



**PROJECT: EMERGENCY POWER INFRASTRUCTURE
REHABILITATION PROJECT**

Project Number: P-ZW-FAO-001

COUNTRY: ZIMBABWE

**ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN
SUMMARY**

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ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN SUMMARY

1. BRIEF DESCRIPTION OF THE PROJECT AND KEY ENVIRONMENTAL AND SOCIAL COMPONENTS

The objective of the project is to improve the provision of adequate and reliable power supply in an environmentally sound manner through the rehabilitation of the Hwange Power Plant (HPP) and the power transmission and distribution facilities in the country.

The envisaged project is situated in Hwange District within Matebeleland Province. Hwange district lies North West of Harare at the very western part of the country. The district is predominantly a mining district and the area has, in addition to Hwange Power Station, Southern Mining Coke Plant, Hwange Coal Gasification Plant, and Hwange Colliery.

The project consists of the following main components:

(A) Rehabilitation of the Hwange Power Plant facilities: This component shall include the following activities:

- Replace and refurbish slurry pumps, ash pumps, sluicing water pumps, booster pumps, sealing water pumps, beilge pumps and overflow sump pumps.
- Replace 4 discharge lines, 4 clinker grinders, 1 fluid coupling, 500m of 11kV transformer cable and 500m of 3.3kV 3-core cables.
- Procure and install 16 sub-transmission level transformers.
- Procure and install 800-900 33/0.4kV distribution transformers.
- Procure and install 800-900 11/0.4kV distribution transformers, and

(B) Implementation of the re-designed ESMP;

(C) Conduct an Environmental and Social Audit and design of an Environmental and Social Management Plan; and

(D) Project Supervision and Auditing.

Project outputs will be refurbished items in the main generation blocks such as boiler feed pumps and feed heaters in the boiler plant, turbine auxiliaries, excitation systems and induced draft fans which will lead to increased plant capacity and reliability. Plant availability will also increase from around 65% to 90%. Other outputs are refurbished auxiliary facilities such as the Boiler plant, Ash plant, Coal plant, cooling water pump station at Deka and generator transformers that will result in an overall improvement in plant operations and allow plant available capacity to increase from 450MW to 780MW.

2. MAJOR ENVIRONMENTAL AND SOCIAL IMPACTS

The project activities will mainly comprise repairs and replacement of existing equipment and limited civil works. This will have minimum negative impacts on the local environment with waste and sludge management and disposal being the significant source of impacts (See Annex VIII). The ESMP will clearly elucidate the measures to be taken to protect the environment including observing proper working methods, replacement of destroyed vegetation, ensuring proper disposal of discarded equipment and materials that may contaminate the soil and ground water; prevention of nuisance in terms of dust, noise, odour, etc. The project provides protective clothing for personnel engaged in the laying or cleaning of sludge / sewers and will also look at fencing and/or covering some of the infrastructure which poses a great danger to humans such as open manholes and ponds. Among positive outcomes, the project is proposed to remediate and mitigate a number of impacts due to lack of maintenance of the Hwange power plant. Such works shall result in (i) significant reduction in air pollutants; (ii) significant improvement to the coal handling and disposal system; (iii) significant improvement and safety considerations for the Ash Dam and Ash Dam area; (iv) significant development of capacity building; and (v) significant enhancement of the environment, livelihood and health protection of workers and people residing in the surrounding areas.

3. ENHANCEMENT AND MITIGATION PROGRAM

Zimbabwe Power Company / Zimbabwe Electricity Supply Authority (ZPC/ZESA) is committed to rehabilitating and operating the Hwange Power Plant (HPP) to high environment, health and safety (EHS) standards.

The following measures build on the design criteria for the power plant in order to reduce to a minimal level any further potential negative impacts. Main areas where positive impacts can be introduced or maximized are as the following.

3.1 Mitigation Program during Auditing

3.1.1 Air Quality

Emissions from the Stack:

- Conduct an air quality dispersion modeling study to identify the locations of maximum concentrations of pollutants emitted from the stack (SO₂, NO_x, TSP, PM₁₀, PM_{2.5}, CO);
- Determine the most representative points to locate background air quality monitoring shelters of an air quality monitoring system composed of at least three monitoring shelters;
- Use the air quality dispersion modeling study to check the existing stack height. Examination of stack height (around 100-110m for all stacks) should include testing of elongated stack heights up to the order of 150m;
- As a minimum requirement, the World Bank's ambient air quality guidelines (in µg/m³) for background atmosphere will be followed;

- A specialized Engineering Consulting Firm (ECF) is to be selected to undertake a comprehensive study for identifying the most appropriate cleaning systems (pollution controllers) for the following abatement measures:
 1. Desulphurization system.
 2. De-noxing processes.
 3. Upgrading techniques for thermal generation efficiency.
- Electrostatic Precipitators are to be refurbished for operating at full capacity, where more than 95% of emitted dust particulates could be captured.

Emissions from the Ash Dam:

- A specialized Engineering Consulting Firm is to be selected to undertake an integrated study for identifying the most appropriate solution (pollution control measures) for the following ash treatment issues:
 1. Ash plant collection and disposal system.
 2. Management of the Ash Dam:
 - Methods of preventing blown-out ash from dispersion into the atmosphere at the Ash Dam will be investigated.
 - Safety of the Hwange Ash Dam will be assessed and effective remedial action will be selected and implemented immediately.

3.1.2 Effluent Water Quality

- Study the potential for optimum treatment, reus, and recycle of the effluent water in various wastewater streams within the power plant, including: cooling tower blowdown; ash handling wastewater; material storage runoff; metal cleaning wastewater; and low-volume wastewater, such as air heater and precipitator wash water, boiler blowdown, boiler chemical cleaning waste, floor and yard drains and sumps, and backflush from ion exchange boiler water purification units.
- Identify most effective ways to control/eliminate contamination arises from demineralizers; lubricating and auxiliary fuel oils; trace contaminants in the fuel (introduced through the ash-handling wastewater system discharge); and chlorine biocides, and other chemicals used to manage the quality of water in cooling system.
- Cooling towers blowdown will be investigated against toxic chemicals that may be present in cooling towers additives (including chemicals containing chromium and Zink whose use should be eliminated).
- Recommended water treatment and wastewater conservation methods are to be studied for best selection of the optimum solutions.
- Procure New Laboratory equipment and refurbish online analyzer equipment

Ash Handling:

Alternative Systems for ash handling, such as dry handling of fly ash, which is capable of eliminating surface impoundments, will be studied and investigated by a specialized Engineering

Consulting Firm for potential alleviation / elimination of ash disposal related impacts. Methods of potential economic use of such ashes should be also examined.

3.2 Mitigation Program during Rehabilitation

3.2.1 Air Quality

Dust Emissions

Implementation of good site practices including

- rehabilitation method is not blasting, but is top-down deconstruction for replaced/ removed equipment, in the reverse order to that of construction / erection, progressive, level by level having regard to type of replacement;
- wherever possible, external non-load bearing cladding shall be removed first;
- debris to be removed at frequent intervals and stockpiles shall not be allowed to build up. Waste shall be removed on a daily basis as far as reasonably practicable;
- appropriate siting and maintenance of stockpiles of demolished materials as well as reconstruction materials so as to minimize dust blow;
- minimizing drop heights for material transfer activities;
- roads will be kept damp via a water bowser;
- roads will be compacted and graveled if necessary;
- site roads will be maintained in good order;
- regulation of site access;
- sheeting of lorries transporting demolished materials and spoil;
- enforcement of vehicle speed limits on dust roads to <35 km/h;

Coal Handling

- Resuscitate the dust suppression system in the local plant;
- Monitor quality of coal and control levels of fines; and
- Modify/maintain pulverized coal ductwork to reduce incidence of pf leaks.

Ash Disposal

- Look at possibility of selling the ash to road construction and cement manufacturing companies.
- For ash dam dust there is need to plant grass on slopes and all exposed surfaces.
- Need to compact the ash.

- Install an irrigation system.

3.2.2 Liquid Effluent

Generation of site-run off

Mitigation activities will include the following

- No discharge of effluents into the surrounding environment - all effluents shall be collected and treated on site or removed off site for treatment by approved firms.
- Development of a site drainage plan which reduces flow velocity and sediment load.
- Protection of temporary stockpiles of soil from erosion by using a reduced slope angle where practical, sheeting and by incorporating sediment traps in drainage ditches.
- Maintenance of well kept rehabilitation site.
- Proper site management to minimize surface water run-off, soil erosion, soil remediation activities and the impacts of liquid effluents.
- Adequate maintenance of drainage systems to prevent any overflow.
- Critical areas within the site shall be clearly marked and provided with protective measures to control site run-off.
- Temporary channels shall be provided to facilitate run-off discharge into the appropriate watercourses, via a silt retention pond.
- Drainage channels shall incorporate sediment basins or traps and baffles to enhance deposition rates.
- Wheel washing facilities will be installed to ensure no earth, mud and debris is deposited on roads. Sand and silt in the wash water from such facilities shall be settled out and removed before (in line with effluent discharge standards discharging the used water into water drains.
- The contractor shall not discharge directly or indirectly into any public sewer stormwater drain or any effluent or contaminated water without the prior written consent of the site engineer in consultation with the Assistant Plant Manager.

Contamination of the Aquatic Environment

Mitigation activities will include the following

- no discharge of effluents into the surrounding environment- all effluents shall be collected and removed off site for treatment by approved firms;
- development of a site drainage plan which reduces flow velocity and sediment load;
- protection of temporary stockpiles of soil from erosion by using a reduced slope angle where practical, sheeting and by incorporating sediment traps in drainage ditches.
- maintenance of well kept construction site.

Ash Slurry System

- Ash discharge lines are corroding and need to be replaced.

3.2.3 Noise Impacts

Implementation of good site practices including:

- enforcement of vehicle speed limits;
- strict controls of vehicle routing;
- rehabilitation plant equipment to be fitted with silencers;
- no noisy rehabilitation activities at night;
- prohibition of heavy vehicle movements at night;
- use of protective hearing equipment for workers;
- carry out preventative maintenance of equipment and machinery to avoid excessive vibrations;
- repair all steam leaks in the steam cycle;
- monitor noise levels in workshops and surrounding areas;
- provide the appropriate protective clothing and/or equipment;and
- develop procedures for action to be taken in the event of noise levels being experienced which are above the stipulated limits.

3.2.4 Socio-Economic Environment

Gender

- The project is envisaged to have improvements that will benefit both men and women at project level and wider context.
- ZPC is to make an effort to encourage more women to seek non-traditional jobs and take advantage of existing vacancy rate which stands at 8% within HPP.
- Potential relief of women's and girls' suffering due to reliable electricity supply at household level and improvement to their well being.
- ZPC/HPP is to create a supportive environment in order to reduce effect of HIV/AIDS on the individual and their families due to influx of labor force to the area during rehabilitation activities.

Social

- Reduction in duration of load shedding and subsequent reduction in usage of inefficient forms of alternative energy sources. .
- Potential cut in production costs, carbon emissions and efficient utilization of energy sources.
- Job creation will benefit surrounding communities through employing around 200 people during rehabilitation phase and 56 people during full operation of the HPP.

- Boost to economic activities via securing electricity supply enhances industry, agriculture, mining and services and maintain jobs, which contributes to poverty alleviation.
- Activities related to rehabilitation work take place on the construction site, i.e. on ZPC/HPP land.
- Public and Industry Relations will be maximized through open dialogue between ZPC (through the Assistant Plant Manager who has direct responsibility for EHS Liaison) and local authority, public and industry representatives.

Health and Hygienic Practices

- The contractors will be responsible for complete adherence to safety and occupational health and environment management policy of ZPC and adherence to Risk Management Policies of ZESA.
- Mandatory compliance to the set principles as an integral part of special clauses in Sub-contractor's contracts.

Waterborne Diseases

- Project interventions to eliminate any stagnant water, especially in the ash dam area and other drainage related activities for combating malaria and other waterborne diseases.
- Enhance uninterrupted water supply to water treatment facilities and alleviate possible catastrophic consequences on health and hygienic practices resulted previous due to unreliability of power supply.

Communicable Diseases

- Subcontractors are obliged to incorporate ZPC guidelines on HIV/AIDS awareness, prevention and mitigation measures.
- Subcontractors are obliged to collaborate with district levels National Aids Council to ensure parallel and long-term programs complementing these efforts on national and local levels activities funded by agencies such as DIFD, USAID, Global Fund and programs like "Local Aids Control Efforts (PLACE), etc., which focus on communities including school going girls and sex workers.
- Training programs and health and safety measures will include knowledge about HIV/AIDS awareness, prevention and treatment.
- Specialized service provider will be sub-contracted by the Consulting Engineer and included in the BoQ depending on the approach.

- The service provider would also talk about other communicable diseases.
- The information would be imparted to construction workers especially those coming in from outside the project area through seminars, pamphlets and peer discussions.

3.2.5 Occupational Health & Safety

Good local and international construction practice in Environment, Health and Safety (EHS) will be applied at all times during rehabilitation and refurbishment activities and account will be taken of local customs, practices and attitudes.

3.2.6 Asbestos Control

There is a potential for finding Asbestos Containing Materials (ACM) during dismantling or rehabilitated processes for reconstruction or re-erection of rehabilitation parts. If found, standard good practice measures will be implemented as follows:

- any ACM present in the superstructures shall be removed before commencement of the rehabilitation works;
- removal of asbestos materials in certain locations may run more smoothly if both asbestos contractors and civil rehabilitation contractors work in tandem. This is due to the convenience of the main civil rehabilitation contractor providing access (scaffolding etc.) to the ACM, for the asbestos contractor and avoiding duplication of effort;
- work actually involving the removal of ACM, that involves the handling of the ACM shall be carried out by a Specialist Asbestos Contractor;
- all remaining ACM on the site is not accessible to the general public.

3.2.7 Waste Management

Collection, segregation, re-use, recycling, storage, transportation and disposal measures are recommended to avoid or minimize potential adverse impacts. The Contractor will incorporate these recommendations into a Waste Management Plan that incorporates site specific factors, such as the designation of areas for the segregation and temporary storage of reusable and recyclable materials

3.3 Mitigation Measures during Operation

3.3.1 Air Quality

Emissions Guidelines

Several specific measures will be taken to reduce stack emissions from the power plant and to comply with Zimbabwean and/or the World Bank/IFC⁽¹⁾ standards.

Stack emissions to the air from the Hwange Power Plant are expected to be within the Zimbabwean, as well as the World Bank guidelines⁽²⁾, with possible increases of some pollutants depending on the technology employed.

To the best expectations, the Hwange power plant is intended to operate within the EMA standards or, at least, the following WB/IFC emission guidelines:

<u>Pollutant</u>	Emissions (in mg/m³) (Dry Gas, Excess O ₂ Content 6%)	
	Non-degraded Airshed	Degraded Airshed^(*)
PM	50	30
SO ₂	200-850	200
NO _x	510	200

(*) DA= Degraded airshed (poor air quality); Airshed should be considered as being degraded if nationally legislated air quality standards are exceeded or, in their absence, if WHO Air Quality Guidelines are exceeded significantly.

Air Quality Guidelines

As described above, ZPC/HPP is committed to rehabilitating the boiler house and the pollution control systems for achieving lower levels of background concentrations of pollutants.

3.3.2 Aquatic Environment

The design of the rehabilitation works will incorporate measures to reduce impacts on the aquatic environment.

In order to minimize potential impacts to water quality, ZPC/HPP will ensure implementation of good site management practices including the following measures:

⁽¹⁾ World Bank/IFC standards are considered international standards that could be used for acceptable reference.

⁽²⁾ World Bank/IFC Pollution Prevention and Abatement Handbook - Part III: Thermal Power - Guidelines for New Plants, July 1998, and its updates of 2008.

_ wastewater will be collected and treated before being discharged into the discharge system;

- no solid wastes will be discharged into the liquid effluents;
- design of drainage systems on site will be reviewed to prevent any contaminated surface run-off from being discharged into the discharge system without prior oil separation and neutralization of any other contamination; and
- all effluent discharges will comply with local Zimbabwean and World Bank standards.
- Put up oil interceptors at various points in the plant.
- Write out procedure for handling and disposing of new and used oil.
- Procure used oil receiver pneumatic operated pumps for topping up oil in engines.
- Develop and implement a used oil management plan.
- Avoid unnecessary spillage when decanting diesel.
- Repair diesel leaks from oil burners.
- Avail pump in diesel separator sump.

3.3.2 Noise Emissions

A number of noise mitigation measures will be built into the design of the plant in order to ensure that noise levels are minimized and that all items of plant are operating to local and international standards.

Specific design mitigation measures include:

- steam turbine generators, air compressors, pumps, and the emergency diesel engines will be enclosed in sound enclosure, if necessary;
- air compressors will be equipped with air silencers; and
- noisy outdoor equipment will be reviewed and managed to be within to a noise limit of 90 dB(A) at one meter.

In addition, all personnel working in noisy areas will be required to wear hearing protection.

3.3.3 Solid and Hazardous Waste Impacts

The mitigation and management measures during rehabilitation described above relate to both the rehabilitation and operation phases.

Additional mitigation measures include:

- Develop a site hazardous chemical register.

- Develop a procedure for handling, transportation, storage and use of hazardous chemical.
- Develop emergency procedures to manage accidental spillage of hazardous substances i.e Clean up procedures (SPILL PLAN) .
- Acquire PCB test kit to monitor PCBs in transformer oils.

3.3.4 Health and Safety

The operational health and safety measures during rehabilitation will be carried forward into the operational phase of the power plant.

The mitigation and management measures will ensure that the health and safety of staff and any visitors on and to the site is not jeopardized during operation of the plant.

4.MONITORING PROGRAM AND COMPLEMENTARY INITIATIVES

4.1 Baseline Audit and Environmental Survey Program

An Environmental and Social Audit (ESA) will be conducted for the Hwange Power Plant to provide a systematic assessment of past and present environmental and social liabilities associated with the project prior to the physical implementation of the rehabilitation program. The Audit results will constitute the findings, conclusions and recommendations that will be carried forward into the ESMP and require follow-up actions, namely corrective and preventive actions. The findings will be used to revise, re-design, and improve the ESMP where necessary. The ESMP will be a condition of the loan for first disbursement.

4.2 Monitoring of Impacts During Power Plant Operation

4.2.1 Stack Emissions

Stack emissions will be monitored continuously during plant operation at a representative point in the stack. Operational monitoring of stack emissions shall comprise monitoring the levels of: Sulfur Dioxide; Oxides of Nitrogen; TSP; and Carbon Monoxide.

The automatic monitoring system used will be linked to an alarm to warn when emission limits for each pollutant are being approached.

Concentrations will be recorded as hourly rolling averages and reports on stack emissions monitoring will compare recorded emissions against determined levels and Zimbabwean and WB/IFC guidelines. Reports will be submitted to the EMA, the AfDB and any other concerned authority on an annual basis (or as required).

**4.2.2 Ambient Air Quality-Continuous SO₂, NO_x, C.
TSP / PM₁₀ / PM_{2.5} Analyzers**

The use of a continuous SO₂, NO_x, CO and TSP/PM₁₀/PM_{2.5} analyzer allows for baseline air quality monitoring on a continuous basis. The provision of three continuous monitors will provide the basis for “validating” the calculations made via dispersion modeling and conditions set in the ESMP. The monitors will also include a weather station (embedded in the station that will be placed at the power plant site) providing data on air temperature, wind speed, wind direction, wind direction variability and mixing heights on a continuous basis.

4.2.3 Aquatic Environment

Monitoring of impacts of the power plant on the aquatic environment will include monitoring of the quality of the effluents discharged from the power plant.

The operational monitoring of cooling towers and effluent discharge will include the parameters summarized in *Table-6* below.

Monitoring data will be analyzed and reviewed at regular intervals and compared with Zimbabwean and World Bank guidelines. Records of monitoring results will be kept in a suitable format and will be reported (in summary format with any exceptions identified) to the responsible government authorities and the AfDB or any other concerned authority as required. As a result, the project company, in discussion with the ZESA, EMA and the AfDB, in addition to any other concerned authority, will review the need to implement any additional mitigation features, such as provision of further water treatment facilities on site and also on the need to continue monitoring.

4.2.4 Waste Monitoring

Wastes generated on site and collected for disposal by skilled firms will be referenced, weighed and recorded. Environmental audits will be undertaken which will assess the quality and suitability of on- and off-site waste management procedures.

General Monitoring for a Coal-fired Steam Power Plant

Item	Monitoring Parameters	Sampling Frequency	Monitoring Locations

Baseline			
A baseline monitoring program may be required if existing data is insufficient for decision making; such a program may be more rigorous than the rehabilitation and operation monitoring programs.			
Construction/Rehabilitation Phase			
Air Quality	Particulate Matter	Every 2 to 4 weeks	4 locations minimum; at nearest residences and site boundary
Noise	Decibels(dB)	Weekly	6 locations minimum: at nearest residences and site boundary
Vibration		Weekly	
Water Quality	Oil and grease	Daily	At all discharges including run-off
	Total Suspended Solids	Daily	At all discharges including run-off and waste water discharges
	BOD	Weekly	At waste water discharges
	Total and fecal coliform	Weekly	At waste water discharges
	Total ammonia	Weekly	At waste water discharges
Operations Phase			
Air Quality * Gas Plants	Sulfur dioxide	Continuous/passive weeks	-2/4
	Nitrogen oxides	Continuous/passive weeks	-2/4
	Carbon monoxide	Continuous/passive weeks	-2/4
	Particulate Matters	Continuous/passive weeks	-2/4
Noise		Bi-annually to annually	6-10 sites at nearest residences around the plant
Water Quality of discharge water	Biological Oxygen Demand	Weekly	At waste water discharges
	Total and fecal	Weekly	At waste water discharges
		Weekly	At waste water discharges

	cloakrooms	Continuous with alarm	In discharged water
	Total ammonia	Continuous with alarm	In discharged water
	PH	Daily	In discharged water
	Temperature	Daily	In discharged water
	Oil and grease	Daily	In discharged water and wastewater discharges
	Total residue chlorine	Monthly	In discharged water
	Total Suspended Solids	Seasonal	At edge of mixing zone
	Suite of heavy metals including copper, iron, zinc as a minimum		
	Temperature increase at the edge of the mixing zone		

5. INSTITUTIONAL ARRANGEMENTS AND CAPACITY BUILDING REQUIREMENTS

5.1 Capacity Building during Auditing

- Establishment of the Environmental Management Unit (EMU) on the ZPC/HPP level.
- Establishment of the Environmental Management Unit (EMU) on the ZESA level.
- Establishment of the Environmental Management Unit (EMU) on the Ministry of Energy (MoE) level.
- Basic training of persons employed to operate the environmental activities.
- Basic training of persons employed to operate the monitoring activities.
- Basic induction training for all employees on good rehabilitation and site management practice.

5.2 Capacity Building during Rehabilitation and Operation

- Environmental Management Units (EMUs) at all levels: ZPC/HPP, ZESA and MoE receive support and enhancement to undertake environmental management and monitoring activities on a continuous basis.
- Basic training of persons employed to operate the environmental activities.
- Basic training of persons employed to operate the monitoring activities.
- Induction, specific and refresher training for all employees on good operation management practice.
- Training methods, facilities & manuals

5.3 Complementary Initiatives

- ZPC/HPP/ZESA will have the overall responsibility for environmental monitoring activities and will provide regular reporting both to the Bank and EMA as well as any other concerned authority.
- EMA (as part of their regular activities), will be involved in the monitoring of the rehabilitation and operation activities in order to ensure that proper environmental mitigation measures are employed.
- The supervision missions of the Bank will validate and crosscheck whether the agencies responsible for environmental management and monitoring have ensured that the mitigation measures have been carried out.
- Suitably qualified and experienced contractors will be responsible for the detailed design and rehabilitation works of the power plant. Rehabilitation workers will be required to demonstrate appropriate skills, qualifications and/or experience prior to employment.
- During rehabilitation, HPP/ZPC/ZESA will ensure that all contracts with Contractors and sub-contractors stipulate all management measures (as given in this ESMP), operational design criteria and environment, and health and safety standards which must be implemented at the project site.
- Implementation of these measures will be enforced and supervised by the Assistant Plant Manager, who will have direct responsibility for the Environment, Safety and Quality Assurance program on site during rehabilitation and operation. The Assistant Plant

Manager is responsible for ensuring that rehabilitation works comply with the requirements of the ESMP and all environmental permits.

- During operation, direct responsibility for environmental compliance and the implementation of the mitigation, management and monitoring measures described in this ESMP report, will continue to be with the Assistant Plant Manager. He will report directly to the Chairman/General Manager of HPP/ZPC/ZESA.
- All staff employed at the plant will be trained in the following:

The training will include induction courses when staff are first employed at the power plant, with specialist and refresher training as required by the job role. Training will be updated annually and occupational health and safety procedures will be included within the Operations Manual for the power plant.

6. PUBLIC CONSULTATIONS AND DISCLOSURE REQUIREMENTS

In order to ensure that the views and interests of all project stakeholders are taken into account, a Public Consultation was undertaken in accordance with EMA and AfDB requirements as part of the Environmental and Social Examination process. This also included coordination with other government agencies involved in the project, obtaining views of local people and affected groups.

The objectives of consultation and disclosure are to ensure that all stakeholders and interested parties, are fully informed of the rehabilitation project, have the opportunity to voice their concerns and that any issues resulting from this process are addressed in the ESMP and incorporated into the design and implementation of the project.

The adopted methodology for the public consultation comprises basic elements, namely:

- discussions with local stakeholders and interested parties during preparation of the environmental documents for First Examination and any local permitting requirements, including EMA requirements;
- discussions with local stakeholders during Audit process and preparation of the Audit Report;
- on-going consultation through an “open-door” policy during rehabilitation and operation of the power plant.

As far as public disclosure is concerned, major initiatives to inform the public and interested parties about the rehabilitation project include the following:

- disclosure of information describing the project; and

- Disclosure of the Draft Final ESMP Report locally and via the AfDB Infoshop.

During the preparation for Audit and the ESMP-Report, consultations are to be undertaken with a variety of organizations to assist them in further identification of environmental and social concerns and the overall development of the project. These stakeholders include the Zimbabwe Electricity Supply Authority (ZESA), Zimbabwe Electricity Transmission and Distribution company (ZETDC), Zimbabwe Power Company (ZPC), Zimbabwe Trust Fund (Zim-Fund), Ministry of Finance (MoF), Ministry of Energy and Power (MoEP), Ministry of Water Resources Development and Management (MoWRDM), Hwange Power Station, Environmental Management Agency (EMA) of Zimbabwe, and local population leaders.

The purpose of these consultations was primarily to provide information regarding the project, identify published and non-published sources of relevant data and information relating to the site and surrounding area, obtain views on the scope of the project, and open channels for ongoing discussions.

7. ESTIMATED COSTS

Since many of the mitigation measures presented are considered an essential, integrated component of the rehabilitation and operation works, it is not possible to separate the specific costs of their implementation from the overall construction and operation costs. However, an attempt for best estimate the relevant cost is presented in the ESMP tables. The total envisaged costs is around 3.62 million US Dollars.

8. IMPLEMENTATION SCHEDULE AND REPORTING

Environmental and Social Management and Monitoring activities will be implemented (according to the ESMP), following the same project schedule, as all activities are mainstreamed in the project design. Achievements/problems will be reported in the project quarterly progress reports and should be timely addressed by the project management and the Bank.