

**APPENDIX B**

**RE-VEGETATION AND REHABILITATION PLAN**

**FOR THE PROPOSED**

**ISUNDU 765/400 KV SUB-STATION AND  
TURN-IN TRANSMISSION LINES  
DEA EIA REF: 14/12/16/3/3/2/745**

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## 1. PURPOSE

The Revegetation and Rehabilitation Plan (RRP) addresses the need to mitigate significant impacts leading to disturbed vegetation, disturbed soil surfaces, and exposed soils prone to erosion and further degradation within the development footprint of the Isundu Sub Station. The plan overlaps to some degree with the Erosion and Soil Management Plan and the Plant Search and Rescue and Alien Invasive Management Plan, but for successful rehabilitation, it is imperative that this plan is at all times used in conjunction with the other plans.

The aims of the RRP are to provide:

- Protocols for the rehabilitation of vegetative cover across the project area.
- Tools for planning the rehabilitation work.
- Guidelines on implementation and post-implementation tasks.
- Criteria for evaluating rehabilitation success.

## 2. SCOPE

The RRP serves as a guideline to be applied by all contractors on the proposed Isundu Sub Station. This plan is a legal document that must be implemented to fulfil the requirements of the environmental authorisation. However, this management plan is an evolving guideline that needs to be updated or adapted as progress is made with the revegetation and rehabilitation of the project area, and successes and failures of procedures are identified.

The objective of revegetation and rehabilitation of the project area are:

- To preserve as best possible the natural habitats on site and to ensure ecosystem function in order to maintain an environment for species to be able to become established and persist.
- To preserve or re-create the structural integrity of natural plant communities.
- To actively aid the improvement of indigenous biodiversity within and around the site based on the condition of the site prior to construction commencing.
- To improve the ecosystem function of natural landscapes and their associated vegetation.

## 3. LEGISLATION AND STANDARDS

There are a host of legal requirements (National, Provincial and Local Government spheres) to which the project proponent must adhere for the proposed development. Fundamentally, the proponent is required to include and integrate environmental principles and values into all planning and implementation procedures taken for development purposes.

Underlying the reasoning above is the Constitutional right that people have to environmental protection as set out in the Bill of Rights in the Constitution (Section 24). These rights have now been interpreted and included into the National Environmental Management Act, 1998 (Act 107 of 1998), which, together with other national and provincial legislation, governs the way environmental principles are incorporated into any form of development.

Relevant legislation pertaining to the rehabilitation and re-vegetation of the site are described hereunder.

### **3.1 National Environmental Management Act, 1998 (Act 107 of 1998)**

The National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) provides for the right to an environment that is not harmful to the health and well being of South African citizens. In addition, there is recognition that development must be socially, environmentally and economically sustainable, and that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied (Government Gazette, 1998).

### **3.2 Conservation of Agricultural Resources Act 43 of 1983**

The aim of the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (CARA) is to provide for control over the utilisation of the natural agricultural resources within South Africa and to promote the conservation of soil and water resources, indigenous vegetation and the control of invasive plants.

In terms of CARA, the landowner or land user is responsible for the maintenance of all soil conservation works located on his/her property. Added to this, the maintenance and improvement of the structure and function of wetlands furthers the aims of CARA.

### **3.3 Environment Conservation Act 73 of 1989**

The primary objective of the Environment Conservation Act, 1989 (Act 73 of 1989) (ECA) is to provide for the effective protection and controlled utilisation of the environment. In terms of Section 20 of the ECA, all wastes generated from the construction and operational phases of a development may only be disposed at licensed waste disposal sites.

Cognisance must also be taken of the relevant provincial legislation given that controlling authority and regulations pertaining to litter in terms of ECA (Sections 19, 19A and 24A) have been delegated to provinces.

### **3.4 National Forests Act, 1998 (Act 84 of 1998)**

#### **PROTECTED TREES (NATIONAL PROTECTION)**

In terms of the National Forests Act, 1998 (Act 84 of 1998), trees in natural forests or protected tree species (as listed in Government Gazette Notice 1012 of 27 August 2004) may not be cut, disturbed, damaged, destroyed and their products may not be possessed, collected, removed, transported, exported, donated, purchased or sold, except under licence granted by the Department of Agriculture, Forestry and Fisheries (formerly the Department of Water Affairs and Forestry). Each application is evaluated on merit (including site visits) before a decision is taken whether or not to issue a licence (with or without conditions). Such decisions must be in line with national policy and guidelines.

#### **PROTECTED TREES (PROVINCIAL PROTECTION)**

Certain indigenous plant and animal species in KwaZulu-Natal are provided with special protection under KwaZulu-Natal nature conservation legislation and permits are required from Ezemvelo KZN Wildlife (EKZNW) for their removal, destruction or translocation.

### **3.5 Natal Nature Conservation Ordinance (Ordinance 15 of 1974)**

The main aim of the Natal Nature Conservation Ordinance (Ordinance 15 of 1974) is the protection of the natural resources of the province of KwaZulu-Natal. In particular, the Ordinance provides local conservation authorities with the power to enforce the protection of the province's resources through a permitting system, which is legally binding. Of particular relevance to the proposed construction of the Isundu Sub Station are the requirements for permits for the removal or destruction of protected indigenous amphibians, invertebrates or reptiles (Section 106 and Schedule 7 and 12a of the Ordinance), the removal or destruction of wild birds (Section 117 and Schedule 9 and 12a of the Ordinance) and the removal or destruction of protected plant species (Section 190 – 211 and Schedule 11, 12 and 12a of the Ordinance).

## **4. INTEGRATION WITH OTHER MANAGEMENT PLANS**

The most important aspect about any restoration or rehabilitation programme is that prior to the initiation of the program, the cause of transformation must be identified and first removed or mitigated. For this reason, it is imperative that this management plan is implemented in conjunction with other management plans, specifically focussing on erosion control, storm water management and the clearing of Invasive Alien Plant species.

## **5. UNDERSTANDING REHABILITATION AND RE-VEGETATION**

In order for any rehabilitation measures to be successful, the following items must be understood by the project proponent:

- Rehabilitation of a site requires a long-term commitment.
- Successful rehabilitation and re-vegetation requires practical and adaptive management.
- The rehabilitation and re-vegetation plan must have achievable goals and set timeframes for implementation.

Prior to vegetation rehabilitation, all stakeholders involved should be consulted to determine:

- What the rehabilitation is ultimately aiming to achieve.
- Who will take long-term ownership and, hence, responsibility for rehabilitation and its subsequent monitoring and management.

## **6. IMPLEMENTING REAHABILITATION AND RE-VEGATATION MEASURES**

### **6.1 Understanding the Site**

The first step in compiling and implementing a successful rehabilitation and re-vegetation plan is to understand the site in question and be aware of the interactions between the biophysical environment and infrastructure on site. In order to achieve this, a map should be created of the development area clearly showing the following:

- Areas of natural vegetation.
- Areas with large numbers of invasive plants.
- Infrastructure within the development area.

- Roads within the development area.
- Wetlands and riparian areas.
- Indigenous vegetation transformed through grazing.

## 6.2 Identification of Required Interventions

For each of the areas, the project proponent will have to decide what intervention will be necessary, desirable, and feasible to enable the development to occur as well as the long-term maintenance of infrastructure.

Thus, for every area, there must be an operational guideline, which will outline the following:

- What will happen in each area (no-go, some rehabilitation or extensive rehabilitation)?
- What needs to be mitigated (this includes stormwater and erosion management)?
- Which areas need priority intervention/mitigation?
- How will this mitigation/intervention be undertaken (method statements)?
- What is the realistic and desirable end state for each area following rehabilitation?

## 6.3 Setting realistic rehabilitation goals

Rehabilitation efforts typically aim at improving ecosystem function that consists of a series of processes, which can be evaluated against a desired outcome or reference state of the environment. Attainable goals of rehabilitation should be possible and viable for at least the following:

- Stabilisation of soils on site.
- Stabilisation of riparian areas on site (if applicable).
- Storm water reduction through management and wetland integrity.
- Clearing of invasive plants.

The degree of rehabilitation, which takes place on site, should be determined according to available project funding, personnel and project requirements. It is important to note that the rehabilitation measures should at least result in an improvement to the current conditions on site and the condition of the environment should never be worse off than prior to project implementation.

## 6.4 Management Actions Required

The plan must make provision for the rehabilitation of all areas of the site and the long term maintenance thereof. This plan must include the following actions, which should be updated based on site conditions and construction progress at the time:

- Bare soil should be kept to a minimum.
- Areas of bare sand on the site are particularly prone to wind erosion and, thus, precautions should be taken to avoid excessive disturbance. **Any cleared areas within the development footprint that are no longer or not required for construction or operational activities** should re-seeded with locally-sourced seed of suitable species. Brush-packing with locally cleared indigenous vegetation will allow local plant seed to enter the topsoil and allow the re-establishment/re-generation of vegetation on these bare areas, as well as limit erosion.
- The verges of hardened surfaces must be re-seeded with locally-sourced seed of suitable species to encourage vegetation re-generation and to limit erosion.

- ❑ Regular monitoring for erosion must be conducted across the site (particularly near hardened surfaces and infrastructure) to ensure that no erosion problems are occurring. Rectification of erosion problems should include brush-packing and re-vegetation as far as possible.
- ❑ Regular monitoring must be undertaken to ensure that alien plants do not establish or increase in numbers on site as a result of construction and operational disturbances.
- ❑ Final levels of all disturbed areas are, where feasible, to be consistent with the natural topography of the area.
- ❑ All drainage lines affected by construction are to be reinstated to approximate their original profile. Where this is not feasible due to technical constraints, the profile is to be agreed upon by the ECO and Principal Agent/Engineer.
- ❑ The concept of progressive reinstatement is fundamental to cost effective (both financial and environmental) rehabilitation of a site. This concept must be followed at all times.
- ❑ Where landscaping is utilised, the concept is to use and restore indigenous plants occurring within a 50 km radius to the site, in accordance with the concept of xeriscaping<sup>1</sup>.
- ❑ The area from which this material is taken must be approved by the ECO and must not result in environmental degradation.
- ❑ Only in exceptional circumstances will sourcing of plant material from further afield or grass seed mixes be considered and approved by the ECO.
- ❑ Reinstatement and rehabilitation are required for all areas disturbed by the project. This includes the entire development site, access roads, construction camps and servitudes for any services that may have been established.
- ❑ The contractor shall reinstate and rehabilitate all disturbed areas outside the demarcated working area at his own cost and to the satisfaction of the ECO.
- ❑ All areas disturbed by contract activities are to be revegetated to the satisfaction of the ECO.
- ❑ Methods of vegetation removal and re-establishment, where required, shall be specified by the ECO, in terms of:
  - Removal and storage of vegetation.
  - Source of vegetative material.
  - Ground preparation.
  - Weed removal.
  - Irrigation.
  - Planting times.
- ❑ Fertilisers and compost may not be used unless agreed to by the ECO.
- ❑ Where there is a possibility of livestock grazing a rehabilitated site, the livestock should, as far as is practicable, be excluded for the first three months after re-grassing.
- ❑ All sites disturbed by construction activities shall be monitored for colonisation by invasive alien plant species.
- ❑ The ECO shall identify those plants that require removal during both the construction and maintenance period, for the contractor's action.
- ❑ The ECO shall provide advice as to effective methods of removal and control of alien plant species.
- ❑ Existing alien plants are to be removed and their spread prevented.

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<sup>1</sup> Landscaping with vegetation that has a low water usage. The objective is to conserve as much water as possible, whilst still beautifying an area (i.e. conservation and aesthetics). The concept embraces utilising indigenous plants occurring within a 50 km radius of the development site.

Where watercourses or wetlands have been affected by construction activities:

- ❑ Ensure that watercourse banks are returned to their original profile.
- ❑ The surface reinstatement of wetland areas is to ensure that no depressions remain that could act as channels for preferential water flow (thereby affecting the hydrological regime of the wetland).
- ❑ The contractor shall preserve all riparian and wetland vegetation for use in rehabilitation of those environments. This vegetation is to be kept moist at all times. It is to be placed in the shade and covered with moistened hessian cloth until replanting, which is to be undertaken immediately after surface reinstatement is complete.
- ❑ Plants are to be, as nearly as possible, replanted in areas from which they were removed.

## **6.5 Timeframes and Monitoring**

The re-vegetation and rehabilitation of the site should take place as outlined below during the construction and operational phases of the proposed development:

- ❑ Progressive rehabilitation will occur during construction, as areas for the re-application of topsoil and plant rehabilitation become available.
- ❑ The initial revegetation period post construction is estimated to be over a period of 6 (minimum) to 12 months (maximum).
- ❑ The rehabilitation phase (including post seeding maintenance) should be at least 12 months (depending on time of seeding and rainfall) to ensure establishment of plants with a minimum 80% cover achieved (excluding alien plant species).
- ❑ If the plants have not established and the 80% is not achieved within the specified maintenance period, maintenance of these areas shall continue until at least 80% cover is achieved (excluding alien plant species).
- ❑ Additional seeding or planting may be necessary to achieve 80% cover.
- ❑ Any plants that die, during the maintenance period, shall be replaced by the contractor (at the contractor's cost).
- ❑ Succession of natural plant species should be encouraged on site.
- ❑ Monitoring of rehabilitation success and follow-up adaptive management, together with clearing of emerging invasives shall be carried out during the operational phase of the proposed development.

Throughout the lifecycle of the development, regular monitoring and adaptive management must be in place to detect any impacts to the environment caused by the proposed development and to remedy these as soon as detected. During the construction phase, the ECO and contractor will be responsible for initiating and maintaining a suitable monitoring system. Once the development is operational, the project proponent will have to identify a suitable entity that will be able to take over and maintain the monitoring cycle and initiate adaptive management as soon as it is required. Monitoring personnel must be adequately trained in identifying both the impacts and causes of the impacts observed on site.

## **7. CONCLUSION**

This RRP provides the contractor, the developer, and the ECO with guidelines on how to plan revegetation and rehabilitation work, and assists to understand the concepts behind successful rehabilitation. This plan must be implemented in conjunction with the approved EMPr as well as other management plans prepared for this proposed development. The exact details of the rehabilitation plan will depend on the extent of rehabilitation that will have to be undertaken, available funding, and the desired end state of the vegetation after rehabilitation.