ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED DEVELOPMENT OF ETHEMBA DAM

Background Information Document and Invitation to Comment

February 2014
INTRODUCTION AND BACKGROUND

The Ministry of Natural Resources and Energy (MNRE), through the National Water Authority proposes to develop Ethemba Dam in the Mkhondvo River. The preferred site is situated in the Shiselweni Region and may affect the communities of Mkhitsini, Nkwene and Hlobane. The site was selected because of its capability of supplying water for 2 500 ha of irrigation along the Mkhondvo River downstream from the dam and the potential for hydropower generation of electricity.

As part of the feasibility study and in order to meet the requirements of the Environment Management Act, No. 5 of 2002 (EMA), an Environmental Impact Assessment (EIA) is being undertaken which will include a public participation component. This document forms one of the first written releases for public notification and serves to provide Interested and Affected Parties (I&APs) with:

- Information about the proposed Ethemba Dam project;
- An outline of the EIA process being undertaken to inform an environmental authorisation decision for this proposed project;
- An opportunity to provide input into the identification of potential issues and concerns relating to the proposed development and hence assist in defining the scope of work for the EIA. I&APs are encouraged to register as stakeholders or submit their comments on the proposed project by 2\textsuperscript{nd} June 2014 to the public participation team.

LOCATION & SITE DESCRIPTION

Figure 1 presents the location for the proposed Ethemba Dam.

Magisterial District

The Ethemba Dam site is located in the Shiselweni Region of Swaziland, which is situated in south-western Swaziland and has a population size of 234 981 people with its administrative centre being Nhlangano. The proposed dam site is located approximately 11 km west (9 km as crow flies) of the MR9 road linking Matsapha and Nhlangano. The co-ordinates for the site are 26° 53’ 54” S and 31° 13’ 35.7” E.
Nearest Towns

The Ethemba Gorge in an area currently occupied by the Mkhitsini, Nkwene and Hlobane communities. The town of Hlathikhulu is located at S 26° 58’0” and E 31° 19’0” at an altitude of 1 114 masl (www.afdevinfo.com). The dam site is located approximately 15 km north-east from the town of Hlathikhulu.

Traditional Authority Jurisdiction

The Ethemba Gorge is on Swazi Nation Land (SNL), which in Swaziland is one of two land tenure systems in Swaziland. SNL is communal land as opposed to Title Deed Land (TDL) which is privately owned land held under Title in farms and urban areas.

These SNL lands are under the jurisdiction of traditional authorities ie the Chiefs, who administer these lands on behalf of the King of Swaziland. The Ethemba Gorge spans 3 Chiefdoms, each with its own traditional authority, which is the Chief working with his inner council called bandlancane. No activity takes place in these Chiefdoms including acquiring land, without the Chief’s consent.

The project area falls under the Nkwene, Mkhitsini and Hlobane traditional leadership.

River Catchment

The proposed Ethemba Dam is located within the Usuthu River Catchment on the Mkhondvo River which originates in South Africa, in the south-west region of the Maputo Basin. The Maputo River Basin has a total surface area of 30 375 km² extending across the borders of South Africa, Swaziland and Mozambique (Plancenter Ltd, 4.1/2006). The main rivers of this basin are the Usuthu and Pongola Rivers which merge on the Mozambique/South Africa border near the eastern edge of the basin to form the Maputo River.

Land Use

The current land use of the area is that of residential homesteads and supporting livelihood activities being both agricultural and livestock rearing activities. There is extensive crop production in the study area. Crops that are grown in the study area include maize, sorghum, sweet potatoes, sugar cane, water melon, melon, sunflower and various types of vegetables including legumes.

Fruit trees grown in the area include avocado pears, bananas, mangoes, apples, grapes, paw-paws, guavas, granadillas and citrus. Apart from fruit and vegetables grown in the area,
people in the study area also live off wild fruit trees such as tincozi, lokhwatsa, monkey apples, black berries and marula.

Local communities harvest medicinal plants that are in abundance in the forests and mountains. The different livestock found in the area are cattle, goats, poultry, donkeys and pigs.

![Figure 1: Map indicating the position of Ethemba Dam](image)

**PROJECT DESCRIPTION**

**Motivation for the Project**

The Government of the Kingdom of Swaziland’s key motivation behind the development of Ethemba Dam Project is to provide reliable irrigation water to the local agricultural region for the purpose of uplifting the community and providing food security. The government aims to
expand agricultural production projects in the region to improve the foundation of further development of the Sishelweni Region and its contribution to the national economy.

The two areas benefitting from the proposed Ethemba Dam Project are: A 1 000 ha area (Mehlwabovu–Ricelands Area) immediately downstream of the dam site and the Mkhondvo Downstream Area which has been estimated at 1 500 ha. These irrigation areas will promote the allocation of water rights to smallholders living in the three project areas. This will allow these smallholders the opportunity to convert land that is currently being used for rain-fed subsistence agriculture and rangeland into commercial irrigated agriculture.

In addition, the town of Hlathikulu has inadequate alternative sources of water as it is located on the top of a ridge. It is proposed that through the development of Ethemba Dam a potable water supply will be secured.

**Proposed Project infrastructure**

The following infrastructure is proposed as part of the Ethemba Dam Project:

- Ethemba Dam with a capacity of 368 million m$^3$ and a 103.5 m high Roller Compacted Concrete (RCC) Gravity wall. The area of inundation associated with the dam is 1045 hectares. An intake works on the left side of the spillway, built into the main RCC body of the dam wall and outlet house and river release control works will also be developed as part of the dam infrastructure;
- A 3 MW hydropower plant at the end of the gorge which will consist of a high pressure penstock, powerhouse and transformer yard. The plant will also have a connection to the existing 66 kV Maguduza-Sithombela transmission line;
- High pressure penstock directing water from the dam to the hydropower plant;
- A water conveyance system consisting of pump stations, balancing dams and delivery pipelines;
- Balancing dam, potable water pipeline, water treatment works, pump stations and reservoirs for the provision of potable water to Hlathikulu;
- Access roads to the site will be upgraded including the upgrading of two bridges. Access will be provided to the left abutment by means of a new access road running up the gorge. Access roads will also be constructed along the proposed pipeline routes and the penstock in the gorge;
- The development of 1 000 Ha and 1 500 Ha of agricultural land: the Ricelands and the Mkhondvo Downstream Area (MDA);
- A quarry for the sourcing of building material located in the dam basin. The proposed quarry site falls within the area of inundation;
• A construction camp upstream of the dam site in the dam basin;
• Resettlement site for the physically and economically displaced persons currently residing and/or utilising the dam basin. The identification of such a site will be advised by the Resettlement Action Plan (RAP).

**Proposed Project Programme**

The following programme is proposed for the Ethemba Dam Project:

<table>
<thead>
<tr>
<th>Project phase</th>
<th>Duration</th>
<th>Dates</th>
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<tbody>
<tr>
<td>EIA and RAP processes</td>
<td>13 months</td>
<td>Nov 2013- Dec 2014</td>
</tr>
<tr>
<td>Construction phase and resettlement</td>
<td>5 years</td>
<td>2015-2019</td>
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<tr>
<td>Operation phase</td>
<td>For life of dam</td>
<td>2020 onwards</td>
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**Legislative Requirements**

This section describes the EIA process requirements in line with Swaziland legislation.

**The Environment Management Act, 2002 (Act No. 5 of 2002) (EMA)**

The proposed project requires MNRE to undertake an EIA in terms of the Environment Management Act, 2002 (Act No.5 of 2002).

The Act stipulates, amongst others, that:

• No person shall undertake any project that may have an effect on the environment without the written approval of the SEA.
• A project brief is required to be submitted to the SEA, who will then advise as to whether an EIA is required.
• The content of the EIA will need to include an environmental impact statement and comprehensive mitigation plan.
• The SEA needs to ensure that all documentation is subject to public review and may in the case that there is significant public concern over the EIA, request a public hearing.

**The Environmental Audit, Assessment and Review Regulations, 2000 (Legal Notice No.31 of 2000)**

Made in terms of Section 18 of the SEA Act 1992, the objective of these Regulations is to avoid and mitigate adverse effects of proposed projects and existing undertakings. Part C of
these regulations refers to the categorisation of proposed projects and relevant authorisation process applicable thereto.

A full EIA is required for Category 3 projects, or for those projects which are located in environmentally sensitive areas. Typical Category 3 projects include dams and reservoirs, large scale irrigation and flood control schemes, mining projects, resettlement schemes, thermal and hydropower schemes.

The EIA for a Category 3 Project needs to be undertaken in two phases:

- Submission of a Terms of Reference which needs to be compiled in consultation with key stakeholders and I&APs;
- Preparation and submission of an EIA and Comprehensive Mitigation Plan.

The regulations also highlight the requirement for public review and hearings and the timing required for these.

In addition, the proposed Ethemba Dam project will need to comply with the following legislation:

- The Water Act, 2003
- The Acquisition of Property Act, 1961
- The Building and Housing Act, 1988
- The Human Settlements Authority Act, 1988
- Land Speculation Control Act and the Land Speculation Control Regulations, 1972
- The Land Survey Act, 1961
- The Swaziland National Trust Commission Act, 1972 (Cultural Heritage legislation)
- The Swaziland Flora Protection Act, 2000 (Biodiversity legislation)
- The Swaziland Areas Act, 1994

**Environmental Impact Assessment Process**

The objectives of the Environmental Impact Assessment Process are:

- to identify the impact of the project
- to recommend measures to reduce negative impacts and to enhance positive impacts.

Knight Piésold Consulting is the Environmental Assessment Practitioner appointed to conduct the EIA process.
The project team includes:

<table>
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<tr>
<th>Team Members</th>
<th>Roles</th>
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<tbody>
<tr>
<td>MNRE</td>
<td>Client</td>
</tr>
<tr>
<td>Knight Piésold Consulting</td>
<td>Environmental Assessment Practitioner</td>
</tr>
<tr>
<td>First Environmental Consultants</td>
<td>Swaziland Environmental Assessment Practitioner</td>
</tr>
<tr>
<td>Social Enterprise Solutions (SES)</td>
<td>Public Participation Process</td>
</tr>
<tr>
<td>Consulting</td>
<td></td>
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<tr>
<td>Nomad</td>
<td>Resettlement Action Plan (RAP)</td>
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Specialist Studies

A selection of specialists has been appointed to undertake the necessary scientific studies:

- Biodiversity (terrestrial and aquatics)
- Social Impact Assessment
- Heritage and archaeology
- Water quality monitoring.

The EIA process is set out in Figure 2.

Potential Impacts

The potential impacts expected during all phases of the Ethemba Dam project include the following:

Construction Impacts:

- Physical and economic displacement
  The dam and its associated infrastructure will require a footprint area which is currently occupied by households and their livelihood activities. These will need to be moved from the area of inundation and resettled elsewhere. Thus the project will result in physical and economic displacement
### Approximate Dates

<table>
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<td>October 2014</td>
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<td>December 2014</td>
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### Proposed EIA Process for the Ethemba Dam Project

1. **Preparation and submission of a Project Brief to SEA**
2. **Categorization of Project**
3. **Public Involvement Process**
   - **Terms of Reference Report preparation and submission to SEA**
   - **Specialist investigations and Draft EIA Report**
   - **Public review of the Draft EIA Report**
4. **Finalise EIA Report**
5. **Submit EIA Report to SEA**
6. **Notification of decision and appeal period**

**Stakeholder Engagement** includes:
- Information sharing meeting with the affected communities
- Public Open Day
- Authorities Meeting
- Fielding of telephonic comment; and
- Receipt of written comment.

**Stakeholder Engagement needs to be ascertained through first round of engagement**

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**Figure 2: Environmental Impact Assessment Process**
• Socio-economic impacts
  Several socio-economic impacts are anticipated to result from the proposed project, both positive and negative. These may during the construction phase of the project include:
  - Employment opportunities
  - Social pathologies associated with the presence of a construction force and camp on site
  - Inmigration into the area in anticipation of jobs

• Noise
  As a result of construction activities and vehicle movement on site, it is anticipated that there will be a resultant increase in noise levels.

• Air quality
  Vehicle entrained dust emissions and dust generated during drilling, blasting, haulage operations and fuel emissions generated from the construction of the dam and borrow pit operations is expected to result during the construction phase of the project.

• Soils
  The footprint of the dam will result in a loss of agriculturally suitable land. Soil erosion may also result from construction activities.

• Fauna and flora
  The footprint of the dam will result in the destruction of fauna and flora in this area. Poaching may also increase as a result of the construction force in the area and the spread of invasive species may also be facilitated by construction activities.

• Cultural and heritage resources
  The footprint of the dam will result in the destruction of heritage resources which may include archaeological, palaeontological, historical and cultural resources. Additionally grave resettlement may result from the dam development.

**Operation Impacts:**

• Visual impact
  The dam wall will modify the visual character of the area permanently.

• Fragmentation of habitat
The dam wall would be a large structure and consequently would form a barrier to existing migration routes and corridors (Plancenter, 8.2-8.4/2007). This will affect fish trying to migrate upstream to spawning areas as well as small mammals that would have to traverse around the dam basin, instead of across the basin. Fish ladders are unlikely to be feasible given the high dam wall (103.5 m).

- **Soil**
  Water will be released from the Ethembaba Dam to satisfy the ecological flow requirements. Water released will flow at a faster rate than the current flow rate of the river resulting in a change in river bed cross section and thus in a possible loss of topsoil downstream of the dam due to erosion and bank scouring. Productive agricultural soils will be lost within the dam footprint area.

- **Social benefits**
  Given the availability of water for downstream agricultural activities as well as reliable potable water supply to Hlathikulu, it is anticipated that during the operational phase of the project the local and national economies will be strengthened as a result of the proposed development.

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**The Public Participation Process: Current Registration Phase**

The objective of the Public Participation Process is to inform I&APs of the proposed Ethembaba Dam Project, involve them in the EIA and provide an opportunity for I&APs to raise issues and concerns for consideration by Knight Piésold during the EIA.

During this first stage of interaction and participation, the following steps have been taken to involve I&APs in the EIA process:

- **Notifications**: I&APs are being notified of the project and opportunities for interaction by means of:
  - An advertisement placed in a national newspaper
  - Radio announcements through national and local radio stations
  - The placement of notices / flyers at public places including schools, local supermarkets, post offices, public clinics.
This Background Information Document is also being circulated to provide additional project information to identified and registered I&APs.

**Interaction with I&APs:** I&APs will be afforded further opportunity to understand the potential impacts of the project so they can meaningfully participate in and contribute to the EIA process. The following active engagement is proposed:

- Information sharing meeting with the affected communities; Nkwene on the 31st May 2014, Hlobane on the 6th June 2014 and Mkhitsini on 7th June 2014.
- Public open day in Mbabane; 3rd June 2014
- Public Scoping Meeting on site; 5th June 2014
- Regulatory authority meeting; 4th June 2014
- Fielding of telephonic comment; and
- Receipt of written comment.

**Feedback:** Feedback will be provided to I&APs via the review of the Draft EIA Report. Methods for active feedback will be tested during the first round of engagements.

All Public Participation Process documents will be available in English and SiSwati and meetings will be conducted in both languages.

All comments and suggestions raised by I&APs will be recorded and made publicly available in a Comment and Response Report for people to verify that their comments have been recorded correctly. The Comment and Response Report will be submitted together with the EIA findings to SEA.

**Invitation To Comment And Register As Interested And Affected Party**

Should you wish to register as an interested and affected party for this specific environmental authorisation process, request more information, and/or raise issues or comments, please complete the attached Registration and Comment Sheet and return it to the Public Participation Office by 2nd June 2014. See details below.
### EIA Public Participation Office Contact details:

<table>
<thead>
<tr>
<th>Tandi Reilly</th>
<th>Thoto Zwane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knight Piésold</td>
<td>First Environmental Consultants</td>
</tr>
<tr>
<td>Swazi Supply Center, Corner Makhosikhosi and Sheffield Roads, Industrial Site, Mbabane, Swaziland</td>
<td>P.O. Box A156 Swazi Plaza Mbabane, Swaziland</td>
</tr>
<tr>
<td>Tel: +268 2404 3151</td>
<td>Tel: +268 768 04224</td>
</tr>
<tr>
<td>Fax: +268 2404 3571</td>
<td>Fax: +268 2422 0089</td>
</tr>
<tr>
<td>Email: <a href="mailto:tandi@sesconsulting.co.za">tandi@sesconsulting.co.za</a></td>
<td>Email: <a href="mailto:thothozee@gmail.com">thothozee@gmail.com</a></td>
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