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THE GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)

Environmental Impact Assessment (DEA Ref No. 12/12/20/978)

ANNEXURE N: DRAFT PRE-CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

AUGUST 2010

Compiled by: ILISO Consulting (Pty) Ltd

P.O. Box 68735
Highveld
0169

REPORT DETAILS PAGE

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Author:	***Deon Esterhuizen and Terry Baker***
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ENVIRONMENTAL ASSESSMENT PRACTIONER
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Dr Martin van Veelen
Project Director

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ABBREVIATIONS

DEIR	Draft Environmental Impact Report
DEA	Department of Environmental Affairs (formerly Department of Environmental Affairs and Tourism and Tourism)
DWA	Department of Water Affairs (formerly Department of Water Affairs and Forestry)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMC	Environmental Monitoring Committee
EMS	Environmental Management System
EMP	Environmental Management plan
EMPs	Environmental Management plans
GLeWaP	Groot Letaba River Water Development Project
GLEMF	Groot Letaba Environmental Management Framework
IEA	Independent Environmental Auditor
I&APs	Interested and Affected Parties
PCMT	Project Co-ordination and Management Team
PEMP	Pre-Construction Environmental Management Plan
PSP	Professional Service Provider

1. STUDY INTRODUCTION

This document is a draft Pre-Construction Environmental Management Plan (PEMP), for the implementation of the pre-construction phase of the Groot Letaba River Water Development Project (GLeWaP). The PEMP is aimed at ensuring that optimal environmental protection is achieved.

The PEMP is a dynamic document, which will be reviewed, revised or updated as required. **Chapter 1** of the PEMP serves to outline the background to the project.

1.1 ENVIRONMENTAL AUTHORISATION PROCESS

Environmental authorisation in terms of Section 24 (5) of the National Environmental Management Act (NEMA) and other legislation is required before the infrastructure components of the project can be implemented. An Environmental Impact Assessment (EIA) process commenced in June 2007 and is expected to be completed in the first quarter of 2009. The Draft Environmental Impact Assessment Report (DEIR) has been prepared in terms of Regulation 32 of GN 385, and will include a PEMP (this report) that complies with Regulation 34 of GN 385.

The Department of Environmental Affairs (DEA) is the competent authority for the EIA, and will make the final decision on whether the proposed project may go ahead or not, and under what conditions.

1.2 REGULATORY REQUIREMENTS

The GLeWaP entails the construction of a large storage dam on the Groot Letaba River and associated Bulk Water Distribution Infrastructure (water treatment works, pipelines, pump stations, balancing dams, off-takes and reservoirs) in the Limpopo Province of South Africa.

In discussions with the DEA at the pre-application consultation on 8 March 2007 it was agreed that although the project would probably ultimately require a suite of EMPs for the various components, only the draft pre-construction and a draft generic construction EMP will be compiled during the environmental authorization process. EMPs for the operational phase and decommissioning will not be included. The draft

generic construction EMP will be used in the implementation phase as the basis for the full suite of EMPs required.

It would serve as a reference to ensure that the recommendations of the EIA and the specialist studies that formed part of the EIA are assimilated into the detailed planning and detailed design of the project. In addition it also notes the relevant environmental legislation which the planning and design team will have to comply with during the planning and design stages of the project.

The draft generic construction EMP (separate document) includes the construction phase of all activities related to all components of the project including the raising of the Tzaneen Dam, the construction of the proposed dam at the site known as Nwamitwa, the road re-alignment, upgrading of the water treatment works, and construction of pump stations, pipelines and reservoirs.

1.3 PURPOSE OF THE EMPS

The GLeWaP EMPs will ensure that the environment is appropriately considered during the detailed planning, design and construction phases of the project. The EMPs should provide a practical implementation framework for the mitigation measures recommended in the Environmental Impact Report (EIR), as well as monitoring, auditing and taking corrective actions during implementation.

1.4 PROJECT TEAM

ILISO Consulting was appointed as the independent Environmental Assessment Practioner (EAP) to undertake the EIA, the Draft PEMP and the Generic Construction EMP. ILISO Consulting has used input from the specialists mentioned below.

Dr Martin van Veelen is a professional engineer with a PhD in aquatic health. He is the Bussiness Unit Head of the ILISO Environmental Management Discipline Group and a certified Environmental Assessment Practitioner with 30 years experience. He specialises in project management, environmental impact assessments and water resource planning. He specifically has extensive experience in water quality, especially water quality management, water quality monitoring and water quality assessment. Martin has experience in managing projects that involve multi-

disciplinary teams, and projects that involve public consultation and participation. Martin is the project leader and undertook the water quality specialist study.

Terry Baker is a certified Environmental Assessment Practitioner (EAP), has a MA in Environmental Management and specialises in Environmental Impact Assessments and Project Management. She has been involved in a variety EIAs including for transmission lines, water supply projects, dams, roads and airports, in South Africa, Botswana, Uganda, Lesotho, and Mozambique. She has been involved in public participation programmes, water quality assessments, socio-economic and institutional development projects and the use of Geographic Information Systems on a number of projects. Terry is actively involved in the International Association for Impact Assessment, and served on the National Executive Committee of the South African Affiliate from 2005 to 2008. Terry is the Project Manager.

Deon Esterhuizen has a MSc in Environmental Management with 16 years of experience in water related projects, which include water quality management, registration and licensing of water users, completion of Environmental Impact Assessments in support of the issuing of Record of Decisions, development of a management guide for domestic water use, project management, and implementation of the Resource Directed Measures as required by the Department of Water Affairs. He was part of the team that compiled the Environmental Management Plan for the Gautrain Rapid Rail Link Project. Deon is responsible for compiling the EMPs for this project.

Consultant Name	Company Name	Specialist Study Name
Dr Johnny van Schalkwyk	National Cultural History museum	Heritage Impact Assessment
Mr Bert de Vries	ILISO Consulting (Pty) Ltd	Traffic Impact Assessment
Mr Derek Cosijn	Jongens Keet and Associates	Noise Impact Assessment
Mr Peter Kimberg	Golder and Associates	Aquatic Ecology Specialist Study
Mr Cameron von Bratt	Golder and Associates	Aquatic Ecology Specialist Study

Consultant Name	Company Name	Specialist Study Name
Mr Graham Deal	Ecorex	Terrestrial Ecology Specialist Study
Ms Renee Thomas	Airshed	Air Quality Specialist Study
Mr Russell Arid	Kayamandi	Economic Specialist Study
Ms Nanja Churr	Kayamandi	Economic Specialist Study
Ms Anita Bron	MasterQ Research	Social Impact Assessment
Ms Karen James	Insite	Visual Impact Assessment
Ms Jo- Anne Thomas	Savannah	Environmental Management Programmes
Mr Andrew Dickson	Margot Saner and Associates	Health Impact Assessment
Prof Gerrit Basson	ASP Technology	Sedimentation Impact Assessment

1.5 APPROACH

Twelve specialist studies were undertaken during the environmental assessment of the GLeWaP, which considered the potential impacts of the GLeWaP and associated infrastructure on the receiving environment.

The findings of all the specialist studies were distilled, examined and captured in the EIR. All mitigation measures prepared by the twelve specialists were assessed for relevance and summarised in the EIR.

These mitigation measures have been incorporated into the relevant EMPs through the development of management and mitigation plans. The various management and mitigation plans that are needed to address the potential impacts of the proposed project are described later.

2. DESCRIPTION OF THE PROJECT

The Groot Letaba River Water Development Project is aimed at improving the management of the water resources in the catchment and consists of non-infrastructure options to manage the available water as well as the construction of infrastructure components. Although only the construction of the infrastructure components require authorisation from the DEA and are subject to the EIA, they must be seen as being complemented by the non-infrastructure components.

2.1 INFRASTRUCTURE COMPONENTS OF THE PROJECT

The infrastructure components of the project that have been subjected to the EIA include:

- Construction of a dam at the site known as Nwamitwa on the Groot Letaba River, downstream of the confluence of the Nwanedzi River. The Environmental Impact Assessment was based on a dam wall that could be up to 36 m high and have a gross storage capacity of 144 million m^3. The catchment area of the proposed dam at the site known as Nwamitwa is up to 1 400 km^2 and the Mean Annual Runoff (MAR) is approximately 122,6 million m^3 under natural undeveloped conditions. The estimated increase in system yield available for domestic use is up to 18 million m^3/a after providing for the Reserve.

- Parts of the R529, D1292 and P43/3 roads will have to be re-aligned to accommodate the dam;

- Raising of the Tzaneen Dam could result in increasing the storage from 157,5 million m^3 to approximately 203 million m^3 ;

- Upgrading of water treatment works;

- Construction of bulk water pipelines and pump stations from the dam for water supply for domestic use to communities in the area. Currently four pump stations and four reservoirs are envisaged;

- Borrow areas from which materials required will be sourced;

- Construction activities will take approximately 5 years with several construction teams working concurrently in different areas at the proposed dam site and along the pipeline routes;

- Residential accommodation for construction staff will be established in the vicinity of the proposed dam or in established towns. Housing, internal roads, water and electricity supply, water treatment, solid waste disposal, emergency facilities and recreational amenities will be provided; and

- Construction sites will include offices, internal roads, water and electricity supply, waste water treatment, solid waste disposal, emergency facilities, areas for the handling of hazardous substances, workshops, wash bays, areas for the safe storage of fuel and explosives and communication infrastructure.

3. ORGANISATIONAL STRUCTURE

This document applies to the phase of the project immediately after authorisation is received until construction commences. During this phase the developer may appoint Implementing Agents and/or Consultants to assist with the implementation of the project. The Environmental Monitoring Committee (EMC) as envisaged for the construction phase must be established and the other individuals, e.g. the Environmental Control Officer (ECO) must be appointed.

Some investigative activities, such as surveying, drilling boreholes, digging test pits, archaeological recording and rescue and land acquisition are expected to be required before the monitoring personal and structures required for the construction phase are in place and operational. Potential impacts on the environment, however, still need to be managed during this phase.

3.1 DEPARTMENT OF ENVIRONMENT AFFAIRS (DEA)

The DEA, on behalf of the Minister, plays a lead role in the implementation of national environmental policies, legislation and regulations. Their role is to ensure that the GLeWaP is implemented in a sustainable manner, in compliance to the relevant environmental legislation. DEA will be responsible for authorising the PEMP for GLeWaP. As the decision maker, DEA is accountable for the decisions taken with regard to authorising identified activities.

3.2 DEPARTMENT OF WATER AFFAIRS (DWA)

Under the South African environmental law, applicants are accountable for the potential impacts of activities being undertaken as well as managing these impacts. Since DWA is the applicant it has the overall environmental responsibility to ensure that the implementation of the PEMP complies with national and provincial legislation as well as with the conditions of the authorisation.

4. COMPLIANCE MONITORING

4.1 CHECKING AND CORRECTIVE ACTIONS

4.1.1 Monitoring

A series of environmental variables that are to be monitored during the pre-construction phase should be developed for identified aspects, such as surface and ground water monitoring, noise monitoring, air quality monitoring etc. Monitoring results should be presented monthly. Where the target values are not met, further mitigation action (development of detailed method statements) should be considered.

4.1.2 Inspections

Some potential impacts are difficult to monitor quantitatively such as soil erosion and waste management. Visual inspections of all pre-construction activities should be undertaken.

4.1.3 Internal Audits

Where monitoring data and the inspection reports highlight problems, an internal audit could be initiated. The purpose of the audit is to ascertain the source of the problem and define what action must be taken to prevent its re-occurrence. Detailed method statements could be the outcome of the internal audit.

4.1.4 Corrective action

There are several levels at which corrective action can be affected, namely verbal instructions, written instructions and contract notices.

5. LEGISLATIVE REQUIREMENTS AND PRINCIPLES

5.1 ENVIRONMENTAL PRINCIPLES

The following principles should be considered at all times during the pre-construction phase activities.

The environment is considered to be composed of both biophysical and social components.

- Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment, during the execution of a project to minimise the impact on affected parties.
- Minimisation of areas disturbed by construction activities (i.e. the footprint of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinances, etc.
- Every effort should be made to minimise, reclaim and/or recycle “waste” material.

5.2 ENVIRONMENTAL PERMITS, LICENCES AND AUTHORISATIONS

The following authorisations and permits are required prior to the activity commencing:

- **Blasting** - Blasting permits are required from the Department of Mineral Resources in accordance with the Explosives Act (Act No 26 of 1956).
- **Waste disposal** - All wastes (general and hazardous) generated during the construction may only be disposed of at appropriately licensed sites (in terms of Section 20 of the Environment Conservation Act (Act No 73 of 1989). Regulations terms of the Environment Conservation Act (sections 19, 19A and 24A) pertaining to litter should be noted and implemented.

- **Storage of hazardous substances** - Hazardous substances must be stored and handled in accordance with the appropriate legislation and standards, which may include the Hazardous Substances Act, the Occupational Health and Safety Act, and relevant associated Regulations.
- **Health and safety of work teams** - Construction Regulations (2003) published under the Occupational Health and Safety Act (Act No 85 of 1993) apply to construction activities including "the moving of earth, clearing of land, the making of an excavation, piling, or any similar type of work". A "health and safety plan" which addresses hazards, and includes safe working procedures to mitigate, reduce or control the hazards identified, is required under this Act. A risk assessment must also be undertaken by an appropriately qualified person(s) and the Contractor shall ensure that all employees under his or her control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.
- **Heritage resources –** Before any heritage resources are demolished or damaged a permit should be obtained prior to any actions been taken. Permit applications must be submitted to South African Heritage Resources Agency (SAHRA).
- **Removal of trees –** The removal of trees from the dam basin requires a permit in terms of the National Forest Act (No 84 of 1998).
- **Removal and transportation of endangered fauna and flora -** The removal and transportation of indigenous and endangered species to nurseries or green houses require permits in terms of the National Biodiversity Act (No10 of 2004), Section 30.
- **Water abstractions –** Water abstracted from any sources for construction purposes requires authorisation.
- **Removal of graves -** Permits are required for the removal of graves in terms of the National Heritage Resources Act (No 25 of 1999) section 36.

6. PRE-CONSTRUCTION SPECIFICATIONS

6.1 GENERAL

The PEMP provides a framework for environmental protection during the detailed planning, design and construction phases of the project, leading up to, but not including, the establishment on site by the appointed contractor. This period will typically include investigative activities such as confirmation of materials availability, archaeological site protection and rescue, fencing and relocation and compensation of affected communities.

The pre-construction activities are the responsibility of DWA.

6.2 LAND ACQUISITION

The land acquisition process should take into consideration the following legal processes:

a) Determine compensation in manner prescribed by legislation.

b) Once the strategic approvals (i.e Ministerial approval of the project as a Government Water Scheme, and Environmental Authorization of the development proposals) are in place, land owners should be advised of the land that is required for the project.

c) Detailed plans should be prepared of each property affected by the project, indicating the extent of the land and improvements that have to be acquired.

d) A panel of land valuers should be appointed to assess the fair market value of the land and improvements to be acquired on each property, taking into account the policy in relation to the maintenance of the rights to use existing water allocations for irrigating new orchards on adjacent land.

e) Compensation recommendations prepared by the panel of valuers should be submitted for approval.

f) Compensation should seek to make individuals or affected parties as well off as they were prior to the development.

g) Notifications of and acquisitions on a specific date, with offers of compensation, should be served on each land owner in respect of each portion of land affected by the project.

h) The World Commission of Dams work highlights the issue of social impacts on vulnerable groups and individuals when large dams are constructed. For this activity these groups could be individuals with unregistered rights or who currently provide part time labour on citrus farms. Compensation of these groups of people will be dealt with in accordance with the relevant laws that apply.

i) Align employment opportunities to farm workers directly impacted.

j) Communicate loss of employment to farm workers from affected farms well in advance.

6.3 PROTECTION OF VEGETATION

a) A Professional Service Provider (PSP) appointed specifically to identify, locate, mark and/or remove all plants to be protected during construction must have undertaken their fieldwork on the demarcated construction servitude prior to the Contractor commencing with land clearing.

b) Any plants or trees of value, close to the construction servitude that will remain, should be marked clearly and must not be disturbed, defaced, destroyed or removed for the duration of the Contractor's presence on site, unless otherwise specified by the ECO through the Resident Engineer.

6.4 PROTECTION OF FAUNA

a) A PSP appointed specifically to identify animal species as defined in the EIR to be relocated must have undertaken their fieldwork on the demarcated construction servitude prior to the Contractor commencing with land clearing.

b) A plant rescue operation should be implemented, targeting the rescue and translocation of threatened, endemic and protected species where possible;

scientific institutions should also be invited to collect live specimens. Particular emphasis should be on beetles *Dromica oberprieleri* and *Megacephala regalis vansoni*, flat rock scorpions (*Hadogenes troglodytes*), and baboon spiders *Opistophthalmus glabrifrons* and *Opistacanthus asper*.

c) Possible receiver sites of the protected species need to match the natural habitat and where possible remain within the same general area, to prevent negatively impacting on other species.

d) Receiver sites must be checked for suitability and abundance of species to encourage virility.

6.5 PROTECTION OF CULTURAL HISTORICAL ASPECTS & GRAVES

a) A PSP appointed specifically to identify, locate and map all features and sites of social and/or cultural, historical, and archaeological significance to be protected during construction must have completed their task prior to the Contractor disturbing any areas where important sites have been identified.

b) Some sites near the construction servitude may be marked for protection using danger tape and steel droppers.

c) Do not disturb deface, destroy or remove protected features and sites, whether fenced or not.

d) The identification and mitigation policy for graves must be determined before construction.

6.6 PROTECTION OF AQUATIC ECOSYSTEM

a) Monitoring frameworks must be compiled and incorporated into the final Construction EMP before Construction commences.

b) A survey evaluating the presence of the exotic fish within the proposed Nwamitwa dam project area is to be undertaken. Particular reference should be on Black Bass (*Micropterus salmoides* and *Micropterus dolomieu*), Nile Tilapia (*Oreochromis niloticus*) and carp (*Cyprinus carpio*).

c) A baseline study of the invertebrate fish communities is to be undertaken during the pre- construction phase.

6.7 SITE LAYOUT & ACCESS ROAD PLANNING

a) In determining the location and extent of access/haul roads, cognisance must be taken of sensitive and no-go areas as well as protecting and maintaining existing private/communal property, fences and gates.

a) New fence lines and gates should be planned in conjunction with local landowners.

b) Fences must be aligned to avoid significant vegetation specimens and communities, natural features, sites of cultural and historical significance and animal movement corridors.

c) Retain temporary fencing and/or gates in position until replaced by permanent fencing.

6.8 INVESTIGATIVE & DESIGN PRE-CONSTRUCTION REQUIREMENTS

These specifications are intended to guide the engineers, surveyors, contractors and other parties that will be involved in detailed planning for the project and act as a reference during the planning and design of the scheme. The objective is to operationalise the recommendations in the EIA that are to be addressed at the design phase of the project:

a) Dam outlets must have the capacity to withdraw and mix water from multiple levels, and sleeve valves must be designed to ensure the immediate aeration of released water.

b) Stratification is predicted to occur in the proposed new dam during summer months, and the release of cold, anoxic bottom water will have a detrimental effect on the aquatic life up to a distance of about 15 km below the dam wall. To overcome the effect a multiple level outlet structure, with outlets at approximately 5 meter intervals from 6 meters below the full supply level of the dam, should be confirmed during the design phase.

c) The surfacing material of the road should be acoustically designed for noise reduction. Properly designed gap-graded rubber bitumen can reduce the tyre-road interaction noise by at least 5dBA.

d) Strategically placed sections of earth berm noise attenuation barrier may be necessary along the edges of the respective road reserves to adequately protect noise sensitive areas.

e) All the necessary acoustic design aspects required should be followed in order that the overall generated noise level from the new installation does not exceed a maximum equivalent continuous day/night rating level (LRdn), namely a noise level of 70dBA (just inside the property projection plane, namely the property boundary) as specified for industrial districts in SANS 10103.

f) Ambient noise levels in the residential areas of Ka-Malubana Village shall not exceed 50dBA during the day and 40dBA at night.

g) Construction personnel accommodation must be placed in a suitable urban area or registered lodges, e.g. Letsitele or Nwamitwa.

h) Married quarters should be supplied for the majority of personnel, with single quarters accommodation also at the closest local villages. Only key personnel, e.g. security, should be accommodated at the construction site.

i) Bio-monitoring of fish and aquatic invertebrates of the river system should be undertaken before construction activities start and, thereafter, at 6-monthly intervals.

j) Pre-construction baseline tests should be undertaken, where applicable, for water quality downstream of the dam. This table is based on limited data and none at the dam site. The limiting sediment values should be recalibrated based on pre-construction sediment analysis 300m downstream of the proposed dam wall.

k) The design for the raising of the Tzaneen Dam wall should respond to the structure of the existing dam wall.

l) The design of the proposed dam at the site known as Nwamitwa should respond to the sensitivity of the scenic continuity of the existing landscape.

m) Based on the impacts predicted from the construction operations a dust fallout monitoring network should be implemented. The dust fall out network is to be implemented before construction commences.