

# Employer's Requirements

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## Abbreviation & Definition

LPGCL	Lakhra Power Generation Company Limited
Contractor	The contractor assigned for dismantling & disposal of respective Lot
Employer	Lakhra Power Generation Company Limited
GENCO-IV	Generation Company-IV (LPGCL)
TPS	Thermal Power Station
ST	Steam Turbine
Units/Plants	Public Assets
OSHA	Occupational Safety and Health Administration
ISO	International Organization for Standardization
CC	Completion Certificate
HSD	High Speed Diesel

## 1. INTRODUCTION

Lakhra Power Generation Company Limited (LPGCL) hereinafter called the "Employer" intends to award contract to dismantle and dispose of its old, redundant and defunct power plants on 'AS IS WHERE IS BASIS', located at Lakhra Power Plant in Sindh province.

This document covers the scope and requirements for dismantling and disposal of complete power plant/Lot along with all primary and secondary, directly and indirectly associated equipment, structure (metallic/steel), piping, cabling, instrumentation, store stocks etc. along with associated transportation, loading/unloading of equipment, **except those mentioned under "Exclusions" of each Lot.**

The purpose of this document is to outline the scope of work, technical specifications, safety guidelines, environmental considerations, and other essential conditions for the dismantling and disposal of the following power plants of Lakhra Power Generation Company Limited (LPGCL). The unit / power station is grouped into a Lot as described hereunder:

**Table 1-1: Descriptions of Lots**

<b>Lot No.</b>	<b>Description</b>	<b>Location</b>	<b>Installed Capacity (MW)</b>
Lot 1	Lakhra Power Plant	Lakhra, Pakistan	150

Lot 1 is referred to as the "Assets".

## 2. PROJECT SCOPE

The Scope of Work for each Lot comprises, but shall not be limited to, the complete dismantling; disposal of plants/Lot including arrangement of equipment, machinery, tools, cranes, fuel oil, gas, electricity etc. for safe dismantling and disposal; packing and marking, insurance, loading and unloading, storing, transport from plant to outside of premises.

The Contractor shall cover all the works related to the dismantling and disposal of equipment along with all primary and secondary, directly and indirectly associated equipment, structure (metallic/steel), piping, cabling, instrumentation on '**AS IS WHERE IS BASIS**'.

Before preparing their Bids, the Bidders are advised to visit defunct Plants/Lot and have meetings with Employer to make them fully conversant with the extent of dismantling/disposal scope of work and exclusions.

Contractor shall perform dismantling and disposal work in full coordination with Employer so as to avoid damaging any live cables, pipes and equipment. Further, all the excluded cables, pipes, equipment, structures etc. shall also be safeguarded against any damage.

### 2.1 General Scope of Work

This sub-section outlines the General Scope of Work for the dismantling and disposal of defunct thermal power plants. The scope ensures a safe, efficient, and environmentally compliant execution of dismantling and disposal activities while addressing the technical, environmental, health, and safety requirements.

The primary objectives of the project are:

- i. To ensure safe dismantling and disposal of equipment, structures, piping, cabling, and materials etc. from defunct power plants/Lots.
- ii. To maintain technical integrity of shared facilities and operational interfaces with adjacent infrastructure.
- iii. To guarantee environmental compliance and safe disposal of hazardous waste.
- iv. To restore the site to an agreed state post-dismantling.
- v. To execute the project in compliance with international best practices and local regulatory requirements.

This scope includes as minimum:

#### 1) Dismantling of Various Equipment

- i. Dismantling of all equipment, interconnected piping and utility lines along with insulation and cladding etc. associated with all piping, platforms and walkways, etc.
- ii. Dismantling of all field instruments and their associated cabling up to the field junction boxes etc.

- iii. All process and utility (such as cooling water, fuel oil, gas, boiler feed water, LP steam, Main steam supply, service air, instrument air etc.) connections connected with rotating equipment and its auxiliaries shall be dismantled.
- iv. All switchgears, breakers for MV/LV and their respective cabinets.

## **2) Removal of Erected Piping (Above and Underground)**

- i. Removal of erected piping including valves etc. at all elevations removal of insulation from insulated lines, removing supports, all fittings and flanges, instruments, etc.
- ii. Removal of underground piping.
- iii. All the instruments such as pressure gauges, temperature gauges, transmitters, on/off valves, control valves etc. with necessary connections, shall be dismantled.
- iv. The Contractor shall remove and safely dispose of all oil and Chemical from piping and equipment before start of dismantling activities in any area.

## **3) Dismantling of The Static Equipment**

- i. Disconnecting all the piping connections and instrument, ladder and platforms to make the equipment free of all attachments. Holding the equipment with proper care before dismantling the equipment. Holding and Dismantling shall be done using appropriate cranes only. Contractor shall provide necessary scaffolding, all tools, slings and shackles, equipment, apparatus etc., and completing the work in all respect at all heights.
- ii. Dismantling of tanks for the storage of fuel oil, chemical, lube oil, hydraulic oil, water etc. along with all associated accessories are included in the scope of work.

## **4) Dismantling of Electrical and Instruments**

- i. Pump Motors, compressor motors, electrical panels, Local Push Button Stations and associated power and control cabling system, cable trays, Lighting Poles, Lighting fittings on poles along with lighting accessories such as cables, junction boxes etc., earthing electrodes with earthing strips. Electrical cables connecting to the motors to be removed shall be dismantled.
- ii. Dismantling of all Instrument cable trays, cable tray supports, junction boxes, instrument stanchions, push buttons and air manifold stations shall be undertaken.

## **5) Hard Barricading**

- i. The Contractor shall ensure safety of the working personnel within the work area by barricading the work area.

## **6) Cranes/Equipment/Tools**

- i. The Contractor shall arrange all the necessary equipment, machinery, tools, cranes, trucks, trailers, containers, fuel oil, gas, water, electricity and all other related accessories for dismantling and disposal of plant/units/lot.

- ii. For the disposal of liquid consumables like oils, fuel and chemicals, the Contractor shall arrange oil/chemical containers, pumps and tankers etc. for safe temporary storing at sites and disposal from sites.

### **7) Method Statements**

- i. The Contractor shall submit detailed method statements of dismantling of major equipment, before starting the specific job, with respect to sequence of activities, rigging plans, safety and emergency mitigation measures and submit to Employer for review. Any special safety requirements in case of emergency etc. shall be provided. The work is to be extensively planned to ensure the units/equipment could be safely dismantled without impeding on the adjacent plants and structures and without risk to personnel.
- ii. The Contractor shall submit method statements for dismantling of equipment along with associated piping and cabling and disposal of consumables, lubricants, fuels and chemicals safely from site premises.

### **8) Clean Conditions**

- i. The Contractor shall maintain the dismantling area in a clean and tidy condition throughout the entire working period. Accumulated debris and waste materials shall be hauled/removed from the site and disposed of to an approved/designated location on daily basis to maintain clean conditions.
- ii. Water sprinkling shall be done for dust suppression in the dismantling area.

### **9) Safety Precautions**

- i. Contractor shall obtain necessary work permits/approvals before starting dismantling work. The request for work permit shall not be unreasonably withheld by the Employer.
- ii. Contractor shall follow all safety guidelines conveyed by Employer.
- iii. The Contractor shall adhere to safe demolishing/dismantling practices at all stages of work to guard against accidents, hazardous and unsafe working procedures.
- iv. Temporary enclosures/fencing, warning lights, warning signs etc. as per safety requirements shall be provided by Contractor to prevent accidents.
- v. All equipment, pipes, fixtures etc. located in the vicinity shall be protected by suitable means, as decided by Employer, during demolishing and dismantling operation.
- vi. Contractor shall deploy a dedicated safety engineer during the execution of dismantling and disposal work.
- vii. Good housekeeping shall be maintained by the Contractor during the entire job.
- viii. Adequate firefighting and safety equipment in accordance to the requirements shall be arranged by the Contractor at site including fire hoses, fire extinguishers, safety belt, lifelines, hard helmets, safety shoes, hand gloves (All PPEs), gas detectors, oxygen meter, etc.



- ix. Fireproof cloth wherever required to restrict the flying sparks due to cutting, welding, grinding etc. will be required to be provided by the Contractor.
- x. All workmen should wear safety belts / lifeline wherever they work above 2 m elevation without permanent support /platform. Workmen shall always wear helmet & safety shoes while on the site / work area.
- xi. Scaffolding for working at elevations along with suitable safety harness for personnel shall be used.
- xii. Maximum two shifts (Morning and evening) each of eight hours will be allowed, however dismantling work after 10:00pm will not be allowed. Contractor will be allowed to work on Sundays and holidays with prior approval of Employer.
- xiii. Removal of dismantled material from the Plant premises is not allowed after Sunset.

### **10) Accommodation & Facilities**

- i. The Contractor shall arrange temporary accommodation for its employees outside the plant's premises.
- ii. Contractor shall also arrange all necessary utilities for their staff at project site.

#### **2.1.1 Pre-Dismantling Phase**

##### **2.1.1.1 Site Survey and Documentation**

- i. Identify shared facilities and interfaces with operational plants, if applicable.
- ii. Prepare a site-specific dismantling and disposal plan for each plant.
- iii. Submit site specific method statements for dismantling and disposal work.
- iv. Identify any hazardous materials (e.g., chemical residues, transformer oils, fuel oil, coal etc.).
- v. Conduct risk assessments for structural integrity, fire hazards, and environmental risks.
- vi. Develop interface isolation plans for shared utilities and facilities.

##### **2.1.1.2 Permitting and Compliance by the Contractor**

- i. Obtain all regulatory approvals and permits for dismantling and disposal.
- ii. Comply with local and international environmental standards (e.g., OSHA, NFPA etc.).
- iii. Coordinate with relevant authorities for waste transportation and disposal permits.

##### **2.1.1.3 Utilities Isolation and Deactivation**

- i. Employer shall implement a Utility Isolation Plan covering:
  - o Electrical systems
  - o Water supply systems

- Drainage systems
- Fuel and gas pipelines
- Any other utilities, as applicable
- ii. Contractor shall verify complete deactivation and isolation before dismantling begins.
- iii. The Employer shall provide all information regarding isolations/interfaces.

## **2.1.2 Dismantling Phase**

### **2.1.2.1 Equipment and Structure Dismantling**

- i. Prepare method statements and rigging plans for dismantling heavy equipment, including turbines, generators, HV breakers, boilers, and transformers.
- ii. Safely dismantle all equipment / systems included in the scope.
- iii. Follow sequence-based dismantling methodologies to prevent damage to adjacent structures or equipment.
- iv. All lifting equipment, materials, tools, cranes, fixtures and any other shall be third part tested. The Contractor shall submit the certificate to the Employer.

### **2.1.2.2 Safety & Security**

- i. The safety and security of all the equipment, parts and materials, etc. brought by the Contractor at site as well as dismantled equipment and parts shall be the responsibility of the Contractor.
- ii. The Employer shall provide a designated place, if available for the storage of dismantled parts for a specific period of time. If any location is not available, then the Contractor shall arrange its own place outside the premises of plant.

### **2.1.2.3 Hazardous Material Handling**

- i. Safely identify, handle, and dispose of hazardous materials, including:
  - Chemicals and residues from dosing systems
  - Transformer oils
  - Fuel oil
  - Lube oil
- ii. Safely dispose of hazardous materials to appropriate places as designated by Employer, in compliance with local regulations.

### **2.1.2.4 Waste Management and Disposal**

- i. Develop and implement a Waste Management Plan.

- ii. Transport waste materials, if any, to appropriate places as designated by Employer, in compliance with local regulations.

#### **2.1.2.5 Site Safety and Environmental Compliance**

- i. Implement Health, Safety, and Environment (HSE) Plans.
- ii. Implement emergency response plans for fire, spills, and structural failures.
- iii. Prevent airborne contaminants (e.g., dust, asbestos fibers) during dismantling.

#### **2.1.2.6 Documentation and Reporting**

- i. Maintain detailed records of dismantling activities.
- ii. Maintain a project schedule for the Lot.
- iii. Provide fortnightly progress and safety reports to the Employer.
- iv. Document any incidents or near misses with corrective measures within 24 hours.

### **2.1.3 Post-Dismantling Phase**

#### **2.1.3.1 Site Clearance and Restoration**

- i. Remove all dismantled equipment, material, debris and temporary structures from the site.
- ii. Remove all the machinery, equipment, tools, and cranes etc. brought by Contractor for dismantling and disposal activities.
- iii. Restore the site to pre-agreed conditions.

#### **2.1.3.2 Final Documentation and Handover**

- i. Conduct a final joint inspection with the Employer. Contractor will remove all the deficiencies/ discrepancies as pointed out by Employer.
- ii. Prepare a Dismantling and Disposal Completion Report.

## **2.2 Handing Over of Assets**

The process of handing over of Assets included in the Lot shall take place through a Transfer Deed/Sales Certificate to be executed between the Employer and the Contractor, after fulfilment of the requirements laid down in the Particular Conditions of Contract.

After execution of the Transfer Deed and receipt of written confirmation by the Employer of the fulfilment of any outstanding requirements, the Contractor shall initiate the transfer of Ownership and/or title of the Assets included in the Lot.

The Contractor shall assume full responsibility for the transfer process and shall bear all associated risks and costs.

The transfer of Ownership and/or title must adhere to all applicable local legislation. The Employer shall provide facilitation to the Contractor in this process wherever necessary and applicable.

Concurrently, the Contractor shall begin the dismantling and disposal of the Lot as per the Project Schedule provided under this Contract.

### 3. DESCRIPTION OF LOT

#### 3.1 General

The following is the breakup of the units installed at the power plant/Lot under LPGCL which are being dismantled and disposed of:

**Table 3-1: Overall Plant Capacities and Locations of LPGCL Units**

Plant	Location	Unit No.	Type	Capacity (MW)	Make	Fuel	Commissioned (year)
<b>Lakhra Power Plant (150 MW)</b>	Lakhra, Pakistan (25° 42' 20.64" N 68° 17' 11.28" E)	01	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1995
		02	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1995
		03	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1996

#### 3.2 Project Completion Timelines

The Project completion timelines i.e., the dismantling and disposal of Public Assets from site for the Lot is given below:

**Table 3-2: Project Completion Timelines for Lots under LPGCL**

Lot No.	Plant	Time of Completion from Commencement Date (Months)
Lot-1	Lakhra Power Plant (150MW)	16

### 3.3 Lot 1: Lakhra Power Plant (150MW)

Lakhra Power Plant is situated on the right bank of River Indus near Khanot, in District Jams-horo, about 60 km from Hyderabad and 217 km from Karachi city. Lakhra Power Plant is the only coal fired power plant in Pakistan, in public sector, using indigenous coal of Lakhra Coal Mines.

The following is the breakdown of the units installed at each of the power plants under LPGCL which are being dismantled and disposed of:

**Table 3-3: Lot-1 Lakhra Power Plant Turbine Configuration**

Plant	Unit No.	Type	Capacity (MW)	Make	Fuel	Commis-sioned (year)
<b>Lakhra Power Plant (150 MW)</b>	01	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1995
	02	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1995
	03	FBC (Fluidized Bed Combustion)	50	M/S Dong Fang Turbine	Coal	1996

#### 3.3.1 Site Visuals

Some of the on-site visuals are as follows.



**Figure 3-1: Lot-1 Lakhra Power Plant**

#### 3.3.2 Major Equipment Installed

The plant mainly consists of following facilities:

##### 3.3.2.1 Steam Turbines (ST)

Following are the specifications of the steam turbine units.

**Table 3-4: Lot-1 Lakhra Power Plant ST Specifications**

<b>Sr. No.</b>	<b>Description</b>	<b>ST 1, ST-2 &amp; ST-3</b>
1.	Make	M/S Dong Fang Turbine
2.	Type	N – 50 – 8.3/535
3.	Output (MW)	50
4.	Main Steam Pressure (MPa)	8.83
5.	Main Steam Temperature (°C)	535
6.	Exhaust Steam Back Pressure (MPa)	0.008

### 3.3.2.2 Steam Generator and Auxiliaries

- 3X Boiler units, including all their allied equipment and auxiliaries.
- F.B.C BOILER SPECIFICATION

Model: FBC DG 220/9.8-5

Rated Steam Flow: 200 t/h

Max. Rated Steam Flow: 220 t/h

Steam Pressure: 100 +/- 1.02kg/cm<sup>2</sup> (9.8+/- 1MPa)

Furnace Temp.: 843 deg C (1550 deg F)

Boiler Drum Pressure: 10.6 MPa

Feed Water Temp.: 215 deg C

Cold Air Temp.: 27 deg C

Boiler Efficiency: 83.02%

Coal Consumption: 51.6 T/H

Boiler Drum Length: 6.4 m (Dia. 1.6 m)

Designed By: M/s Foster Wheeler USA

Manufactured By: M/s Dong Fang Boiler

Works P.R. China

Type of Fuel: Lakhra Lignite Coal

### **3.3.2.3 Condenser**

- The condenser mainly consists of, but shall not be limited, to the following items:
- Condenser tubes (SS)
- Water boxes with rubber lining and cathodic protection
- 100 % bypass operation of steam turbine
- Hot well
- Expansion joints
- All interconnecting pipes related to above mentioned systems.
- All kind of valves

### **3.3.2.4 Condensate and Feed Water System**

The feed water system consisting of condensate pumps, feed water pumps, LP & HP heaters, associated piping, as well as all relevant auxiliaries.

### **3.3.2.5 Balance of Plant (BOP)**

All major balance of plant includes:

- Mechanical Draught Cell type Cooling Towers with pumps, motors and fans
- Compressed Air System
- Closed cooling water system
- Once through cooling water system
- Fly ash disposal and emergency fly ash disposal system
- Firefighting system including protection and network piping of whole plant
- Fuel handling (Pumping, decanting & forwarding system)
- Emergency Diesel Generator Set
- All kind of valves
- Overhead Cranes and hoisting facilities
- Warehouse/ Stores/workshops
- HVAC system



- All power and controls cables along with cable trays/ supports related to above mentioned systems.
- Water Intake pump house (at Indus river) pumps, motors, steel structure, bridge, conductor, power cables, towers etc.

### 3.3.2.6 Electrical

#### 3.3.2.6.1 Unit 01, 02, 03 Generators (50MW Each)

In machine hall of Lakhra Power Plant, three (03) Steam Turbine Generators are installed with following specification:

**Table 3-5: Lot-1 Lakhra Power Plant ST Generator Specifications**

Sr. No.	Description	Unit 1, 2& 3
1.	Make	M/S Dong Fang Turbine
2.	Type	QFQ-50.2B
3.	Rated Capacity (MW)	50
4.	Rated Voltage (kV)	10.5
5.	Rated Current (Amp)	3440
6.	Power Factor	0.80
7.	Gross Weight each	NA

#### 3.3.2.6.2 Transformers

Following is the list with specification of major transformers:

**Table 3-6: Lot-1 Lakhra Power Plant Transformer Specifications**

Sr. No.	Description	Rating		Qty.
		kV	Power	Nos.
1	Main Transformer (T-1, T-2 & T-3)	10.5/ 132 kV	63MVA	3
2	Auxiliary Transformers (for each unit)	10.5/ 6.3 kV	12.5 MVA	3
3	Station Auxiliary Transformer	132/6.3 kV	12.5 MVA	1
4	0.4 KV Distribution Transformer	11/0.4 kV	630kVA	1
5	Feeder Transformers	6.3/0.4 kV	1 MVA	13

#### 3.3.2.6.3 Switch Yard

132kV switch yard (including SF-6 Circuit breaker) along with the gravel is also included in the scope of work.

#### 3.3.2.6.4 Central Control Room

##### **Central Control Room (CCR):**

Control and protection panels for: steam turbines, generators, transformers, etc.

##### **6.6kV & 0.4kV Switchgear and Battery Room (Unit-1-3):**

LVAC (415V), LVDC distribution panels, 6.6kV Switchgear Panels, battery banks chargers

**Note:** *All panels, electrical equipment, circuit breakers, electrical facilities, and any associated equipment not mentioned or listed above are considered to be included in the scope of work.*

### **3.3.3 Piping and Cabling**

All piping and cabling, above and underground, trenches, are included in the dismantling scope, except those as mentioned in the exclusions.

### **3.3.4 Power Cables**

All power cables install in trenches/conduits (above/under the ground) are included in the dismantling scope, except those as mentioned in the exclusions.

### **3.3.5 Colony**

The electro-mechanical equipment in the associated colony of Lakhra power plant is included in the Contractor's scope of work which includes but not limited to cables, cable towers, breakers, pumps, piping (above & underground).

### **3.3.6 Store Stock, Spares, and Consumables**

All store stock, spares and consumables, shall be included within the dismantling and disposal scope. Additionally, consumables such as chemicals, fuel oil, lubricating oils, and transformer oils, whether stored in tanks/warehouses or within equipment/piping/transformers shall also be considered part of the scope. The contractor shall conduct his own survey.

Furthermore, fuel oil tanks contain a combination of dead stock and usable fuel. The responsibility for the safe disposal of this fuel shall rest with the Contractor.

All furniture and fixtures items in colony and power plant are also included in the dismantling and disposal works.

The list of store stocks, spares and consumables are available in Appendix-03, '*Store Stocks, Spares and Consumables*'.

### **3.3.7 Exclusions in Dismantling Scope**

1. Admin building will be kept functional during dismantling work. Therefore, a dedicated 630kva transformer (from HESCO Feeder) along with its associated MV/LV Panels shall not be dismantled at priority. However, it shall be dismantled at the end of dismantling work or any other period subject to approval from Employer.
2. During the dismantling of admin building equipment, the Contractor shall provide sufficient office space along with utilities i.e., electricity, water, internet, furniture for Employer's personnel at Contractor's office area.

3. Transmission Line Tower(s), its conductors and other accessories in 132kv switch yard are excluded from the dismantling scope of work.
4. Dismantling of buildings made of concrete and civil structures supported by steel columns/beams are excluded from the dismantling and disposal scope of work.

### **3.3.8 Battery Limits and SLDs**

Marked up battery limits and single line diagram for the lot has been attached as Appendix-01 and Appendix-02 respectively. Additionally, miscellaneous of respective lot is attached in Appendix-04.

## **4 GENERAL PROJECT REQUIREMENTS**

This sub-section outlines the General Project Requirements applicable to the execution of the dismantling and disposal works. These requirements aim to ensure that the Contractor executes the works professionally, adhering to international best practices, local regulations, and health, safety, and environmental (HSE) standards.

All activities under the project must be carried out with technical excellence, regulatory compliance, and a commitment to safety, quality, and environmental stewardship.

### **4.1 Compliance with Standards and Regulations**

The Contractor shall comply with the guidelines of all applicable national and international standards specially HSE, emergency management, firefighting etc.

The Contractor shall obtain all necessary permits, if required, from relevant authorities before initiating work.

### **4.2 Language**

English language shall be used in all technical correspondence between the Contractor and the Employer, and whenever anything is required under the terms of the Contract to be written, marked, or printed.

Warning and safety notices, and all permanent or temporary notices around the Plant shall be in English.

### **4.3 Project Management and Organization**

The Contractor shall establish a Project Management Team with a dedicated Project Manager responsible for the overall execution, planning, and coordination of the project.

#### **4.3.1 General Requirements:**

The Contractor shall prepare and submit a comprehensive Project Execution Plan (PEP) to the Employer for review and approval before commencing any dismantling activities.

The PEP shall serve as the primary document governing all aspects of the dismantling project, including planning, execution, monitoring, and reporting.

#### **4.3.2 Detailed Scope of Work:**

The PEP shall clearly outline the scope of dismantling activities, including the removal of boilers, turbines, generators, piping systems, transformers, control systems, auxiliary equipment etc.

Identification and segregation of hazardous waste.

#### **4.3.3 Methodology and Procedures:**

The Contractor at first shall share a list of method statements and procedures for dismantling and disposal of Public Assets which shall be submitted with execution plan to the Employer for

review. After finalization of the list, the Contractor shall furnish the required methodology and procedures within a given timeframe. No work shall be performed before approval of method statements and procedures.

The Contractor shall provide a detailed step-by-step procedures for dismantling, disassembly, and safe removal of components.

The Contractor shall submit specialized methods for handling critical components heavy machinery, and hazardous materials (e.g., asbestos, chemicals, and oils), safety procedures for working in confined spaces and heights.

#### **4.3.4 Resource Planning:**

The project execution plan shall include:

- Allocation of labour, equipment, and materials required for dismantling, including cranes, cutting tools, and transportation vehicles.
- Deployment of trained personnel for handling hazardous materials and operating specialized equipment.
- Detailed timeline for resource mobilization and demobilization.

#### **4.3.5 Waste Management Plan:**

The waste management plan shall include a minimum of:

- Classification and quantification of waste generated during dismantling (e.g., scrap metal, insulation materials, and hazardous waste).
- Procedures for safe handling, transportation, and disposal of hazardous waste in compliance with environmental regulations.

#### **4.3.6 Health, Safety, and Environmental (HSE) Plan:**

The HSE plan shall include a minimum of:

- Identification of potential risks and hazards associated with dismantling activities, along with mitigation measures.
- Emergency response procedures for incidents such as fire, chemical/oil spills, and structural collapses.
- Regular safety drills and training sessions for all on-site personnel.
- Personal protective equipment (PPE) requirements and enforcement.

#### **4.3.7 Interface Management:**

Coordination plans for interfacing with existing facilities, utility connections, and neighbouring infrastructure should be included. This shall be specific for the lot and/or units.

Communication protocols to ensure seamless interaction with the Employer and third-party stakeholders.

The Contractor shall appoint site supervisors and specialists for critical activities (e.g., hazardous material handling, critical equipment dismantling, and interface management).

#### **4.3.8 Transport and Logistics Plan:**

The transport and logistical plan shall include a minimum of:

- Strategy for the transportation of dismantled components to storage yards, disposal sites, and outside of plant premises.
- Assessment of transport routes, including road and bridge constraints, and arrangements for necessary permits. This specification is specifically for inside the plant premises.

#### **4.3.9 Demobilization Plan:**

- Steps for site clean-up and restoration to agreed conditions after dismantling is complete.
- Removal of temporary facilities and equipment from the site.
- Handover procedures and documentation to the Employer.

### **4.4 Permit to Work (PTW) Implementation**

#### **4.4.1 General Requirements**

The Contractor shall obtain Permit to Work (PTW) from Employer, where ever required, to ensure safe execution of all dismantling activities.

#### **4.4.2 Permit Validity:**

All permits shall have a specified validity period and must be renewed or reissued for extended activities.

Permits must be closed upon completion of the work. The Employer shall have the right to cancel any PTWs in case of unsafe conditions and violation of HSE protocols.

## **4.5 Health, Safety, and Environment (HSE) Requirements**

### **4.5.1 Health and Safety**

- The Contractor shall prepare and submit an HSE Management Plan before commencing work.
- Compliance with OSHA standards and NFPA guidelines is mandatory.
- Workers shall be provided with Personal Protective Equipment (PPE), including helmets, gloves, safety goggles, hearing protection, and high-visibility vests etc.
- Daily toolbox talks and safety briefings shall be conducted.
- Emergency response plans, including firefighting measures and evacuation protocols, shall be in place.
- The Contractor shall appoint safety management team and specialists for project execution.

### **4.5.2 Environmental Protection**

- The Contractor shall prepare an Environmental Management Plan (EMP), outlining measures to mitigate environmental risks.
- Waste shall be categorized, segregated, and disposed of in line international and local waste management regulations.
- Proper measures shall be implemented for dust suppression, noise control, and water pollution prevention.
- Hazardous materials, including asbestos, oils, and chemicals, must be handled and disposed of according to international and local regulations.
- Any contamination identified during dismantling must be immediately reported, and remediation measures implemented.

## **4.6 Technical Documentation and Reporting**

The Contractor shall maintain comprehensive technical documentation for all activities, including:

- Method statements for key activities
- Risk assessments and mitigation plans
- Daily site activity logs
- Fortnightly progress reports

- Incident and accident reports
- Maintenance of comprehensive records of dismantled components, hazardous waste disposal, and compliance reports.
- Final Close-out Report: Upon project completion, the Contractor shall submit a final report detailing:
  - Summary of activities performed.
  - Environmental compliance reports

#### **4.7 Resource Management**

- The Contractor shall ensure the availability of qualified personnel with experience in power plant erection / dismantling.
- Adequate resources, including machinery, tools, and equipment, must be mobilized to meet project timelines.
- All equipment used on-site must be certified, well-maintained, and regularly inspected for safety compliance.
- The Contractor shall provide on-site welfare facilities (e.g., potable water, sanitation, medical aid) for all personnel.

#### **4.8 Site Security and Access Control**

- The Contractor/Employer shall ensure secure access control measures at all entry and exit points.
- Unauthorized personnel shall be strictly prohibited from accessing work zones.
- The Contractor shall deploy security personnel to safeguard assets, equipment, and personnel on-site.
- Visitor access must be controlled, and all visitors must adhere to site safety protocols.

#### **4.9 Risk Management**

The Contractor shall develop a Project Risk Management Plan identifying risks associated with:

- Structural integrity during dismantling
- Hazardous material exposure
- Environmental contamination
- Delays in execution due to regulatory or logistical issues



- Risk mitigation measures shall be implemented, with regular reviews and updates to the plan.
- An Emergency Response Plan (ERP) shall be developed for scenarios such as fire, chemical spills, and natural disasters.

#### **4.10 Coordination and Communication**

- Effective communication channels shall be established between the Contractor, Employer and stakeholders.
- Any deviations, delays, or unforeseen challenges must be communicated to the Employer immediately.
- Weekly coordination meetings shall be held to review progress, resolve issues, and align on upcoming tasks.

#### **4.11 Closure and Handover Requirements**

- Ensure removal of all temporary structures, waste, and debris from the site.
- Conduct a joint inspection with the Employer before final handover.
- Obtain Completion Certificate (CC) from the Employer as confirmation of satisfactory project completion.

#### **4.12 Project Scheduling**

##### **4.12.1 General**

The Contractor will develop a Project Time Schedule or Project Programme. If the same Contractor is for multiple lots, then separate Time Schedule shall be submitted for each lot. The Employer would review this Programme and closely following up on all activities. The Employer would also analyse the schedule, e.g., on room for improvement, criticality of activities, etc. and advise the Contractor accordingly.

It is essential that this Programme to be made available to the Employer allowing to fully interrogate and analyse this schedule.

##### **4.12.2 Schedule Structure and Composition**

The Project Schedule shall have a work breakdown structure (WBS). This is required, in order, to categorize the activities into different codes that relates to the Project. The codes shall act, as tags or attributes of each activity to allow the programme to be grouped, summarized, and filtered in or out of the display in soft copy.

The WBS shall have a hierarchal structure to be developed by the Contractor breaking down the Project tasks into definable and recognizable activities of manageable and logical headings.

The Contractor shall ensure that contract schedule has clearly identified all the Project key deliverables and have shown these within the WBS.

The programme shall have a measurable finish point for each group of activities, which is identified and indicated in the schedule by a Milestone event with a designated zero duration.

#### **4.12.3 Periodical update**

Periodical update of schedule according to deliverables and visual inspection during supervision activities is a comparison of planned stage and current status of the Project.

- **Programme updates**

The Contract schedule will require updating and status. As a consequence of this process, there is potential for creation of three versions of the contract schedule. These are as following:

- Contract Schedule (baseline);
- Contract Schedule (current);
- Contract Schedule (recovery).

Contract Schedule (baseline) - this shall be the approved contract schedule, as previously stated shall not be changed or altered without approval and it will remain unstated.

Contract Programme (current) - this shall be the same version, as Contract Schedule (baseline) but set up by the Contractor at the end of each month with the same activities' logic links or their original durations as in the Contract Schedule (baseline). The Contractor after each set up the schedule shall carry out time analyse to establish the new position of the programme. An electronic unfiltered copy of this programme shall also be included in the Monthly Report.

Contract Schedule (recovery) - if after time analysis the Contractor find the key contract dates are overrun by more than one calendar month, it shall then make appropriate changes to the logic and resource level of the activities with the negative total float, in order to maintain the original key dates.

This adjusted schedule shall be labelled, as Contract Schedule (recovery). The Contractor shall note all the changes that are made to each activity and log these, describing each change and the reason for it. An electronic unfiltered copy of this recovery schedule including these logs shall also be included in the Monthly Report.

#### **4.12.4 Schedule review**

The review of Contractor's schedule in accordance with consistency, time schedule logic and contractual agreed baseline shall be done by the Employer.

#### **4.12.5 Progress report**

Contractor's Fortnightly Progress Report shall be based on the Contract schedule. A typical content for Contractor's Report should comprise the following aspects to allow Employer a swift review:

- Progress of Dismantling Activities
- Progress of Interface Activities
- Progress of Removal of Public Assets from respective sites
- Health Safety & Environment
- Hazards

## 5 Contractor's Personnel

The Contractor shall provide the details of following personnel on key positions and their experience record in the form of resume for Employer's review and approval. The Contractor shall have the right to interview each personnel in person or virtual. The personnel on key positions shall only be qualified for the specific Lot after approval from Employer.

- i. Project Manager
- ii. Project Engineer
- iii. Planning Engineer
- iv. HSE Engineer

The minimum requirements of the personnel in key positions shall be as follows:

- a. Minimum qualification of Project Manager: Bachelor's in Electrical or Mechanical Engineering with minimum 15 years of experience in construction and/or dismantling of thermal power plants or large scale industrial complex.
- b. Minimum qualification of Project Engineer: Bachelor's in Engineering with minimum 10 years of relevant experience in construction and/or dismantling of thermal power plants or large scale industrial complex.
- c. Minimum qualification of Planning Engineer: Bachelor in Engineering with minimum 10 years of relevant experience.
- d. Minimum qualification of HSE Engineer: Bachelor in Engineering with minimum 10 years of relevant experience.

The Contractor shall finalize and get the personnel approved from the Employer within 15 days from the Commencement Date. Failure to comply with these conditions within the time frame could result in Termination of Contract as per Conditions of Contract.

## **6 APPENDICES**

List of appendices of Employer's Requirements are here under:

- Appendix-01: General Layout
- Appendix-02: Single Line Diagram (SLD)
- Appendix-03: Store Stock, Spares and Consumables
- Appendix-04: Miscellaneous Data