, Reg Nr.: 400079/10
Postal Address	11 Rietvlei 751 Piering Ave Elarduspark 0181
Telephone Number	079 963 4806
Email	str.marianne@gmail.com
Qualifications & Experience	M.Sc. Botany 25 years of experience
Project Related Expertise	In terms of project related expertise, the Ecological Specialist has worked on the following projects:

	• EIA ecological survey for the proposed Ngqeleni Rural Electrification Project, Eastern Cape. • EIA ecological survey for the proposed Teebus Powerline, Eastern Cape. • Plant Search and Rescue for the Viljoenskroon-Vierfontein Powerline Upgrade, Free State. • Rehabilitation Plans for !Khi and !KaXu topsoil stockpiles. • EIA ecological surveys, pre-construction walkthroughs, rehabilitation plans for 56 renewable energy facilities and their respective grid connections (Wind, PV, and Thermal Solar) • Plant Search and Rescue and Vegetation Rehabilitation Plans for mines, including South 32 Wolvekrans and Elandspruit, Mpumalanga and Bushveld Chrome, Limpopo

3 APPLICABLE LEGISLATION

This list is not intended as an exhaustive analysis of the applicable environmental legislations but provides a guideline to the relevant aspects of each Act.

Table 2: **Legislation pertaining to the proposed project**

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998, (Act No. 107 of 1998)	The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), The principles set out in the National Environmental Management Act, 1998 (Act No. 107 of 1998), hereafter, referred to as NEMA, apply to all listed projects. Construction and operation have to be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.
Biodiversity	National Environmental Management:	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to

Aspect	Relevant Legislation	Brief Description
	Biodiversity Act, 2004 (Act No. 10 of 2004)	provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.
	NEMBA: Alien and Invasive Species Regulations and Lists, 2014 (GN R599 in GG 37886 of 1 August 2014, Lists updated 2016)	The purpose of the regulations is to curtail the unabated spread of alien invasive species in South African Environments, by listing the most threatening invasive species according to their invasive status and need to control and/or eradicate. It applies to any person or organisation that is responsible for managing open grounds, or portions thereof, or the sale, cultivation or distribution of exotic plants.
Biodiversity contd.	Gauteng Provincial Legislation	• Nature Conservation Ordinance 12 of 1983 as amended by the Gauteng General Law Amendment Act 4 of 2005 • Gauteng Department of Agriculture and Rural Development (GDARD) Requirements for Biodiversity Assessments Version 3, March 2014 • Red List Plant Species Guidelines Revision August 2017 The above legislation and guidelines aim to facilitate the conservation of Protected and Red List Plant Species of Gauteng and are to be used by any person or organisation that is responsible for managing, or whose actions affect, areas in Gauteng where populations of Protected and/or Red List Plant Species grow.
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA)	The Act aims to provide for control over the utilization of natural agricultural resources in order to promote the conservation of the soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied in order to achieve the objectives of the Act. This Section must be used as complementary to the NEMBA Alien and Invasive Species Regulations.

Aspect	Relevant Legislation	Brief Description
Water	National Water Act, 1998 (Act 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use[1]. The preamble to the Act recognizes that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users.

3.1 METHOD STATEMENTS FOR THE ACTIVITIES TO BE CARRIED OUT

Method Statements (MS) must be prepared and signed by Eskom's Project Manager or Engineer, ECO and the Contractor prior to commencement of activities on site and this include but not limited to the following:

- Vegetation clearing;
- Fauna and flora management;
- Site Rehabilitation;
- Alien plants removal and use of herbicides and pesticides.

This list has not exhausted all the activities/aspects that may require MS prior to commencement of the work. The Environmental Control Officer (ECO) may require more MSs to be submitted as the project progresses.

4 DESCRIPTION OF MITIGATION MEASURES

This section serves to prescribe mitigation measures related to the search and rescue of protected and/or threatened plant species that may be present within the servitude of the powerline, as well as the rehabilitation of all areas affected by the upgrading of the powerline.

The Biodiversity report identified several habitats and defined their sensitivities as follows:

- Deteriorated Grassland (Medium-low Sensitivity);
- Natural/ Rocky Grassland Matrix (High Sensitivity);
- Ridges/ Rocky Grassland Matrix (High Sensitivity);
- Wetland Habitat (Medium-high Sensitivity);
- Transformed Areas (Low Sensitivity).

The mitigation actions relevant to this report will thus require the following:

i. Pre-construction walk-through during the growing season (preferably between March and early June, but possible from December to early June) in all High and Medium-high Sensitivity sections of the servitude. This will be mainly between Etna and Lehae substations, and the wetland areas closer to Etna substation.

ii. Possible Plant Search and Rescue should any protected or threatened plant species be located during the above walkthrough

iii. Post-construction vegetation rehabilitation of the different areas. Due to current conditions on the ground, as gleaned from the relevant reports, rehabilitation efforts will differ and will be divided into Natural/Ridges/Rocky Grassland Matrix, Wetland habitats, Deteriorated Grasslands and Transformed areas.

iv. Post-construction and operational phase alien invasive control measures along the entire servitude

5 PRE- CONSTRUCTION MANAGEMENT PROGRAMME

5.1 PRE-CONSTRUCTION FLORISTIC WALKTHROUGH SURVEY

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
To detect the possible presence of protected and/or threatened species that may be affected by the dismantling of the existing and construction of the new powerline.	All areas designated as High Sensitivity (between Etna and Lehae Substations) and Medium-High Sensitivity (wetland-vegetation closer to Trade-Route Substation shall be investigated as follows: • By a suitably qualified botanical specialist, on foot • During the growing season, preferably between March and early June • Map areas of occurrence or individual plants by GPS • Record the number of individuals per species detected • Take or provide a representative photograph of each species to include in an identification guide to be used on site • Assist with a preparation of a Method Statement for the relocation of such species where applicable, or other mitigation measures deemed necessary to prevent the reduction of individuals of affected species • Specific species to look out for (possible habitat identified by GDARD): o *Cineraria austrotransvaalensis* • Protected species recorded during the biodiversity survey in the servitude, and which may be affected by the construction activities include: o *Boophone disticha* o *Crinum graminicola* o *Gladiolus* species	• Walk-through survey report, including GPS localities of species of concern • Photographic guide of species of conservation concern	Eskom Qualified Botanist	Prior to commencement of construction activities

5.2 SEARCH AND RESCUE OF PROTECTED AND THREATENED PLANT SPECIES

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To conserve protected and threatened species • To minimise loss of plant species of conservation concern	Following the completion of the walk-through survey, the following needs to be undertaken: • Application for all the necessary plant removal /relocation permits from the responsible authorities. • Suitable safe final receiving (similar habitat) or temporary nursery areas should be identified (GPS position recorded) prior to search and rescue commencing. o If possible, plants should be replanted into a final position immediately, and establishment monitored over at least one year o Record how many plants are re-planted into each locality for monitoring purposes • Search and rescue of all identified species of conservation concern that will be disturbed should be undertaken. • Search and rescue should take place in late autumn, during onset of senescence (i.e. no earlier than mid-May, or at the onset of the growing season (after first rains in October, if plants are visible, taking care to remove the plant with the soil around all roots entire intact). • The area/nursery where plants are stored (if applicable) shall be kept free of weeds • Plants stored in the designated area/nursery shall be protected from rodents, excessive sun and wind, and inspected regularly until being planted for pathogens and pests, and then treated accordingly	• Permits • Locality of final planting areas and/or temporary nursery facilities • No loss of protected or threatened plants • Successful establishment and continued persistence of all relocated plants • ECO to control	Eskom Contractor	Prior to commencement of construction activities Six to eight months after planting, or the nearest date falling within the growing season (after six months)

5.3 PLANNING FOR VEGETATION REHABILITATION

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To ensure that Vegetation Rehabilitation occurs during the optimal season, and is aligned with construction progress • To ensure revegetation occurs as soon as possible after construction	Rehabilitation work must be planned in conjunction with the timing of various components of the construction process. Thus for every construction section where rehabilitation must be done (temporary lay-down and construction areas, pylon positions, temporary access tracks), there must be an operational outline on: • What needs to happen there – Plant Search and Rescue, topsoil salvage, final landscaping, removal of foreign objects, etc. • Where excavated topsoils and subsoils will be stored to minimise the construction footprint and impacts on natural vegetation • what needs to be mitigated with the revegetation – including storm water- and erosion management o how will this intervention be done (method statements including schedule of work)	• Method Statements for revegetation • Incorporation of rehabilitation into overall construction schedule • ECO to control	Eskom Contractor	Prior to commencement of construction activities

6 CONSTRUCTION /POST-CONSTRUCTION VEGETATION REHABILITATION

6.1 SENSITIVE ECOLOGY

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
To ensure that minimal disturbance occurs in sensitive areas	The proposed development will encroach on sensitive environments including Critical Biodiversity Areas (CBA) with primary vegetation. • Construction may only commence after pre-construction search and rescue operations (if deemed necessary from the pre-construction walkthrough survey) have been completed. • Where possible construction in high sensitive areas must take place during the dry season (May to November) to minimise impacts on bulbs and annuals. • Ensure that lay-down and other temporary infrastructure is within low sensitivity areas, preferably previously transformed areas. • Creation of new access tracks should be minimised in all areas of natural vegetation. • Point out and/or demarcate all ecologically "sensitive" areas to the contractors (e.g. red data habitats & species, water courses, sensitive soils, steeper slopes and areas susceptible to erosion). • Demarcate and create a DWS approved buffer for the area near the wetlands and consider it a no-go area. • Ensure that 'No-Go' areas are clearly demarcated and/or fenced before construction starts. Barriers must be maintained in good order throughout the course of the construction.	• Observation • ECO to monitor • Site plan • No alien species along servitude • Minimal clearing in sensitive habitats • No unjustified tracks, excavations or other damage to sensitive habitats	Eskom Contractor	Prior to construction During construction

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
	• Construction activities should be restricted to the immediate footprint of the infrastructure to avoid any additional disturbance impacts on habitats in the broader area. • Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of Red Data species. • Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum. • Rehabilitate disturbances as soon as possible. • Rehabilitated areas must be monitored to ensure the establishment of perennial vegetation on such areas. • Remove and control all alien plant species that may appear during construction phase.			

6.2 VEGETATION REHABILITATION: GENERAL PROCEDURES

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To re-establish a perennial herb cover with a density of at least 70% canopy cover within one year of construction along the entire powerline servitude • To recreate a non-invasive, near-natural vegetation	• All seed used for re-vegetation should be applied as a hydroseeding mixture • Seed mixtures may not contain any species that is either known to be invasive, not indigenous to the area or a known indicator of degraded areas o If possible, the final seed-mixture proposed by a contractor must be approved by the ecologist	• Successful completion of the contract with all affected landowners signing the release form within twelve months after	Eskom Contractor	On completion of construction Quarterly inspections (including dry season) and monitoring of the site by the ECO or personnel designated to the

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
cover that will facilitate the establishment of desirable and/or indigenous species • To minimise unfavourable runoff conditions • To minimise erosion of soil from site during and after construction • To minimise and mitigate unfavourable alteration to sensitive habitats • No accelerated overland flow related surface erosion due to a loss of vegetation cover • No reduction in the surface area or general nature and functionality of wetlands as a result of the establishment of infrastructure on the project areas and beyond its boundaries • A clear reduction of invasive plants on the project area and replacement thereof by indigenous vegetation according to a pre-determined desirable end state	• Hydroseeding slurry should be applied in late spring (before or after first rains September/October) or late summer (March) • **Prior to hydroseeding ensure**: ○ subsoil shall be shaped and trimmed to blend in with the surrounding landscape ○ ground surface or shaped subsoil shall be ripped or scarified with a mechanical ripper or by hand to a depth of 15 – 20 cm, ○ compacted soil shall be ripped to a depth greater than 25 cm and the trimmed by hand to prevent re-compacting the soil ○ any rubbish, concrete remnants, steel remnants or other objects introduced to the site during the construction process shall be cleared before ripping, or shaping and trimming of any landscapes to be rehabilitated takes place ○ topsoils shall be spread evenly over the ripped or trimmed surface, if possible not deeper than the topsoil originally removed ○ the final prepared surface shall not be smooth but furrowed to follow the natural contours of the land ○ the final prepared surface shall be free of any pollution or any kind of contamination ○ care shall be taken to prevent the compaction of topsoil ○ where applicable, the final prepared surface will also contain scattered rocks and/or logs to mimic the natural condition of the original habitat or	completion of the project • Disturbances to revegetated areas avoided or kept to an absolute minimum and only where it cannot be avoided • Near-Natural configuration of habitats retained and/or recreated, thus ensuring a stable substrate and general environment for species to be able to become established and persist • The structural integrity of natural plant communities is recreated or maintained • Indigenous biodiversity continually improves		rehabilitation process until the desirable perennial plant cover has been established

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• Minimize claims and litigation from landowners and/or authorities	area and to aid in soil stabilisation and erosion control ○ ensure all alien invasive plans are removed, including regenerative material ○ measures shall be taken to protect all areas susceptible to erosion by installing temporary and/or permanent erosion control structures as soon as possible **Traffic on revegetated/hydroseeded areas:** • Designated tracks shall be created for pedestrian of vehicle traffic where and if necessary • Disturbance of vegetation and topsoil must be kept to a practical minimum, no unauthorised off road driving will be allowed **Weeding**: • It can be anticipated that invasive species and weeds will germinate readily on rehabilitated soils • These need to be hand-pulled before they are fully established and/or reaching a mature stage where they can regenerate • Where invasive shrubs or trees re-grow, they will have to be eradicated according to the Invasive Plant Management Plan	to gradually match a desirable species mixture typical for the area • This end state, if healthy, will be dynamic and able to recover by itself after occasional natural disturbances without returning to a degraded state • No new establishment of alien invasive plants • ECO to monitor		

6.3 VEGETATION REHABILITATION: HYDROSEEDING MIXTURE FOR NATURAL/RIDGES/ROCKY GRASSLAND MATRIX

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To re-establish a perennial herb cover with a density of at least 70% canopy cover within one year of construction along the entire powerline servitude • To recreate a non-invasive, near-natural vegetation cover that will facilitate the establishment of desirable and/or indigenous species • To ensure seed mixtures used do not contain any species that is either known to be invasive, not indigenous to the area, or a known indicator of degraded areas	• Seed stocks for rehabilitation can be sourced commercially and should include any or a mixture of following species: o *Andropogon schirensis* o *Anthephora pubescens* o *Brachiaria serrata* o *Digitaria eriantha* o *Diheteropogon amplectens* o *Elionurus muticus* o *Eragrostis curvula* o *Eragrostis racemosa* o *Heteropogon contortus* o *Melinis nerviglumis* o *Setaria sphacelata* o *Sporobolus africanus* o *Sporobolus ioclados* o *Sporobolus pyramidalis* o *Themeda triandra* o *Trachypogon spicatus* o *Tristachya leucothrix* • A suitable mixture of indigenous annual and/or pioneer grasses may be added to boost initial cover	• Appropriate Method Statement by contractor • Final Seed Mixture approved by ecologist • No new establishment of invasive plants • ECO to monitor	Eskom Contractor	On completion of construction Quarterly inspections and monitoring of the site by the ECO or personnel designated to the rehabilitation process until the desirable perennial plant cover has been established

6.4 VEGETATION REHABILITATION: HYDROSEEDING MIXTURE FOR WETLAND HABITATS

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency

• To re-establish a perennial herb cover with a density of at least 70% canopy cover within one year of construction along the entire powerline servitude
• To recreate a non-invasive, near-natural vegetation cover that will facilitate the establishment of desirable and/or indigenous species
• To ensure seed mixtures used do not contain any species that is either known to be invasive, not indigenous to the area, or a known indicator of degraded areas
	This must be read in conjunction with the wetland rehabilitation plan
	• Where possible, remove sods of vegetation (the upper 15-20 cm of vegetated soil removed in blocks) and store and replant according to the wetland rehabilitation plan
	  ○ Ensure all invasive and exotic species are removed from these sods after replanting
	• Seed stocks for rehabilitation can be sourced commercially and should include any or a mixture of following species:
	  ○ *Agrostis lachnantha*
	  ○ *Andropogon appendiculatus*
	  ○ *Andropogon eucomus*
	  ○ *Cynodon dactylon*
	  ○ *Digitaria eriantha*
	  ○ *Eragrostis curvula*
	  ○ *Eragrostis plana*
	  ○ *Eragrostis planiculmis*
	  ○ *Setaria pallide-fusca*
	  ○ *Setaria sphacelata*
	  ○ *Sporobolus africanus*
	  ○ *Sporobolus pyramidalis*
		• Appropriate Method Statement by contractor
		• No new establishment of invasive plants
		• Corresponds to Wetlands Rehabilitation Plan
		• ECO to monitor
			Eskom
			Contractor
				On completion of construction
				Quarterly inspections and monitoring of the site by the ECO or personnel designated to the rehabilitation process until the desirable perennial plant cover has been established

6.5 VEGETATION REHABILITATION: HYDROSEEDING MIXTURE FOR DETERIORATED GRASSLANDS

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To re-establish a perennial herb cover with a density of at least 70% canopy cover within one year of construction along the entire powerline servitude • To recreate a non-invasive, near-natural vegetation cover that will facilitate the establishment of desirable and/or indigenous species • To ensure seed mixtures used do not contain any species that is either known to be invasive, not indigenous to the area, or a known indicator of degraded areas	○ Seed stocks for rehabilitation can be sourced commercially and should include any or a mixture of following species: ○ *Andropogon schirensis* ○ *Brachiaria serrata* ○ *Cynodon dactylon* ○ *Digitaria eriantha* ○ *Diheteropogon amplectens* ○ *Eragrostis curvula* ○ *Heteropogon contortus* ○ *Panicum coloratum* ○ *Schizachyrium sanguineum* ○ *Setaria sphacelata* ○ *Sporobolus africanus* ○ *Themeda triandra* ○ *Trachypogon spicatus* ○ *Triraphis andropogonoides* ○ *Tristachya leucothrix* • A suitable mixture of indigenous annual and/or pioneer grasses may be added to boost initial cover	• Appropriate Method Statement by contractor • No new establishment of invasive plants • ECO to monitor	Eskom Contractor	On completion of construction Quarterly inspections and monitoring of the site by the ECO or personnel designated to the rehabilitation process until the desirable perennial plant cover has been established

6.6 VEGETATION REHABILITATION: HYDROSEEDING MIXTURE FOR TRANSFORMED AREAS

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• To re-establish a perennial herb cover with a density of at least 70% canopy cover within one year of construction along the entire powerline servitude • To recreate a non-invasive, near-natural vegetation cover that will facilitate the establishment of desirable and/or indigenous species • To ensure seed mixtures used do not contain any species that is either known to be invasive, not indigenous to the area, or a known indicator of degraded areas	Consult land-owner(s) where applicable to determine nature of vegetative cover • For open municipal areas not part of private land, following species can be used in the hydroseeding mixture: o *Choris gayana* o *Cynodon dactylon* o *Digitaria eriantha* o *Eragrostis curvula* o *Setaria sphacelata* o *Sporobolus africanus* • A suitable mixture of indigenous annual and/or pioneer grasses may be added to boost initial cover	• Appropriate Method Statement by contractor • No new establishment of invasive plants • ECO to monitor	Eskom Contractor	On completion of construction Quarterly inspections and monitoring of the site by the ECO or personnel designated to the rehabilitation process until the desirable perennial plant cover has been established

7 OPERATIONAL PHASE

7.1 INVASIVE PLANT CONTROL

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
• Manage and reduce the impact of invasive vegetation • To significantly reduce the presence of weeds and eradicate alien invasive species • To avoid the introduction of additional alien invasive plants to the project control area • To avoid further distribution and thickening of existing alien plants on the project area • To complement existing alien plant eradication programs in gradually causing a significant reduction of alien plant species throughout the project control area	• Compile a detailed invasive plant management and monitoring programme as guideline for the entire construction, operational and decommissioning phase after the presence and potential risk of invasive species has been verified during an ecological footprint investigation ○ This plan must contain Working for Water-accepted species-specific eradication methods ○ Invasive species recorded during the original biodiversity survey (to be updated on a regular basis) that need to be controlled includes, but is not restricted to the following: ▪ *Acacia mearnsii* ▪ *Acacia podalyriifolia* ▪ *Argemone ochroleuca* ▪ *Arundo donax* ▪ *Canna indica* ▪ *Datura stramonium* ▪ *Eucalyptus species* ▪ *Melia azedarach* ▪ *Oenothera rosea* ▪ *Oenothera stricta* ▪ *Physalis viscosa* ▪ *Phytolacca octandra* ▪ *Populus x canescens* ▪ *Ricinus communis* ▪ *Senecio inornatus* (indigenous)	• Observation • Alien Management Plan in Place and updated at least every second year • ECO to monitor • Visible reduction of number and cover of alien invasive plants within the project area. • No establishment of additional alien invasive species.	Eskom Contractor	Prior to construction During construction Post Construction Annually during operational phase, during the summer growing season.

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
	▪ *Stoebe plumosa* (indigenous) ▪ *Solanum mauritianum* ▪ *Solanum sisymbriifolium* ▪ *Tagetes minuta* ▪ *Verbena bonariensis* o It must also provide for a continuous monitoring programme to detect new infestations • Avoid creating conditions in which invasive plants may become established: o Keep disturbance of indigenous vegetation to a minimum o Rehabilitate disturbed areas as quickly as possible o Shred all non-seeding material from cleared invasive shrubs and other vegetation, This can be used as mulch as part of soil erosion or dust control o Do not import soil from areas with alien plants • Eradicate all invasive plants that occur within the powerline's temporary and permanent footprint areas • Ensure that material from invasive plants that can regenerate – seeds, suckers, plant parts are adequately destroyed and not further distributed o Note that regenerative material of listed alien invasive species is classified as a hazardous material • Immediately control any alien plants that become newly established using suitable control measures Risks from alien invasives do not only arise from invasives present within the servitude area, but also from alien			

Objective	Mitigation / Management Action	Monitoring Criteria/ Performance Indicators	Responsible Agent	Monitoring Frequency
	invasives along the verges of the major transport routes, especially invasive grasses and smaller weeds. Similarly, invasives can be spread by construction processes to surrounding areas. To avoid the distribution of weeds and invasive plants, establish a routine amongst contractors/all staff to regularly check: • that clothing and shoes are free of mud and seeds • that foot wells inside vehicles and mats are cleared of weed seed • radiator and grill, along wheel trims, around wheels, mud flaps, undercarriage of vehicle or other moving machinery for mud and seed			