

SECTION 11 : SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table 11-1 : Summary of Impacts and Potential Mitigation Measures and/or Further Work

Potential Impact	Preliminary Assessment of Significance*	Potential Mitigation Options and/or Further Studies
Inundation of islands and riverine forest	High	Select Site 2 to minimise impact Detailed ecological studies in EIA
Inundation of rocky habitats	High	Select Site 2 to minimise impact Detailed ecological studies in EIA
Loss of biodiversity, especially Red Data Book species	High	Further ecological studies during EIA
Inundation of huts, businesses	Medium	Select Sites 4 or 5 to minimise impact Reduce weir height at Site 2 Conduct detailed socio-economic assessment
Inundation of infrastructure	Medium	Re-route road Reduce weir height at Site 2 Select Sites 4 or 5 Conduct detailed socio-economic assessment
Inundation of institutions	Medium	Select Site 2 Construct a flood retaining wall at Frans Dimbare centre Reduce weir height at Sites 4 and 5
Inundation of graves and burial sites	High	Avoid cultural and religious sites Relocate graves in consultation with local community
Inundation of archaeological sites	Medium	Detailed archaeological assessment if required
Visual impact of weir on tourist facilities	Low	Select Sites 4 or 5
Reduction in flow of water during construction	Low	Fill basin during flood peak Construct bypass channel
Reduction in flow in river	High	Install TOPS gates to ensure continual flow
Reduction in natural variability in flow	High	Set strict operational guidelines to ensure that flow over the weir reflects the natural hydrograph Determine minimum flow requirements for different seasons/flow conditions
Inundation of land during Probable Maximum Floods	Medium	Minimise weir height

Interruption in the free flow of sediment downstream	Potential fatal flaw	Annual sluicing Bypass pumping Modelling
Scour of riverbed downstream of weir and erosion of important habitat	High	Bypass pumping of sediment
Potential Impact	Preliminary Assessment of Significance*	Potential Mitigation Options and/or Further Studies
Impacts of sediment interruption and sluicing on downstream ecology and geomorphology	High	Bypass pumping
Impacts of bypass pumping on downstream ecology and geomorphology	Medium	Distribute sediment release across width of river Pumping must be continuous
Interruption in fish movement	Medium	Fish ladder Fish bypass channel
Impact of noise during construction	Medium	Develop detailed Construction Environmental Management Plan (CEMP) and monitor
Impact of construction on vegetation at weir site	High	Develop detailed Construction Environmental Management Plan (CEMP) and monitor
Impact of construction of substation on vegetation	Low - Medium	Select site to minimise impact on flora and fauna Conduct detailed surveys during EIA
Impact of developing quarries and borrow pits during construction	Low – Medium	Conduct detailed surveys during EIA
Impacts of pollution from oils, diesel, paint, concrete, sediment etc during construction	Medium	Develop detailed Construction Environmental Management Plan (CEMP), monitor and enforce
~	Medium	Clear all vegetation in the basin prior to filling Make cleared timber available to local community Use local labour to clear vegetation
Impact of erosion during construction	Low	Develop detailed Construction Environmental Management Plan (CEMP) and monitor
Impact of work force on social stability	Low	Employ construction labour locally Develop a community liaison and consultation plan
Impact of work force on STDs in local population	Medium	Employ construction labour locally Develop a community liaison and consultation plan Education and awareness training
Impact of introduced alien	Medium	Develop detailed Construction

plants and animals		Environmental Management Plan (CEMP), monitor and enforce
Impact of erosion in weir basin during hydro power operations	High	Manage draw down within natural limits of variability Implement bypass pumping instead of sluicing Monitoring
Impact of water pollution during operation	Low	Adhere to EMP or EMS Bypass pumping Monitoring
Impact of noise during operation	Low	Adhere to EMP or EMS
Potential Impact	Preliminary Assessment of Significance*	Potential Mitigation Options and/or Further Studies
Potential for seismic activity	Low	Conduct seismic risk assessment in Feasibility Study
Impact on sustainable livelihoods	Medium	Calculate compensation costs on loss of livelihood as well as on loss of property and land Develop a Resettlement Plan to World Bank standards Include resettlement areas in EIA Use weir impoundment to promote sustainable artisanal fisheries in the area
Potential increase in disease e.g. malaria, biharzia	Medium	Education and awareness training Spraying programmes Vegetation management within the impoundment Surveillance
Impacts on socio-economic structure of Botswana, especially the tourist industry	Low – High	Detailed socio-economic survey including a cost-benefit analysis Physical modelling of sediment impacts
Impacts on tourism in the project area	Medium	Allow use of impoundment for boating Erect bird and animal viewing hides Make power available locally
Maximise local economic benefits during construction	High	Use local labour during construction Source goods and services locally as far as possible
Maximise local economic benefits during operations	Medium	Make power available locally for small businesses Capacity building programmes
Visual impact of the substation	Low	Careful positioning Use existing trees as a screen or plant indigenous vegetation

Denudation of land following construction	Low	Develop a rehabilitation programme using indigenous species
Impact of power lines on birds	Medium	Careful route alignment planning during EIA
The impact of cumulative effects	Not determined	Incorporate a cumulative effects study in the EIA
Impact of land mines in zone of inundation	High	Clear all land mines prior to land clearance
Impact of climate change on long-term viability of the project	Not determined	Use latest climate and runoff models to predict climate change and viability of project
Impact of catchment land use changes on water flow, quality and sediment production	Not determined	Model land use change for a variety of scenarios under changing climatic conditions
Potential Impact	Preliminary Assessment of Significance*	Potential Mitigation Options and/or Further Studies
Evaporation and seepage	Low	Minimise water surface area
Impact on future conservation initiatives	High	MET to proclaim additional conservation areas along the Okavango River

Note:* Where significance is rated as Low, it means that the impact would not affect the decision as to project approval. Medium significance means that the impact should have an effect on decision-making unless the impact can be mitigated. A High significance rating means that the impact should have an effect on the decision regarding the project.