

APPENDIX E

STORMWATER MANAGEMENT PLAN

FOR THE PROPOSED

**ISUNDU 765/400 KV SUB-STATION AND
TURN-IN TRANSMISSION LINES**

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TABLE OF CONTENTS

TABLE OF CONTENTS	ii
1. PURPOSE	1
2. SCOPE	1
3. LEGISLATION AND STANDARDS	1
3.1 National Environmental Management Act, 1998 (Act 107 of 1998)	2
3.2 Conservation of Agricultural Resources Act 43 of 1983.....	2
3.3 Natal Nature Conservation Ordinance (Ordinance 15 of 1974)	2
3.4 National Water Act, 1998 (Act 36 of 1998)	2
4. GENERAL GUIDELINES	3
4.1 The Planning Phase	3
4.2 The Construction Phase	4
4.3 The Operational Phase.....	4

1. PURPOSE

The Stormwater Management Plan (SMP) consists of a proposed Water Management Strategy, which offers mitigatory measures for the all development phases in order to minimise environmental impacts at the proposed Isundu Sub Station near Ashburton in KwaZulu-Natal, South Africa. The plan overlaps with the Erosion Management 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 and the approved EMPr.

2. SCOPE

This Stormwater Management Plan acts as a guideline to be applied by all contractors on the Isundu Sub Station project. This plan is a legally authorised document that must be implemented to fulfil the requirements of the 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 aim of the SMP is to:

- Provide tools for managing storm water flow.

The objectives of the stormwater management plan are to:

- Preserve as best possible the natural habitats on site and to minimise erosion.
- Preserve or recreate the structural integrity of natural plant communities.
- Allow for natural surface and sub-surface flows so as not to impede the movement of water along drainage lines.
- Include measures to promote the dissipation of storm water run-off.

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 control of stormwater on site is 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.

Thus, 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 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).

3.4 National Water Act, 1998 (Act 36 of 1998)

The National Water Act, 1998 (Act 36 of 1998) (NWA) has various sections of relevance to the proposed Isundu Sub Station. The Department of Water and Sanitation (DWS) is the responsible authority with regard to matters affecting water resource management, including water quality. Added to this, certain provincial and local authority powers also influence the regulation of water resources, including agriculture, the environment, health services, nature conservation, pollution control, regional planning and development, soil conservation and water and sanitation services.

The development or modification of wetlands in any form are governed by conditions provided in Chapter 4, Part 1 of the Act which sets out general principles for regulating water use.

In general, water use must be licensed unless:

- It is listed in Schedule 1 of the Act.
- Is an existing lawful water use.
- It is permissible under a general authorisation.
- A responsible authority waives the need for a license.

As development or modifications of watercourses or wetlands are not included in Schedule 1, a license is required to carry out any activity involving a wetland. It is recognised that wetlands are beneficial in terms of stream flow regulation, flood attenuation and water purification. Any construction activity that takes place within a wetland may be considered to be an activity that is potentially harmful to both aquatic and non-aquatic organisms, and, generally, reduces local water quality.

Part 4 of the NWA deals with pollution prevention, and, in particular, the situation where pollution of a water resource occurs or might occur as a result of activities on land. The person who owns, controls, occupies or uses the land in question is responsible for taking appropriate measures to prevent the pollution of water resources. If these measures are not taken, the catchment management agency concerned may, itself, do whatever is necessary to prevent the pollution or to remedy its effects, and to recover all reasonable costs from the persons responsible for the pollution. This section of the Act has bearing on the proposed Isundu Sub Station as it deals with pollution, which, in this case can include the spillage of chemicals and hydrocarbons during construction and operation, or soil erosion run-off, all of which may enter surface and ground water resources.

4. GENERAL GUIDELINES

The purpose of the Stormwater Management Plan is to specify general guidelines and principles for stormwater management within the Isundu Sub Station site so as to ensure that the increased volumes of stormwater from hard surfaces, roofs etc. do not result in ecological damage and erosion. Procedures for the management and control of stormwater are described in this plan. The plan is aligned with the EMPr and is, therefore, structured into a Planning, Construction and Operational section for ease of use.

4.1. The Planning Phase

Develop a Stormwater Management Plan (by a suitably qualified professional) to ensure that runoff from stormwater does not result in erosion at the collection areas and at the discharge points on site. In general, the following measures are recommended:

- ❑ All roads and parking areas must have stable surfaces and channels lined (where possible) with vegetation.
- ❑ Points of stormwater discharge must be stabilised and energy dissipation measures specified. Ecological methods (gabions, perforated mattresses, vegetation, etc) are preferred.
- ❑ All activities that affect surface drainage should be designed so as to ensure that stormwater runoff does not lead to excessive surface erosion problems on the site.
- ❑ Stormwater infiltration must be promoted through minimising hard paved areas and using porous paving surfaces wherever possible.
- ❑ Rainwater runoff from roofs and panels should be directed into natural areas rather than into stormwater drains wherever possible.
- ❑ Waste traps must be planned and included in the stormwater design to catch litter conveyed by surface runoff.
- ❑ The harvesting of stormwater for appropriate uses (such as cistern water or for irrigation) must be planned and incorporated into the design of the development where possible.

4.2. The Construction Phase

Implement and maintain a Stormwater Management Plan. In general, the following measures are recommended:

- Remove only vegetation essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
- Ensure that measures are in place to control the flow of excess water so that it does not impact on surface vegetation
- The accumulation of water on the surface should be prevented. The drainage of the surface should be done in such a way that stormwater will be led away quickly and efficiently without any erosion taking place.
- Runoff from roads must be managed to avoid erosion and pollution problems.
- Prevent stormwater or contaminated water directly entering any watercourse.
- Install waste traps to catch litter conveyed by surface runoff.
- Dissipate concentrated stormwater flows through energy dissipaters or vegetated areas.
- Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs.
- All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time.
- The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report.
- Implement topsoil and stormwater runoff control management measures to prevent the loss of topsoil.

4.3 The Operational Phase

Maintain the storm water management system for the facility on an ongoing basis and ensure that it is always in good working order. The following are of relevance:

- Ensure that measures are in place to control the flow of excess water so that it does not impact on surface vegetation.
- The accumulation of water on the surface should be prevented. The drainage of the surface should be done in such a way that stormwater will be led away quickly and efficiently without any erosion taking place.
- Runoff from roads must be managed to avoid erosion and pollution problems.
- Prevent stormwater or contaminated water directly entering any watercourse.
- All waste traps within the stormwater system must be emptied/cleaned regularly to ensure their efficient functioning.
- Dissipate concentrated stormwater flows through energy dissipaters or vegetated areas.
- Repair all erosion damage as soon as possible. Do not allow erosion to develop on a large scale before effecting repairs.