



# **BATOKA GORGE HYDRO-ELECTRIC SCHEME (BGHES) - ZAMBEZI RIVER - ZAMBIA AND ZIMBABWE**

*Environmental and Social Impact Assessment Disclosure*

**04 December 2020**

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*The business of sustainability*

# Agenda

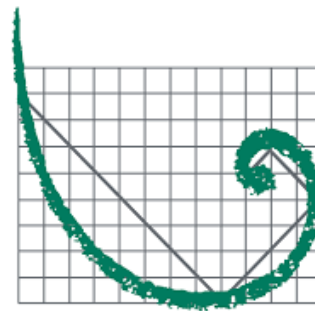
1. Introductions
2. Focus Group Discussion Etiquette
3. ESIA Process Undertaken To Date
4. Project Description and Status
5. Impacts Associated with Loss of Critical Habitat and Avifaunal Communities
6. Next Steps
7. Focus Group Discussion

# Webinar Etiquette

- As a participant, you will be muted for the duration of the presentation
- During this time you as participant can use the Q&A function (bottom tool bar of your screen) to pose questions and comments to the speaker. Please do not use it for other topics or internal discussion
- These questions and comments will be addressed during the discussion session following the presentation
- To ask a question during the Q&A session please raise your hand using the function on your tool bar
- We will record the meeting and share the presentation on the Project website



# Introduction



ERM

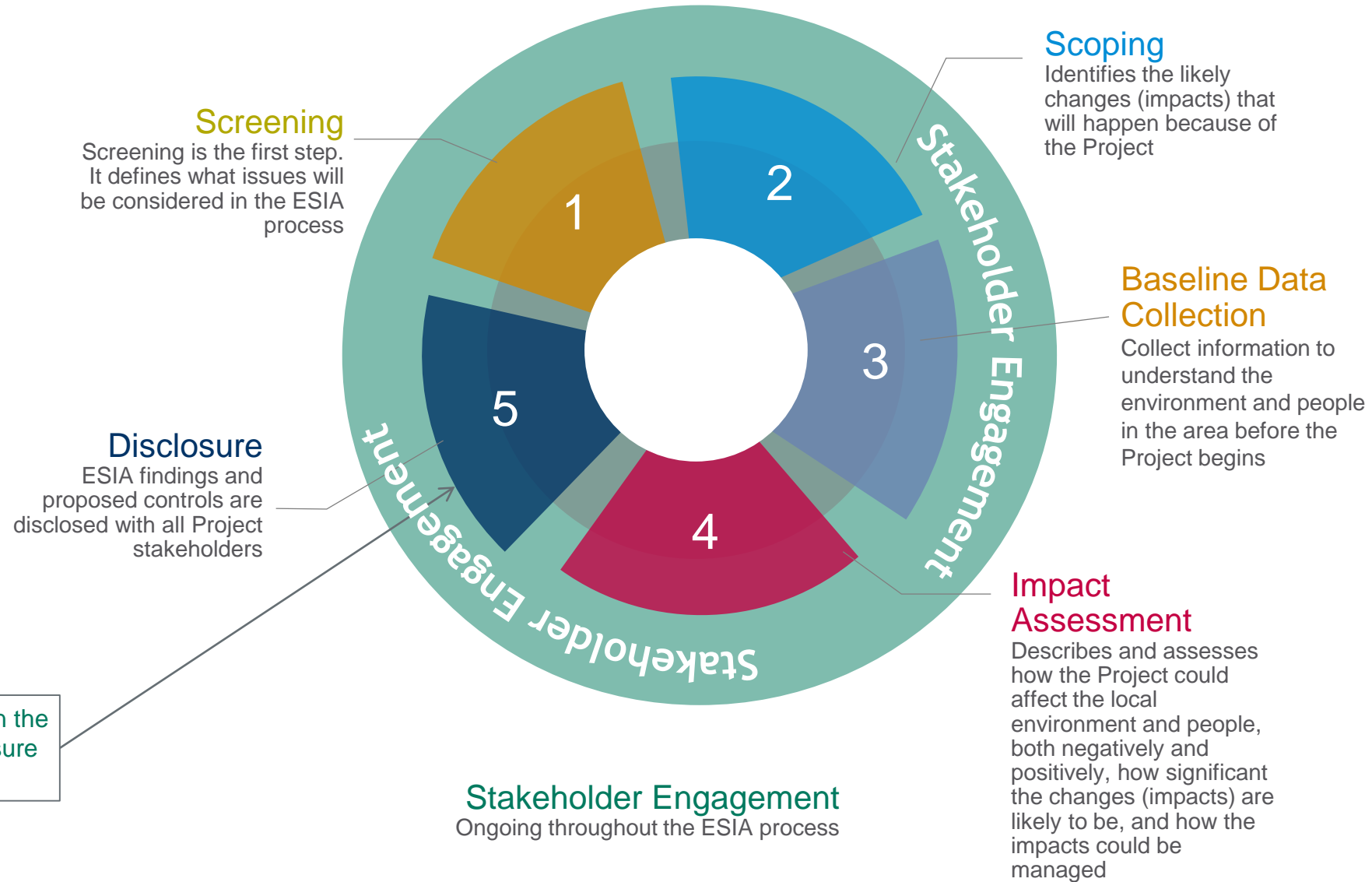


# **ESIA Process Undertaken To Date**

# Regulatory Framework

- Three separate draft ESIA have been prepared for the Project to assess potential **physical, biophysical**, and **social impacts** of the Project, and propose measures to mitigate adverse impacts and enhance project benefits
- Three ESIA were prepared under the Zambia and Zimbabwe Environmental Management Acts and associated guidelines
- International environmental and social guidelines and standards applicable to the BGHES, include
  - World Bank Environmental and Social Safeguard Policies
  - The International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012)
  - World Commission on Dams (WCD) Guidelines and Recommendations
  - The International Hydropower Association (IHA) Sustainability Guidelines and Sustainability Assessment Protocols
  - The Southern African Power Pool (SAPP) Environmental and Social Impact Assessment Guidelines for Hydroelectric Projects and Transmission Infrastructure in the SAPP region

# The ESIA Process



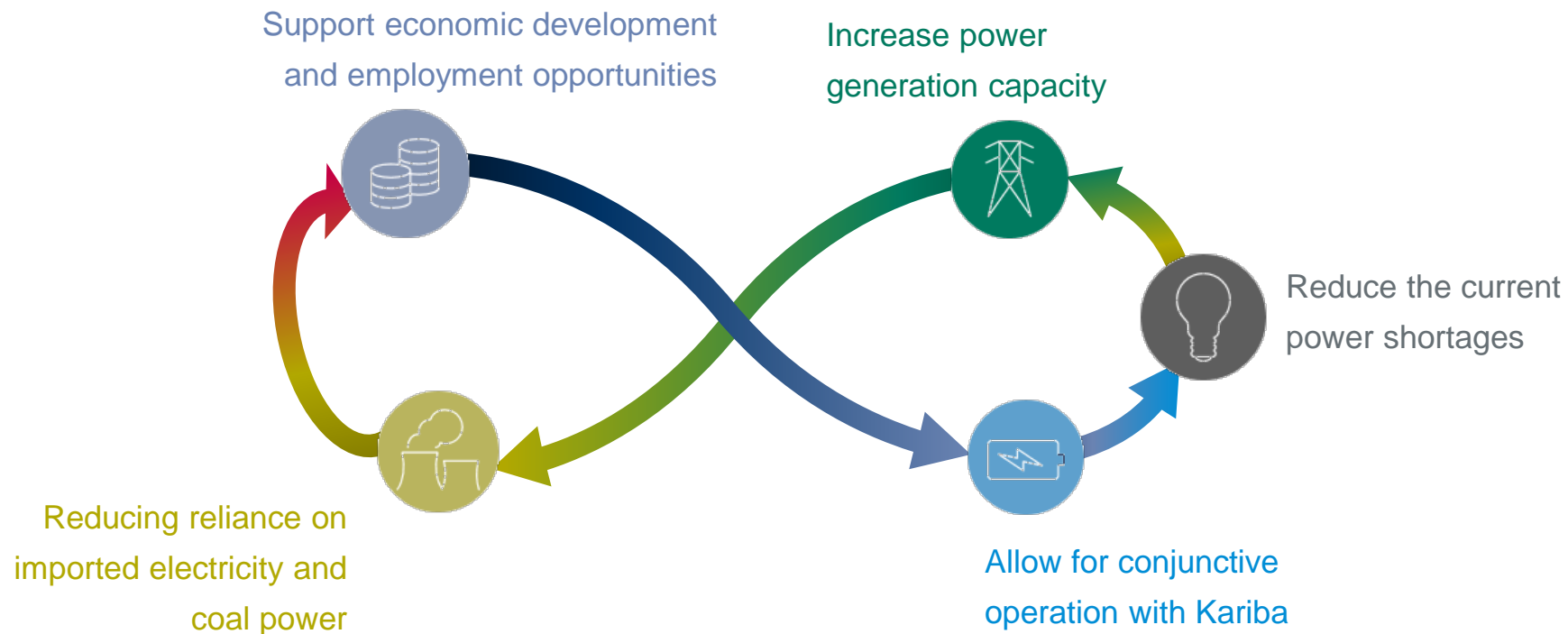
## **Project Description**



# Need for the Project

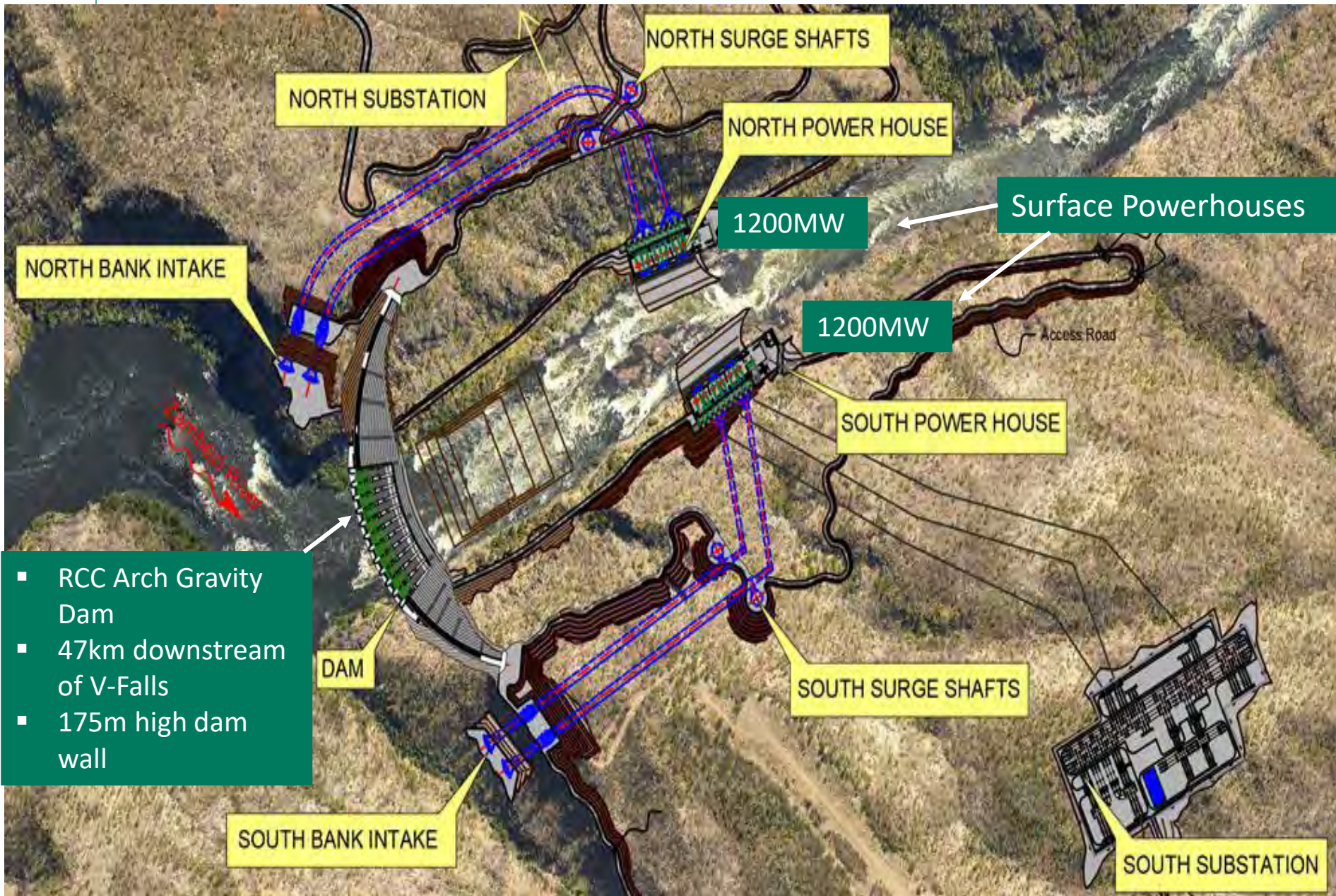
The Zambezi River has a vast hydropower energy potential. Hydropower is considered the most feasible and reasonable electrification option for both countries

BGHES would contribute significantly to electricity supply of Zambia and Zimbabwe, and to distribute power to southern African countries under the Southern African Power Pool (SAPP). The Project will aim to:





# BGHES Proposed Scheme Layout



Batoka Gorge Site

- Roller Compacted Concrete Arch Gravity Dam Wall and impound area (reservoir)
- Spillway
- Pressure waterways, located in the abutments
- Two surface power houses, one on each side of the river, located on the abutments and two switchyards
- Project townships (in both Zambia and Zimbabwe) and other ancillary infrastructure (such as quarries, spoils area and batching areas)
- Access roads on each side



# BGHES Proposed Project Transmission Lines

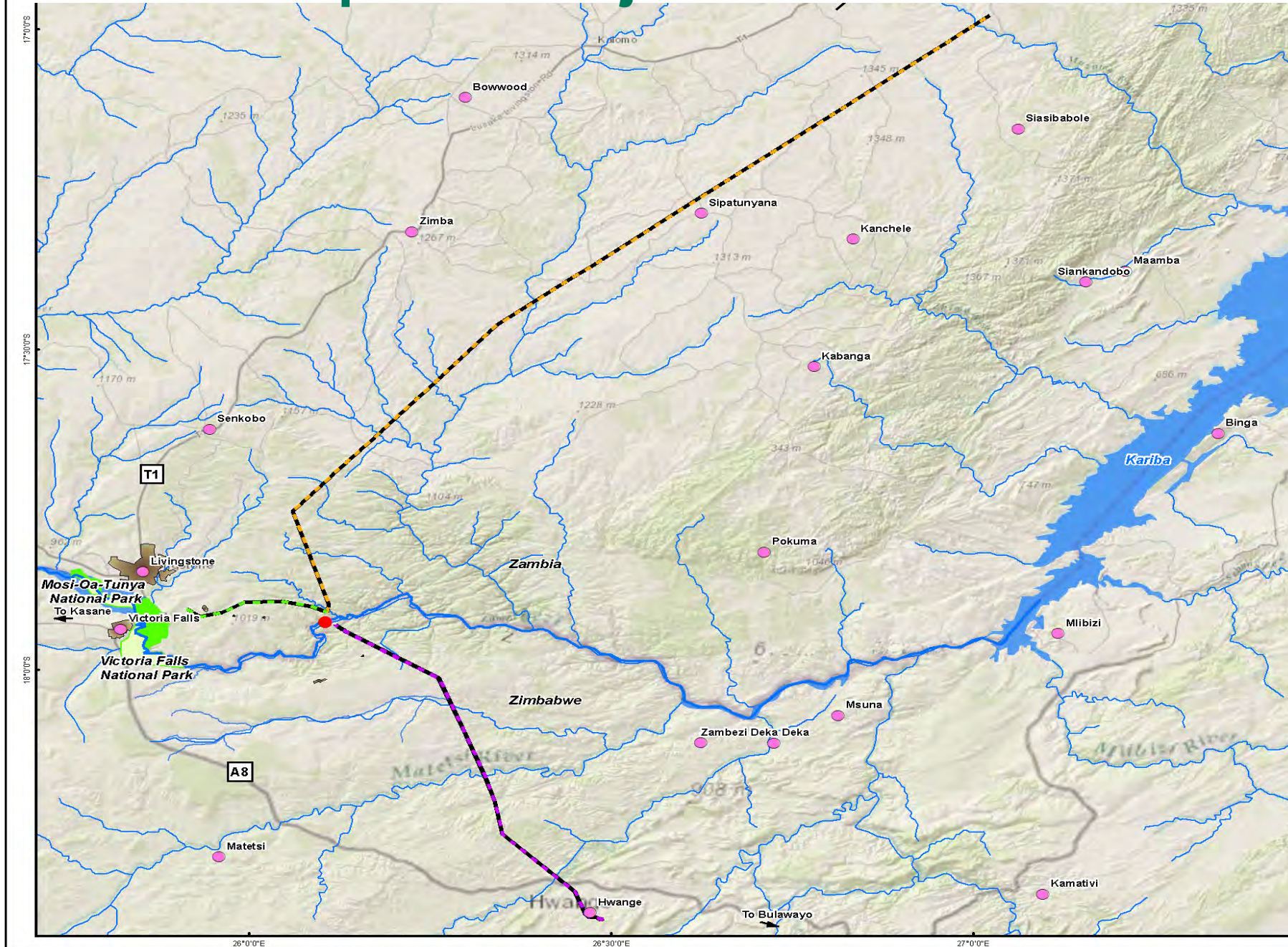
Three transmission line routes are proposed as part of the BGHES Project:

## Zambia

- Mukuni 300 kV transmission line - approximately 22 km (from proposed BGHES substation on north bank to newly constructed 330 kV Mukuni ZESCO substation in Livingstone)
- Muzuma 300 kV transmission line - approximately 152 km (from proposed BGHES substation on north bank to Muzuma substation in Choma)

## Zimbabwe

- Hwange 400 kV transmission line - approximately 67 km (from the proposed BGHES substation on south bank to the proposed Hwange 400/330kV substation)





# BGHES Proposed Access Road & Staff Townships

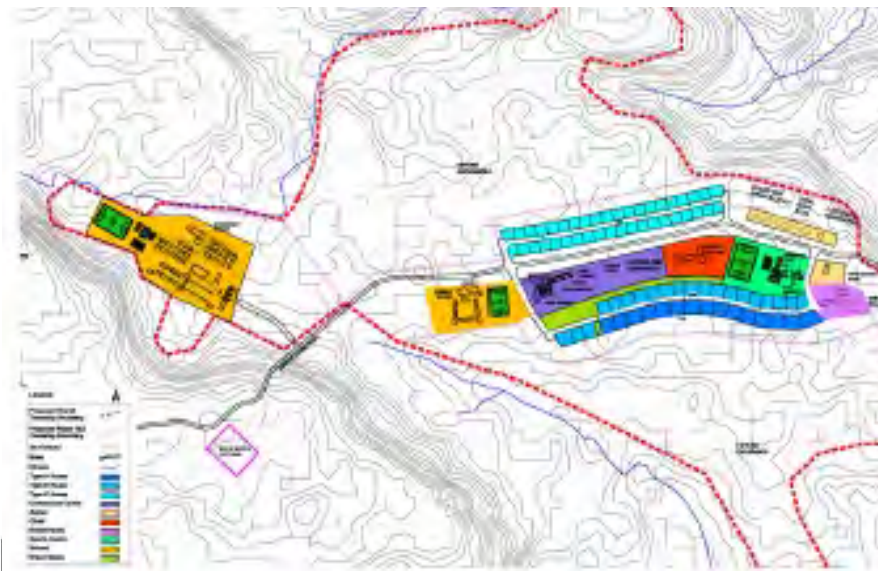


Figure 5-1: Proposed Northern Township Plan

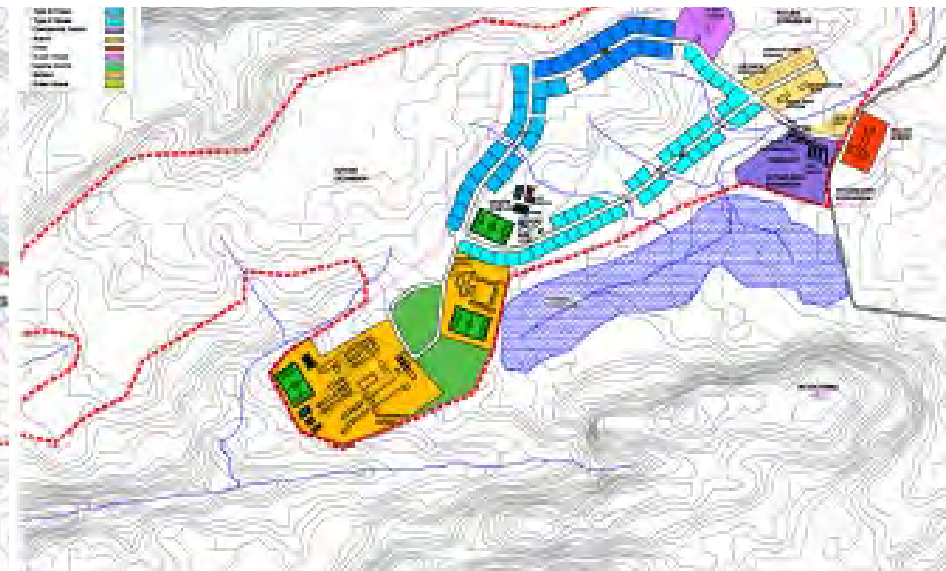
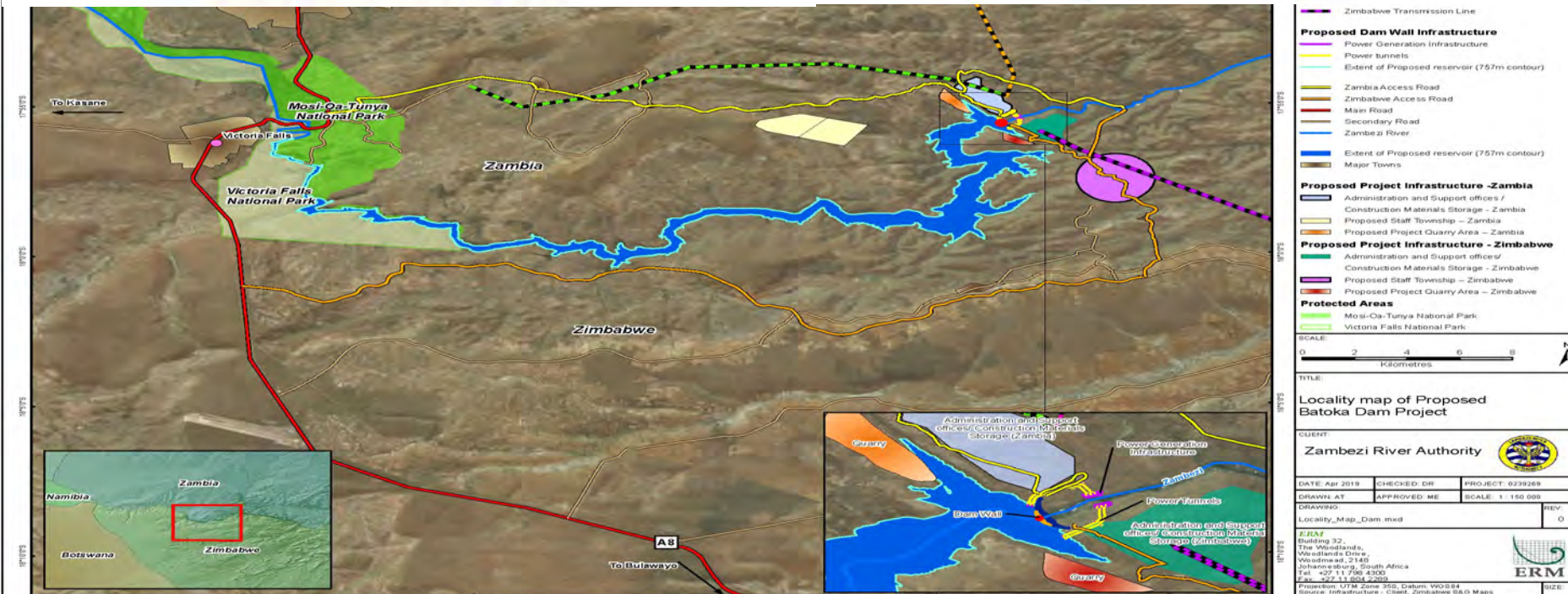


Figure 5-2: Proposed Southern Township Plan



## Access Road

Overall access road length is 35 km on the Zambian side and 53 km on the Zimbabwe side

**Staff Townships** - There are two proposed Townships on the North bank and South bank

## Land Acquisition Progress

**Zambia** (over 2558Ha allocated for the project)

- All required approvals obtained , pending is numbering of the land parcels to be followed by letters of offer and then title deeds

**Zimbabwe** (applied for about 3000Ha.)

- Cabinet approved the excision from communal to urban and SI gazetted
- Next steps include preparation of base maps, concept layouts and for submission to Physical planning department

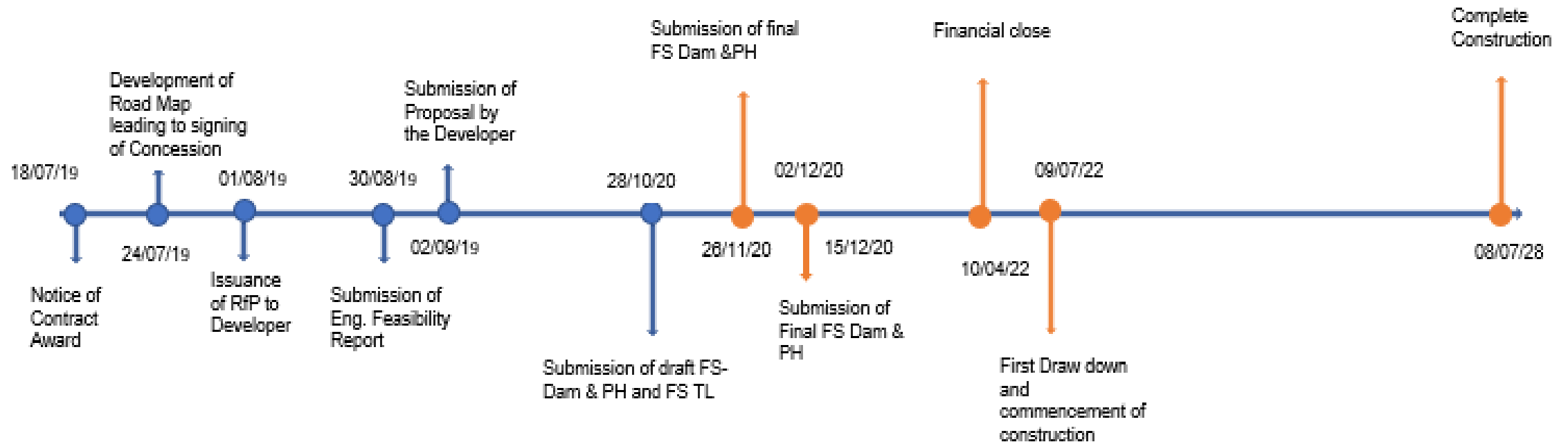
# BGHES Project Status

- Engineering Feasibility Studies by Studio Pietrangeli were completed
- Draft ESIA reports completed and placed in the public domain in March 2020, currently ESIA process is at Public Disclosure phase
- The Developer is carrying out predevelopment activities including refining and optimizing the feasibility studies. Developer has since submitted proposal which is currently under Review

## **Current Pre-Development Activities by the Developer**

- Bathymetric Surveys
- Additional Geotechnical Studies
- Aerial Topography Surveys
- Environmental and Social Impact Assessment for Additional Transmission Lines

# BGHES Project Timeline





# **Impacts Associated with Loss of Critical Habitat**

## **Impacts to Avifaunal Communities**

Andrew Cauldwell

# Impacts to Protected Areas and Loss of Critical Habitat

## Baseline

- The Mosi-oa-Tunya (Zambia) and Victoria Falls (Zimbabwe) National Parks are legally protected and recognised as a UNESCO Natural World Heritage Site.
- The whole Batoka Gorge is recognised as an Important Bird Area (IBA) and an IUCN Key Biodiversity Area.
- The Batoka Gorge is a unique ecosystem, which qualifies as a critical habitat as per IFC criteria.

## Impact Statement

- Activities causing transformation and loss of habitat are construction of the dam wall, associated infrastructure and inundation of the reservoir.
- Leads to direct loss of critical habitat, legally protected areas and internationally recognised areas, including a UNESCO World Heritage Site (the BGHES reservoir extends into the World Heritage Site).

## Key Management Measures

- Avoiding impacts to important areas is not feasible.
- Protecting non-impacted parts of the Batoka Gorge (rim, cliffs, scree slopes) reduces the loss of critical habitat.
- A significant residual impact remains that needs to be

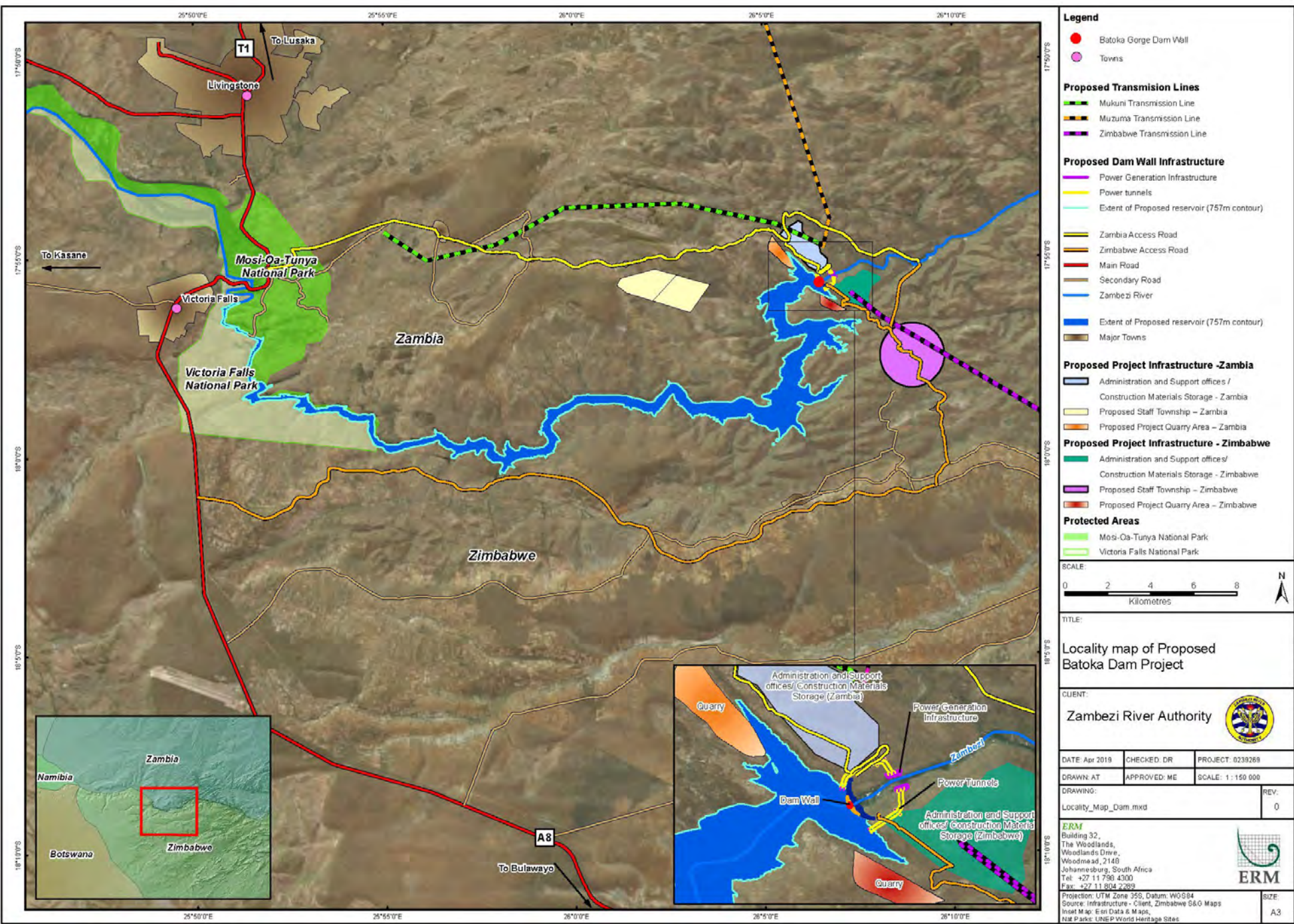
- offset to align with the IFC Performance Standards.
- Offsetting residual impacts was beyond the scope of this ESIA, and no offset options have been identified.
  - Unmitigated impacts to the World Heritage Site present a potential fatal flaw (*as per guidance notes to the IFC Performance Standard 6*).

## Impact Significance Rating Before Mitigation

**Major Negative Impact** (*potentially of Critical significance*)

## Impact Significance Rating After Mitigation

**Major Negative Impact**





# Avifauna (Bird) Impacts

## Baseline

- The Batoka Gorge is an IBA (*as in previous slide*) as it supports the largest known population of Taita Falcons, and is important for other birds (Rock Pratincole, Verreaux's & Crowned Eagle, Peregrine & Lanner Falcon, Bat Hawk, Augur Buzzard).
- Parts of Batoka Gorge remain un-surveyed for Taita Falcons (surveys undertaken for upper 25 km stretch), also their ecology is not sufficiently understood to predict impacts and develop appropriate mitigation.

## Impact Statement

- Primary activity that will affect important species will be loss of the Batoka Gorge habitat from inundation of the reservoir.
- Impact to birds from losses of key biodiversity features (swifts, a key prey source for Taita Falcons, may be adversely impacted by the loss of rapids, but there is insufficient evidence of this impact).

## Key Management Measures Required

Key baseline gaps remain, and ZRA are committed to an action plan that outlines an approach to:

- Species specialists to thoroughly assess the entire Batoka Gorge to determine the occurrence and status of Taita Falcons;
- Workshopping with all species specialists to pool available knowledge, raise the level of confidence on potential threats and impacts, and identify if mitigation to address threats is feasible;
- Develop an appropriate Biodiversity Action Plan to address the risks.

Impact Significance Rating Before Mitigation	Impact Significance Rating After Mitigation
Major Negative Impact ( <i>low confidence</i> )	Uncertain due to data deficiency

# Impacts Associated with Changes to the Downstream River Conditions

Alison Joubert

# Downstream Flow Impacts – Environmental Flows

## Baseline

- Present ecological status of the downstream river is high (Category A/B and B – slightly modified from natural conditions) for most of the gorge
- The Zambezi River ecosystem supports extensive aquatic habitats, riparian vegetation and serves as important ecological corridor and sustains rich floral and faunal diversity and populations of large fauna including hippo and crocodile populations
- There are important water users downstream closer to Lake Kariba - predominantly informal abstractions in support of agricultural activities
- Larger, more intensive water users are associated with Lake Kariba - it was assumed that impacts will not be felt as far downstream as Kariba

## Impact Statement

- Impacts relating to flow and sediment conditions in the river downstream of BGHES during dam filling and operation particularly during hydro-peaking; Potential temperature effects in the dry season.
- It was agreed that there could be no more than a 1.5 class drop in Overall Ecosystem Condition in the downstream river, i.e., from A/B to no less than a mid-C category. This represents a drop in ecological category from “near natural” to “moderately modified”, which is still considered a healthy functioning ecosystem

Impact Significance Rating Before Mitigation	Impact Significance Rating After Mitigation
Major Negative Impact	Moderate Negative Impact (if run-of-river in dry season)
	Major Negative Impact (if hydro-peaking in wet and dry seasons)

## Key management measures

- Only operated as a hydro-peaking scheme during the wet season (Feb-Aug) as per operating rules established by scenario AddPM04 (dry season = Sep-Jan).
- ZRA will adopt off peak flow condition during wet season of QMin as per flow statistics in ESIA
- During hydro-peaking, rate of change of flow releases (ramping rate) will be restricted so there is a correspondingly gradual change in downstream water levels
- Gradual (smoothed) transition between wet and dry season minimum flow conditions



**Next Steps**

# Next Steps: ESIA

- Stakeholder can submit additional comments and questions to ERM until 25 January 2021 when the ESIA comment period will close
- All comments received in this forum, as well as additional comments submitted, will be included in the ESIA Comment and Response Report
- Comments, together with a response from the Project team will be included in the ESIA Comments and Response Report to be submitted to the Authorities
- The final ESIAs and associated documents will be submitted to both the EMA and ZEMA for review and consideration

# Next Steps: Additional Studies

Zambezi River Authority to develop an action plan to:

- Further assess entire Batoka Gorge to determine the occurrence and status of Taita Falcons
- Work with species specialist to raise the level of confidence on potential threats and impacts, and identify if mitigation to address threats is feasible
- Develop an appropriate Biodiversity Action Plan to address the risks

# **Focus Group Discussion**



# Thank you

Please feel free to reach out to ERM via email at:

[batokagorgehes@erm.com](mailto:batokagorgehes@erm.com)