

1 INTRODUCTION

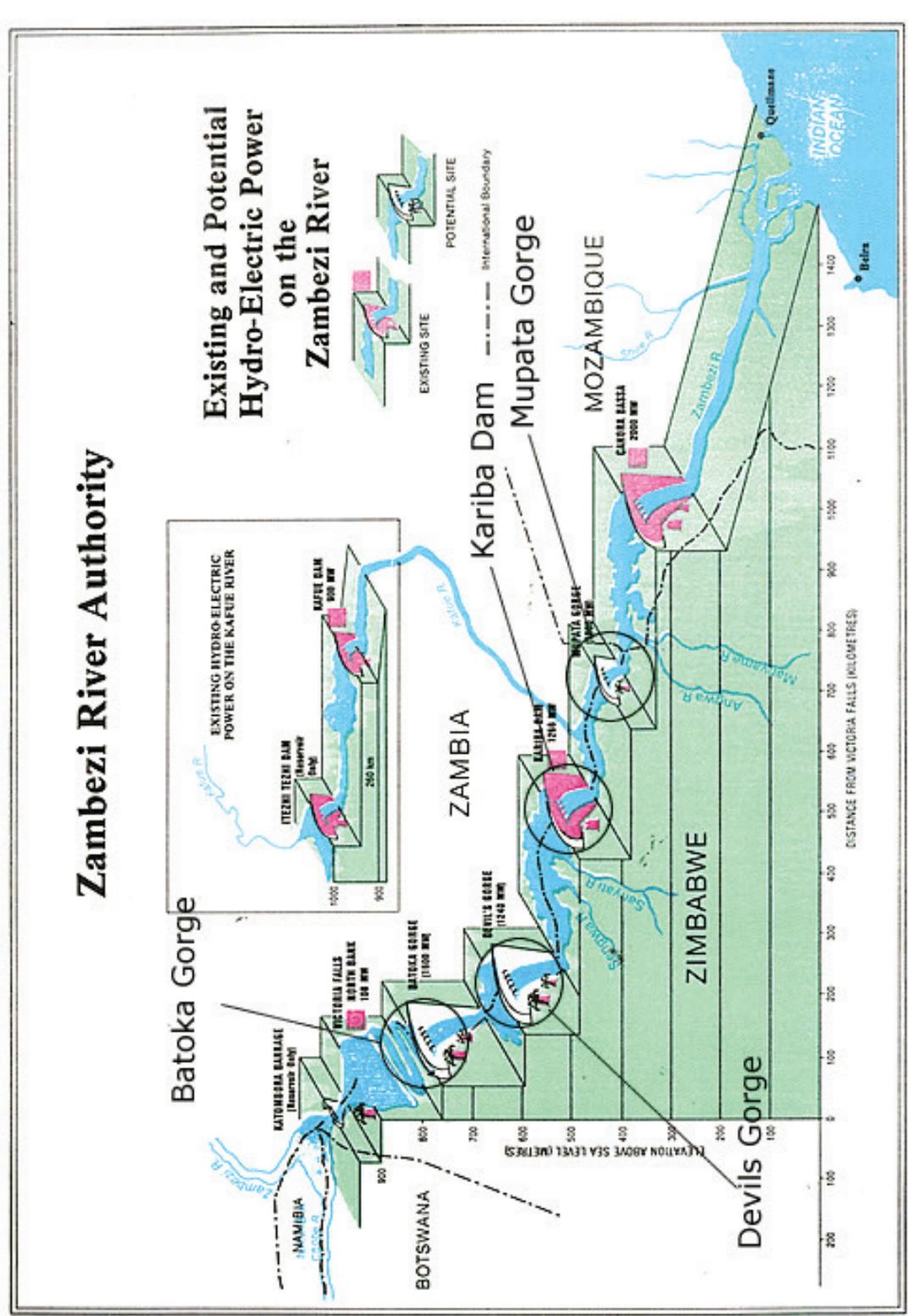
1.1 THE PROJECT

The proposed project, the Batoka Gorge Hydro-Electric Scheme (hereafter referred to as the Batoka HES), lies on the Zambezi River, approximately 50 kilometres (km) downstream of the Victoria Falls. This proposed bilateral hydropower project between Zambia and Zimbabwe includes the construction of a proposed 181 metres (m) high gravity arch dam that would provide a total capacity of between 1,6000 and 3,000 megawatts (MW) (to be shared equally between Zambia and Zimbabwe), and annual energy production of 11,100 Gigawatt hours per year (GWh/y). Further details of the project description, including locality maps, are provided in *Chapter 3* of this report.

1.2 PROJECT BACKGROUND

Although geological investigations in the Batoka Gorge commenced prior to the construction of the Victoria Falls Bridge (before 1904), more extensive work with regards to the Batoka HES in particular, began in 1972. This related to early investigations undertaken by Sir Alexander Gibb & Partners, on behalf of the then Central African Power Corporation (CAPCO), in order to identify suitable sites on the Zambezi River for the development of Hydropower schemes. Specific sites identified as part of the study included Batoka Gorge, Devil's Gorge and Mupata Gorge (*Figure 1.1*).

Figure 1.1 Identified Sites on the Zambezi for Hydro-Electric Power Development



Source: Zambezi River Authority

While engineering and geological investigations were undertaken in the Batoka Gorge during this study, the site was some 12 km downstream from the site now identified as the most suitable location for the Batoka HES development.

Since 1972, three more phases of site/geological investigations have been undertaken at the preferred Batoka site (12 km upstream of that defined in 1972). These investigations were conducted in 1981/82, 1983 and 1989 respectively, in order to supplement information acquired during previous studies, and to proceed to the final design of the dam and its associated infrastructure. Amongst other findings, the results of these investigations revealed that the Batoka Gorge substrate conditions represent a feasible location for such a project, with surrounding rock masses that are generally considered to be strong, hard and of low permeability (BJVC, 1993).

In 1981, the Zimbabwean Natural Resources Board commissioned the Department of Land Management (DLM) to undertake an Environmental Impact Assessment (EIA) of future dams at the Batoka Gorge and Mupata Gorge sites. The EIA report concluded that the Batoka HES would flood a comparatively small area, with "negligible" environmental impacts, although the study concluded that the scheme would have a direct negative impact on the white river rafting industry conducted below the Victoria Falls. Although it was determined that the study did not address upstream and downstream effects adequately, given the limited Terms of Reference (ToR), a team of consultants commissioned in early 1990 by the Industry and Energy Department of the World Bank judged that the EIA report was reliable and professionally conducted, as reported at an International Union for the Conservation of Nature (IUCN) workshop, held in Victoria Falls in 1992.

In 1992, the ZRA commissioned the Batoka Joint Venture Consultants (BJVC) to carry out a feasibility study for the Batoka HES. Although this report looked at two alternative sites, in addition to the 1981/82 site, neither was found to be better than the site identified in the 1981 report (BJVC, 1993). As such, the above-mentioned feasibility study concentrated on this site, with 18 different configurations for development being considered, costed and compared (BJVC, 1993). The findings identified that a Roller Compacted Concrete (RCC) gravity arch dam with two underground power stations (one on the Zambian bank of the river and another on the Zimbabwean bank), each with four turbines fed by two penstocks, with a combined total capacity of 1,600 MW, was the optimal project sizing for the site. Furthermore, the proposed dam would provide 1,680 Mm³ of storage. This relatively small storage capacity (compared to Lake Kariba's capacity of ±180,000 cubic millimetre (Mm³)) means that the plant would be intended to operate as a 'Run of River' (RoR) scheme, allowing more effective use of the storage in Lake Kariba and maximising secure power delivery at the greater system level. Annual energy production of the proposed scheme was expected to be in the order of 9,000 GWh.

A recommendation was made in the 1993 Feasibility Report for further studies to be undertaken to evaluate the overall environmental impact of the proposed project. In accordance with this recommendation, a number of additional Environmental Impact Studies were undertaken for the Batoka HES in 1998. The main objective of these studies was to assess various environmental issues that were not adequately addressed during the earlier feasibility study, as they were considered to fall outside of the scope of the original work. The nine aspects that were assessed in further detail, as part of the 1998 study, included the following:

- Vegetation studies;
- Wildlife studies;
- Water quality and limnology;
- Fish and fisheries;
- Tourism studies;
- Archaeology and paleontology;
- Social and cultural studies;
- Downstream impacts; and
- Land use studies.

The most notable negative impacts identified in the 1998 report were related to the loss of vegetation (eg inundation of rare species), wildlife, specifically avifauna (eg falcon nesting sites), tourism (eg white-water rafting), and socio-cultural and land use issues (eg in-migration). However, potential mitigation measures were also proposed to reduce the impact of the Batoka HES on these aspects, and a list of potential positive benefits of the development, was provided. The report did not constitute a comprehensive EIA, as only the environmental issues additional to the 1993 study were assessed. As such, the 1998 report should be read in conjunction with the 1993 Feasibility Report.

Given the wealth of studies undertaken for the proposed Batoka HES, the ZRA has since appointed Studio Pietrangeli (SP) Consulting Engineers to update the engineering feasibility study for the proposed scheme, and in parallel, has appointed Environmental Resources Management Southern Africa (Pty) Ltd. (ERM) to carry out an Environmental and Social Impact Assessment (ESIA) of the proposed Batoka HES. The ESIA is to make extensive use of the 1993 and 1998 studies, but updated using current information available.

1.3

PROJECT PROPONENT

The Zambezi River Authority (ZRA), a corporation jointly and equally owned by the governments of Zambia and Zimbabwe, is considering developing the Batoka Gorge Hydro-Electric Scheme, and is the project proponent for the proposed Batoka HES.

ZRA was formed by the Zambezi River Authority Act of 1987 (Act No. 17 and 19 Zambia and Zimbabwe respectively) and is governed by a Council of

Ministers consisting of four members: two are Ministers in the Government of the Republic of Zambia; and two are Ministers in the Government of Zimbabwe. The Ministers are those holding portfolios of Energy and Finance in the respective countries.

The functions of ZRA are set out in the schedule to the Act, and are as follows ⁽¹⁾:

- Operate, monitor and maintain the Kariba Complex ("Kariba Complex means: the Kariba Dam and reservoir, all telemetering stations relating to the Kariba Dam, any other installations owned by the Authority");
- In consultation with the National Electricity Undertakings, investigate the desirability of new dams on the Zambezi River and make recommendations thereon to the Council;
- Subject to the approval of the Council, construct, operate, monitor and maintain any other dams on the Zambezi River;
- Collect, accumulate and process hydrological and environmental data of the Zambezi River for the better performance of its functions and for any other purpose beneficial to the Contracting States;
- In consultation with the National Electricity Undertakings, regulate the water level in the Kariba reservoir and in any other reservoir owned by the Authority;
- Make such recommendations to the Council as to ensure the effective and efficient use of the waters and other resources of the Zambezi;
- Liaise with the National Electricity Undertakings in the performance of its functions that may affect the generation and transmission of electricity to the Contracting States;
- Subject to provisions of Article 13 of the Act, recruit, employ and provide for the training of such staff as may be necessary for the performance of its functions under the Agreement;
- Submit development plans and programmes to the Council for approval;
- Give effect to such directions, as may from to time, be given by the Council; and
- Carry out such other functions as are provided for the Agreement or are incidental or conducive to the better performance of its functions.

1.4 *TERMS OF REFERENCE*

Elements of the project constitute scheduled activities in terms of Act 12 of the 2011 Zambian Environmental Management Act, and Chapter 20:27 of the Zimbabwean Environmental Management Act of 2002. As such, an Environmental and Social Impact Assessment (ESIA) is required. In addition to Zambian and Zimbabwean legal requirements, the ESIA will also need to conform to international standards and best practices, in particular the requirements of the World Bank Group, the International Finance Corporation (IFC) and the Equator Principles. The ESIA will also conform with other

(1) ZRA, 2014, Functions, <http://www.zaraho.org.zm/functions.html>

international guidelines and standards directly applicable to dam-building and hydropower projects such as the World Commission on Dams (WCD), the International Hydropower Association (IHA) guidelines and the Southern African Power Pool (SAPP) environmental and social impact assessment guidelines for hydroelectric projects and transmission infrastructure.

Environmental Resources Management Southern Africa (Pty) Ltd. (ERM) in partnership with Kaizen Consulting (Zambia) and Black Crystal Consulting (Zimbabwe) was appointed by ZRA to facilitate the environmental licensing process, in accordance with both Zambian and Zimbabwean national and international requirements.

1.5

PURPOSE OF THE REPORT

The ESIA process is being conducted in accordance with the Zambian Environmental Management Act (Act No. 12 of 2011) and Environmental Impact Assessment (EIA) Regulations. In Zimbabwe, the process is being conducted in line with the following legislation: the Environmental Management Act 20:27 of 2002; Statutory Instrument 7 of 2007: Environmental Management (Environmental Impact Assessments and Ecosystems Protection) Regulations; the Environmental Impact Assessment Policy of 1997; as well as the Environmental Impact Assessment Guidelines of 1997. The study will also conform to the World Bank Safeguard Policies and the International Finance Corporation (IFC) performance standards.

The environmental scoping study (*this report* – otherwise known as the Terms of Reference for the study, and a requirement specifically of the Zambian Environmental Management Act of 2011) is the second phase of the overall ESIA process. The purpose of the scoping study is to identify the environmental consequences of the proposed project, and to consider input from stakeholders. The study aims to provide the relevant authorities with enough information to make a decision regarding the project, or the need for further biophysical or socio-economic studies. The main objectives of this study are therefore to:

- present the ESIA process and the relevant national legislation and international obligations that will be adhered to;
- present a description of the proposed project;
- present the alternatives assessed and the rationale behind the preferred alternative;
- present the biophysical and socioeconomic conditions of the study area;
- present the issues raised during the initial public consultation process;
- identify the environmental and social issues related with this project, on which the ESIA Study shall be focused; and
- Present an outline of the terms of reference for the various specialist studies that will address the identified environmental and social issues.

The Scoping Report does not present the assessment of the environmental impacts or other definitive answers; these shall be presented in the ESIA Report.