PROJECT BACKGROUND

The Kariba Dam is located on the Zambezi River, on the border between Zambia and Zimbabwe. It is situated 130 km south-south-east of Lusaka (Zambia) and 280 km north-west of Harare (Zimbabwe). The Kariba Dam is managed and operated by the Zambezi River Authority (ZRA), a statutory body established in 1987 and jointly and equally owned by the Governments of Zambia and Zimbabwe. ZRA is also responsible for overseeing any further development of the Zambezi River.

The ZRA is proposing the rehabilitation of some of the support infrastructure of the Kariba Dam, namely the plunge pool and spillway. The ZRA will require an ESIA to be undertaken in accordance with the environmental regulations of Zambia and Zimbabwe before they will be granted permission to continue with the works bearing in mind the findings of the ESIA. ZRA appointed Environmental Resources Management (ERM) as the environmental consultant to conduct the ESIA.

WHAT IS AN ESIA?

An ESIA is a study to identify and assess the possible environmental and social impacts associated with a proposed development – in this case the rehabilitation of Kariba Dam infrastructure. In order to commence with the Project, an ESIA must be done. This ESIA must be done in accordance with the relevant in-country legislation as well as international good practice guidelines such as the IFC’s Performance Standards.

An ESIA process typically aims to answer five key questions regarding the proposed development. These questions are illustrated in Figure 1.2 below.

- What are the current environmental and social conditions of the Project Area?
- What will be the Project’s impacts be? How will the environment and society change as a consequence of the Project?
- Are the Project Impacts significant, if so, how significant?
- If the impact is significant, what can be done to avoid, reduce, remitiate, or compensate for the adverse effects of enhance the benefits?
- What will the residual impact be after the mitigation? How significant will this be?
The Plunge Pool Rehabilitation

Over the years, due to sustained heavy spillage episodes, the river bedrock in the plunge pool (situated immediately downstream of the dam wall) was scoured down to 80m below the normal water level. Therefore there is a major concern over the natural development of the plunge pool in future, especially in case of exceptional floods and of intense spillages as is illustrated in the photograph in Figure 1.3 and 1.4.

In order to manage future uncontrolled deepening of the plunge pool and to avoid the toe of the dam wall from weakening, it has been concluded that the plunge pool should be made bigger to include areas on both river banks as well as in a downstream direction. It is foreseen that this excavation and reshaping of the plunge pool will facilitate the draining of spillage flows downstream, and avoid the concentration of turbulence in a restricted and confined area as is currently the case. The position of the plunge pool is illustrated in Figure 1.5.
The plunge pool will be enlarged through the excavation of the riverbed. The excavation will be performed with the drill and blast method. The excavated rock will be transported from the pool to a dump site 2.5 km downstream, on the Zambian side of the river; see Figure 1.6. Construction activities will begin with the drying of the river in the area of the plunge pool.

A number of associated activities will form part of the refurbishment, namely:

- access road rehabilitation and construction;
- construction of a cofferdam downstream of the plunge pool and upstream of the powerhouses;
- pumping the water out of the plunge pool and releasing it further downstream in the Zambezi river;
- continuous pumping of water out of the plunge pool area for the entire duration of the works; and
- additional drilling and concreting inside the plunge pool area.

Figure 1.6: Layout of the Kariba dam
It is important to note that due to the location of the works area, namely at the toe of the dam wall, construction can only be done during the dry season / non-spillage period. This limits the construction timeframe significantly. This means that construction will be done in 7 month phases (May-November) after which all materials and equipment will be removed from the works area to allow for the 5 months spillage period. This cycle of site establishment and removal will continue for 5 years. The sequencing of the construction activities is illustrated in Figure 1.8 below.
Spillway Rehabilitation Works

The spillway is located in the arch dam wall and has six sluices equipped with downstream gates as shown in Figure 1.9 below. Given the age (50 years) of the spillway’s hydro-mechanical equipment and upstream grooves ZRA is proposing the replacement of the existing stopbeams with an emergency gate which will be operated in rehabilitated grooves.

The new gate will be operated by a new gantry (crane-like mechanism) and will slide into the rehabilitated upstream grooves. The construction of the emergency gate and associated infrastructure will be undertaken immediately after the rehabilitation of the plunge pool.

The rehabilitation activities will include:

- the installation of an emergency gate to be able to close a sluice, its associated gantry; and rehabilitation of the grooves, sills and lintels with new built-in parts adapted to the emergency gate;
- construction of cofferdams to dewater the sluices during the rehabilitation process; and
- Installation of new stopbeams for scheduled maintenance.

The sequencing of the construction activities is illustrated in Figure 1.10 below.
In Zambia, key legislation is the Environmental Management Act of 2011 which provides for integrated environmental management. In addition, the Environmental Impact Assessment Regulations (and Statutory Instrument 28 of the 1997 EIA Regulations) require developers to provide an environmental Project Brief to the Environmental Council of Zambia. If the Council finds that the project will have a significant impact on the environment, it may require the developer to submit an environmental impact statement. For this Project it has been decided by the ZRA that a full ESIA be undertaken to ensure that international standards are met.

In Zimbabwe, the key legislation is the Environmental Management Act (Chapter 20:27) which was enacted in March 2003. The act provides that the project developer (ZRA) should engage an independent consultant to undertake the ESIA. In addition, Statutory Instrument 7 of 2007 provides for the implementation of the findings of an EISA. Statutory Instrument No. 7 of 2007 the Environmental Management (Environmental Impact Assessments and Ecosystems Protection Regulations).
An essential component of an ESIA is stakeholder engagement. The key objectives of the stakeholder engagement process of an ESIA are:

- to share information about the Project;
- to allow informants to raise concerns/questions about the Project;
- to gather stakeholder responses on the ESIA findings and proposed management and design measures;
- to provide responses to concerns and questions, where possible, or to explore further as part of ESIA;
- to report back on the findings of the ESIA and proposed management measures; and
- to meet legislative requirements regarding stakeholder engagement.

**Be a Part of the Process**

You are invited to participate in the ESIA process. The Stakeholder Engagement Process aims to inform a wide range of stakeholders about the Project and the environmental and social assessment process to be followed.

The engagement process allows for the public to exchange Project information and to express their views and concerns on the proposed development. The process assists in identifying potential issues and concerns that need to be addressed during the impact assessment. It also captures stakeholder comments and suggestions for inclusion in the ESIA report.

Therefore, please ensure that you are registered on the Project stakeholder database. The registration of your details will ensure that you receive on-going Project communication such as meeting invitations, Project updates and the opportunity to review the draft ESIA report.

**Key contact persons during the ESIA process are:**

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**Project Website:**

http://www.erm.com/KaribaDamESIA
Registration and Comment Sheet– Kariba Dam Rehabilitation

September 2014

Should you have any queries, comments or suggestions regarding the Project, please note them below.

Return this comment sheet to:

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Please formally register me as stakeholder and provide further information and notifications during ESIA process

I would like to receive my notifications by:  

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Comments:

Thank you for your participation!