

**ENVIRONMENTAL MANAGEMENT PROGRAMME
FOR THE
MOOI-MGENI TRANSFER SCHEME – PHASE 2 (MMTS-2)**

**Environmental Management Plan (EMP)
Transplantation of the red data species found at Inchbrakie
Falls to Reekie Lynn Falls**

EMP

Document Revision 2

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PREFACE

This Environmental Management Plan (EMP) comprises two sections:

- Project Description and the Environmental Management Philosophy.
- EMP for Transplantation of the red data species found at Inchbrakie Falls to Reekie Lynn Falls.

Project Description and the Environmental Management Philosophy

This section is common to all EMPs, and provides the context and described the overall project description and the environmental management philosophy or approach that TCTA has adopted for to ensure efficient and effective environmental management during the implementation of this project. This section was approved as part of the EMP for the Spring Grove Dam Wall construction.

The RoD requires a suite of Construction EMPs to be prepared (3.2.4.1.1):

- a) Spring Grove Dam Impoundment.
- b) Spring Grove Dam Wall.
- c) Roads realignment and flood protection of affected sections of the Loteni Road (P27 – 30).
- d) The Quarry (if developed). *As commercial sources are to be utilised for quarry material, this EMP will not form part of the suite of EMPs, however a Traffic Management Plan has been prepared for the transport of aggregate, as per the requirements of DEA (letter, dated 3 May 2011).*
- e) Services relocation and decommissioning, especially the existing sewerage systems which will be inundated.
- f) Mooi River gauging weir.
- g) Mooi River fish barrier.
- h) Mpofana River gauging weir.
- i) Mpofana River outfall works and j) Pipeline from Spring Grove to the Mpofana River outfall works including the new break pressure tank on Gowrie Farm. *As the appeal from the Mziki Homeowners Association was upheld by the Minister of Justice and Constitutional Development, the water transfer scheme is subject to a new environmental authorisation process, therefore these EMPs will not form part of the suite of EMPs.*
- k) A detailed search, rescue and relocation plan for all red data, protected and endangered species, medicinal plants, heritage resources and graves.
- l) A detailed plan for the rehabilitation of off-site wetlands in the Mooi and Mgeni catchments to mitigate the loss in wetland function and habitat.
- m) A detailed plan of action to establish offset areas to compensate for the loss of biodiversity and habitat and for the management of such areas during the operational phase of the MMTS-2.
- n) A detailed transplantation plan for the red data species found at Inchbrakie Falls to the Reekie Lynn Falls.
- o) A detailed relocation plan for people living in the dam basin.

This document serves to provide an EMP for the transplantation of red data plants from Inchbrakie Falls to Reekie Lynn Falls

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1. ACTIVITIES FOR WHICH SEARCH AND RESCUE IS REQUIRED

1.1 Overview

There will be a range of activities during the construction of the Spring Grove Dam that have the potential to impact on red data, protected and endangered species, medicinal plants, heritage resources and graves. For the most part, activities that result in physical changes to the existing environment have such potential, including clearing of vegetation, excavations and during inundation. These activities are common to all of the facilities (permanent or temporary infrastructure) that will be established as part of the project.

When the dam is inundated to the full supply level, the Inchbrakie Falls (Figure 1) will be under water, therefore any plants of significance, i.e. i.e. conservation worthy flora which may include either protected, endangered or red data species, species must be transplanted before inundation. The Reekie Lynn Falls (Figure 2) has been identified in the EIA as an alternate site to which these plants must be translocated. Reekie Lynn Falls is about 20km upstream of the dam and is in close proximity to the Kamberg Nature Reserve.



Figure 1. Inchbrakie Falls



Figure 2. Reekie Lynn Falls

2. RECORD OF DECISION (ROD) CONDITIONS

Ref	Condition	Response
3.2.4.3	All EMPs contemplated in Clauses 3.2.4.1 must include but not be limited to:	See responses below
b	Rehabilitation measures for areas to be disturbed during the construction of the project.	This EMP focuses on search and rescue operations at the Inchbrakie Falls and this condition is not relevant to this EMP.
c	Siting and management of construction camps outside proclaimed areas.	This EMP focuses on search and rescue operations at the Inchbrakie Falls and this condition is not relevant to this EMP.
d	Access roads to individual construction sites.	This EMP focuses on search and rescue operations at the Inchbrakie Falls and this condition is not relevant to this EMP.
e	Plant search and rescue before the commencement of any construction activity.	Included in this EMP.

Ref	Condition	Response
f	Implementation of measures aimed at controlling invasive plant species must be implemented. The pipeline route alignment and construction sites must be monitored for re-growth of invasive vegetative material at least twice a year for a period of up to two years after the completion of this development.	This EMP focuses on search and rescue operations at the Inchbrakie Falls and this condition is not relevant to this EMP. <i>Please note that the pipeline is not part of the current suite of authorisations and will not proceed until properly authorised.</i>
g	Protection of the heritage resources likely to be impacted by construction of the dam and appurtenant structures authorised in this ROD.	This EMP focuses on search and rescue operations at the Inchbrakie Falls and this condition is not relevant to this EMP.
3.2.4.4	Once accepted by the Department, the EMPs will be regarded as dynamic documents. However, any changes to the EMPs must be submitted to the Department for acceptance before changes are effected. Such a submission to the Department must be accompanied by recommendations of the EMC.	Accepted as such
3.2.4.5	Compliance with the approved EMPs must form part of the project documentation of all contractor(s) and subcontractor(s) working on projects and must be endorsed contractually in all contracts.	All contractors and sub-contractors are contractually bound to the conditions of approval of the project.

3. FLORA SEARCH, RESCUE AND RELOCATION

3.1 Overview

The Environmental Impact Assessment identifies the Inchbrakie Falls as a unique microhabitat and identified three red data listed plant species. These include *Ornithogalum sephtonii*, *Hesperantha woodii* and *Corcosmia pottsii*. The KwaZulu-Natal Conservation Plan also lists this area as a possible habitat for a number of other red data listed species.

3.2 Objectives

To identify, remove, and where possible, relocate red data and conservation worthy flora species from Inchbrakie Falls to Reekie Lyn Falls.

3.3 Indicators and targets

Indicator	Target
Written and photographic records available for all pre-construction surveys	All conservation worthy flora has been identified or removed prior to clearing.
Percentage area of search and rescue of construction area	100%
Survival rate of trans-located plants	20-80% ¹

3.4 Risks

This management and mitigation plan serves to mitigate or prevent the following risks:

1. Risk of loss of important (conservation worthy) species; and
2. Reputational risk (possible perceptions of poor environmental management commitment/performance).

3.5 Legal requirements

1. National Environmental Management Act: Biodiversity Act (Act 10 of 2004) including Threatened or Protected Species Regulations;
2. National Environmental Management Act (Act 107 of 1998);
3. Natal Nature Conservation Ordinance (Nat Ord. 15 of 1974); and
4. National Forests Act (Act 30 of 1998).

¹ It is difficult to predict the survival rate of transplanted plants, and some plant species transplants easier than others. Due to the timing of dam inundation, plants cannot be marked in spring/summer and then moved the following winter. The bulk of the material will be identified and moved during the same spring/summer season which is likely to reduce the survival rate. A multi-pronged approach will be followed to improve the chances of survival by collecting seed for propagation in a nursery and for on-site sowing, by collecting bulbs, and by collecting cuttings where appropriate.

3.6 Management and mitigation requirements

3.6.1 Plant marking at Inchbrakie Falls

1. Conduct a detailed search of the Inchbrakie Falls. As a minimum, this should take place during the spring and summer months prior to impoundment so positive identification of flowering plants can be made. This should be done taking due cognisance of specialist studies already undertaken as part of the EIA process;
2. Allow time for additional searches if these are deemed necessary, based on progress and diversity of plant species found;
3. Identify and physically mark all conservation worthy plants found on the ground; and
4. Capture markers and reference in a retrievable system, so that these can be located again for transplanting (e.g. using a combination of aerial photography, GPS and GIS, as appropriate).

3.6.2 Reekie Lyn Falls

1. Conduct site visits to Reekie Lynn Falls to allow the project team to become familiar with the environment and plan for the direct transplanting of conservation worthy plants from Inchbrakie Falls.
2. Determine whether Reekie Lynn Falls provides a suitable habitat for the plants removed from Inchbrakie Falls. It may be possible that Reekie Lynn does not provide the suitable habitat as it is higher up in the Catchment and is also subject to severe flooding when heavy rains occur. The fish barrier site which is upstream of Inchbrakie will also be considered as it is in the same locality as the Inchbrakie Falls.

3.6.3 Plant search and rescue plan

1. From information gathered during the plant marking exercise, establish the size requirements for the plant rescue team workforce, and the methodology to be employed during the rescue to maximise the likelihood of success;
2. Document and motivate which species found at Inchbrakie Falls are considered to be conservation worthy. Because there are potentially very large numbers of red data, protected, endangered and medicinal plants on site, and because the budget for plant search and rescue is not limitless, only conservation worthy plants will be rescued.
3. Follow a multi-pronged approach to maximise the likelihood of success wherever feasible. In addition to transplanting of whole plants, seed can be collected and sown *in situ* in suitable habitats and/or in an off-site nursery.
4. Any plants not suitable for transplantation to Reekie Lynn Falls must be considered for transplanting to existing conservation areas nearby. This could involve growing these plants on in an off-site nursery for a period of time.
5. Depending on the conservation worthy species found, the location of suitable existing conservation areas nearby and the location of the off-site nursery, the most appropriate plant rescue options must be detailed in the search and rescue plan, and could be a combination of the following options:
 - a. Preferably, plants should be directly transplanted to Reekie Lynn Falls;

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- b. Plants can be transplanted to a competent commercial nursery and grown on, and bulked up for later planting out at Reekie Lynn Falls, or if suitable habitat is lacking, at existing conservation areas nearby. For some species, which do not readily transplant (particularly trees and shrubs), propagation in a nursery may be the only viable option. Transplanting of fully grown trees often yields poor results, with the new growth having weak branch unions and poor form. Better and more vigorous results are obtained in the long term by growing trees from younger stock such as seed, cuttings and wildlings (seedlings up to 10 cm found in the wild). However, due to the vegetation type on site, it is expected that herbaceous plants will make up the bulk of conservation worthy species identified on site;
 - c. Any seed collected, which is not used for nursery propagation can be sown *in situ* in suitable habitat at Reekie Lynn Falls or, if suitable habitat is lacking, at existing conservation areas nearby; and
 - d. Potential threats (e.g. livestock, fire, alien plants, etc.) at Reekie Lynn Falls must be assessed and appropriate management action recommended.

3.6.4 Plant permits

1. Where transplanting involves plants designated as specially protected under the Natal Nature Conservation Ordinance (15 of 1974), an application must be submitted to Ezemvelo KZN Wildlife (EKZNW) to clear or transplant these plants as part of the plant rescue operation;
2. Where transplanting involves natural forests or individual trees protected in terms of the National Forests Act, 1998 (30 of 1998), an application must be submitted to the Department of Water Affairs (DWA);
3. Where transplanting involves plants listed as threatened or protected species under the National Environmental Management Act: Biodiversity Act, 2004 (10 of 2004), an application must be submitted to the appropriate authority to transplant these plants as part of the plant rescue operation; and
4. All required permits must be obtained from the appropriate authority covering plants to be affected by the plant rescue operation prior to the removal of the plants.

3.6.5 Plant rescue

1. Once this EMP is approved, and prior to the implementation of this EMP, EKZNW will be invited to participate in the plant rescue;
2. During the implementation phase of the plan, Inchbrakie Falls must be visited to ensure that all conservation worthy species marked during the preceding plant search are transplanted in accordance with the approved plant search and rescue plan;
3. To maximise the chances of success, the exercise should be staggered over a suitable period of time to ensure that plants are transplanted in manageable batches. Any plants removed should be replanted on the same day, and the receiving environment (Reekie Lynn Falls/nursery/existing conservation areas nearby) must be prepared timeously; and
4. Immediate management actions defined in the plant search and rescue plan must be completed (e.g. plants are watered immediately to restore capillary action).

3.6.6 Aftercare and monitoring

1. Ensure all seed and other propagules (cuttings, wildlings, bulbs) collected for propagation in a nursery are appropriately maintained;
2. Record numbers and diversity of propagated plants and the health of the same, until they can be planted out;
3. Aftercare of transplanted plants to be done in accordance with the plant search and rescue plan by an appropriate agent (e.g. staff from the commercial nursery or an appropriately trained onsite Contractor), including watering and alien plant control requirements. If done correctly, the frequency of input will decrease with time;
4. Record numbers and diversity of transplanted plants and the health of the same;
5. Monitoring must be undertaken as per requirements of the plant search and rescue plan, including monitoring of alien plants and maintenance of a photographic record; and
6. Provide a detailed record (including photographic record) that indicates the success of the plant rescue operation. Records of corrective action taken to improve management of transplanted plants, where relevant, must also be completed.

4. CONCLUSION

This EMP applies to the transplantation of the red data species found at Inchbrakie Falls to Reekie Lynn Falls

EMP	SUBMITTED	APPROVED
Spring Grove Dam Impoundment	X	
Spring Grove Dam Wall	√	√
Traffic Management Plan as per requirement of letter issued by DEA on 3 May 2011	√	√
Roads realignment and flood protection of affected sections of the Loteni Road (P27 – 30)	√	
Services relocation and decommissioning, especially the existing sewerage systems which will be inundated	X	
Mooi River gauging weir	√	√
Mooi River fish barrier	√	√
Mpofana River gauging weir	√	
A detailed search, rescue and relocation plan for all red data, protected and endangered species, medicinal plants, heritage resources and graves – Approved on 7 September 2012	√	√
A detailed plan for the rehabilitation of off-site wetlands in the Mooi and Mgeni catchments to mitigate the loss in wetland function and habitat	X	
A detailed plan of action to establish offset areas to compensate for the loss of biodiversity and habitat and for the management of such areas during the operational phase of the MMTS-2	X	
A detailed transplantation plan for the red data species found at Inchbrakie Falls to the Reekie Lynn Falls	√	
A detailed relocation plan for people living in the dam basin	X	

Many of the EMPs require specialist input and primary research and data collection. These plans will be prepared in accordance with the construction programme and will be submitted to DEA for approval prior to undertaking such activities.

Chapter 12 of the National Water act, 1998 (Act 36 of 1998) contains measures that aim at improving the safety of dams with a risk to reduce the potential harm to the public, damage to property or to resource quality. The following will be required during the operation phase:

- A dam safety plan;
- Operation and Maintenance Manual (O&M);
- Emergency Preparedness Plan (EPP) in compliance with the Dam Safety Regulations;
- Emergency Evacuation Plan under the jurisdiction of the National, Provincial, District

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- and Local 'disaster management' authorities; and
 - Registration of the new "dam with a safety risk" must be within 120 days of the day on which the dam becomes capable of containing, storing, or impounding water.
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- TCTA shall prepare an Exit Strategy policy and implementation plan within 12 months after the start of construction. The objective of the Exit Strategy is to ensure that the completion and de-mobilisation of the construction staff and activities are managed with due regard to potential social and economic impacts.