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HSE SPECIFICATIONS CONTRACTS AND BIDDING DOCUMENTS

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1 PURPOSE

The purpose of this HSE specification is set to ensure that the contractors / suppliers shall comply with NTPC's HSE Management System and the associated regulatory requirements; including:

- Leadership commitment to HSE
- Legal compliance
- HSE Policy
- HSE communication
- Employee orientation and training
- PPE applicability, supply and compliance
- HSE Record keeping
- Equipment control and maintenance
- Hazards and effects management
- Waste management
- Road safety management
- Performance monitoring
- Incident investigation and reporting

2 SCOPE

This procedure is a guideline to all contract and bidding process for the HSE Specifications.

3 DEFINITIONS

Reference	Definition
Site specific HSE management plan (HSEMP)	A plan that identifies and documents site-specific risks and control measures associated with the work to be undertaken.
Health, Safety and Environment Management System	That part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining HSE policy, objectives and targets. Performance measurement includes measurement of HSE management activities and results.
Shall	Mandatory requirement.
Should	Advisory or discretionary requirement.
PPE	Personal Protective Equipment
Contract	A legal document that specifies the term and conditions for goods and services supplied by a contractor to NTPC.
Contractor	A third party which supplies goods or services to NTPC.
Hazard	A source of potential harm. Also known as the source of a risk.

Job Hazard and Environment Analysis (JHEA)	Documented statement that describes the work to be carried out, identifies the work activities assessed as having HSE risks, and describes the control measures that will be applied to the work activities.
Risk	The chance of something happening that will have an impact on objectives. Note: risk could also be attached to strategic issues of finance and reputation.

4 DOCUMENTS REQUIREMENTS

The Bidder should submit evidence of its ability to conform with NTPC's HSE requirements for carrying out the Services as follows:

4.1 POLICY, ORGANIZATION AND COMMITMENT

- Provide policy statement(s) related to Health &Safety and/or Environment.
- Identification of person(s) responsible for HSE activities of the bidder and to coordinate with NTPC's HSE staff.
- Provide the job description of your site HSE staff.
- Provide written procedures concerning (i) safe working (such as work at heights, electrical work, welding work, etc.); and (ii) environmental protections (such as Hazmat management, waste management, etc.)

4.2 TRAINING

- Provide skill training records of staff conducting specific tasks deemed to be potentially hazardous (e.g. welding, crane operator, electrician, etc.)
- Provide training records of other formal HSE qualifications or training (e.g. ISO 14001, OHAS 18001, ISO 9001, etc.)

4.3 MATERIALS, EQUIPMENTS

- Provide outline of any inspection programs and certification for machine, equipment, and tools
- Provide outline of the Personal Protective Equipment to be used

5. HSE MANAGEMENT SYSTEM

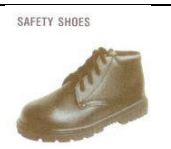
5.1 GENERAL NTPC SAFETY RULES

A set of 11 Safety Work Rules shall be followed.

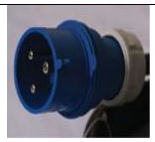
1. Nobody outside of the white UXO Markers.	Nobody is permitted outside of the white UXO markers, except for Clearance Personnel.
2. Reported all Accidents and Incidents.	All incidents, accidents and injuries must be report to your Supervisor.

3. Hard Hats, Safety Glasses and Steel Cap Boots/Shoes must be worn in the Plant/Site.	As a minimum Hard Hats, approved Safety Glasses and Steel Capped Boots/Shoes must be warn in the Plants / Work Site Areas.
4. High Visibility Clothing must be worn in the Plant/Site.	As a minimum a High Visibility Shirt, Jacket Or Vest must be worn in the Work Site Areas.
5. Seat Belts must be worn at all times.	Where Seat Belts are fitted, they must be worn at all times. Travelling in the back of a pick-up is prohibited.
6. Traffic signs must be obeyed.	All Traffic Signage Rules must be obeyed at all times.
7. You must be inducted before commencing work.	All persons onsite must complete the HSE induction before commencing work.
8. Equipment must not be operated without guards.	Equipment must not be operated with guarding removed.
9. You must isolate and attach your personal danger tag.	When performing a maintenance task you must ensure the equipment is isolated and attach your personal danger tag.
10. When above 1.8m, fall protection must be used.	When working above 1.8 meters fall protection devices such as a harness must be used.
11. Blood alcohol above 0.00% is unfit for work.	If your blood alcohol level is above 0.00% you are unfit to commence work or drive a vehicle.

5.2 MINIMUM HEALTH SAFETY REQUIREMENTS

No	Detail required	Standard/ Certificate	Illustration	Requirements
A	HSE Organization / Training			
A-1	Health Safety Personnel Representative .	Appointment Document and Specify in Organization.		Prior to commencing work.
A-2	Attend the HSE Induction Training	All persons		Prior to commencing work.
B	**Personal Protective Equipment (PPE)**			
B-1	Safety Helmet (Blue Colour)	BS-5240, ANSI Z-8901, TIS, Class A, B Nylon suspense with slot for face shield.		Required to wearing all the time when entering in to the working area.
B-2	Safety glass (I/O lens)	ANSI Z87.1		Required to wearing all the time when entering in to the working area
B-3	Safety shoes or Safety boots	EN345,BS1870,ANSIZ41,DIN4843, TIS; Steel toecap, steel midsole		Required to wearing all the time when entering in to the working area

No	Detail required	Standard/ Certificate	Illustration	Requirements
B-4	Ears plug/Ears muff	BS-6344,ANSI S3,19,AS1270,LIC875 Produce from Soft silicone Employee shall wear ear plugs if they are working in noisy work. If the noise level exposure is still causing disturbance, ear muffs are more desirable.	 	The choice of hearing protectors depend on level of noise, comfort and suitability for employees. *Ear muffs can provide greater protection than ear plugs.
B-5	Gloves	* PVC Gloves for chemical, cleaning detergent, acid or corrosive products etc. * Cotton gloves for general work. * Leather gloves for welding, hot work, or scratch surface	 	To be applied as appropriate.
B-6	Mask	NIOHS, N95		To be applied as appropriate.
C	Working at Height			
C-1	Safety Harness	ANSI Z359		Required when working above 2 meters height.
C-2	Ladder			
C-3	Scaffolds	At Least Japanese scaffolding to be elected when working higher than 2 meters.		Scaffolds to be elected when work higher than 2 meters.
D	Equipment / Machine/Hand tools			

No	Detail required	Standard/ Certificate	Illustration	Requirements
D-1	Electrical Equip. /Machine	To be connected with standard grounding connector. 3 cores cable with appropriated size shall apply for all devises that use single phase. 5 cores for 3 phase		It's mandatory to all electric device/Equipment connectors to be equipped with this type socket. All equipment to be inspected by NTPC prior brings in to use.
D-2	Electrical distribution panel	All sub breaker to be equipped with ELCB (Earth Leakage Circuit Breaker)		
D-3	Outdoor cable	Outdoor cable to be applied with double Insulated Cable with appropriated sizing.		

5.3 STAFF SPECIFIC RESPONSIBILITY

- Performing all duties in a manner which will ensure their own and others safety;
- Complying with the responsibilities assigned under HSE rules & regulations;
- Observing all HSE rules and regulations including the wearing of appropriate PPE for each task;
- Being alert at all times to potential hazards and report all hazards to the Supervisor or HSE personnel;
- Participating in the identification and elimination of hazards during developing of JSEA's;
- Immediately reporting any injury, incident, near miss, hazard or equipment defects;
- Setting a positive example to others by maintaining a safe and organized work area;
- Prevention of pollution;
- Attend for work in a fit condition ensuring compliance with drug and alcohol free requirements and fatigue management conditions.

5.4 JOB Hazard AND ENVIRONMENT ASPECT (JHEA)

The Contractor shall prepare JHEA, including identification of hazards, for all routine and non-routine activities such as:

- Confined space entry
- Cranes and other lifting equipment
- Electrical, mechanical safety and isolation
- Fitness for work
- Manual handling
- Noise, dust and vapor

- Vehicles and driving
- Working at Heights
- Working environment
- Waste and Hazmat management

The Contractor is to implement risk controls based on the risk hierarchy principles of:

- **Elimination** – Removal of the hazard from the task
- **Substitution** – If the hazard cannot be removed, substitute it for a lower hazard
- **Engineering Controls** – Manage the hazard through the introduction of engineering controls
- **Administrative controls** – management the hazard through the formation of safe work procedures
- **Personal Protective Equipment** – Ensure that personnel use appropriate protective equipment for the tasks.

5.5 HEALTH, SAFETY AND ENVIRONMENTAL MANAGEMENT PLAN

Prior to the commencement of activities, prepare a *Health, Safety and Environmental Management Plan*, which includes, where relevant:

- a brief description of activities;
- the responsible person;
- the Job Hazard and Environment Aspect (JHEA);
- Detailed descriptions of the risk mitigation activities;
- a HSE training program for staff;
- a system of monitoring and checking conformance with these specifications;
- a system of reporting to NTPC; and
- Emergency Response Procedures, where required.

5.6 STAFF TO BE RESPONSIBLE

Nominate a senior staff member who is responsible for planning, implementation and monitoring of health, safety and environmental controls.

5.7 REPORTING

5.7.1 Quarterly Reports

Reports prepared by the Contractor are to include:

- progress of planning/implementation/monitoring HSE controls;
- Any health, safety or environmental incidents and number of medical treatment cases, lost time injuries and fatalities.
- any health, safety or environmental complaints received in activities, and actions that were undertaken to resolve complaints; and
- Any environmental non-conformances with these specifications, and measures taken to resolve non-conformances.

5.7.2 Other Reporting

Report all HSE incidents to NTPC immediately as per the QHSE Incident Management Procedure.

Report all non-conformances with these Specifications to NTPC within two days of becoming aware of the non-conformance, as per the QHSE Incident Reporting Procedure.

Non-conformances and incidents are defined in the NTPC QHSE Incident Management Procedure (PR 1108) which is available to the contractor on request.

5.8 NTPC HEALTH, SAFETY AND ENVIRONMENTAL INSPECTIONS

NTPC may inspect operational sites at any time to identify health, safety or environmental issues or non-conformances.

5.9 CONTRACTOR HSE PERFORMANCE EVALUATION

Contractor shall keep and available on site the records to NTPC related its Health, Safety and Environmental Management implementation order for NTPC to evaluate the Health, Safety and Environmental performance from time to time NTPC RSU – HS and WQB to monitor contractor and records the observation have seen during inspection, patrol.

The HSE criteria and HS Performance Evaluation Form as Annex 4: HSE Criteria Performance Evaluation Form and Annex 5: HSE Performance Evaluation Form shall be implemented by RSU - HS Site inspector and WQB Environmental officer.

5.10 WORKER TRAINING

All workers are required to complete a general health, safety and environmental awareness training session prior to starting work. NTPC will develop and present the training session.

The contractor is to provide evidence to NTPC that staffs are appropriately qualified in technical fields, such as:

- Mechanics;
- Electricians;
- Scaffolders;
- Vehicle Driving and
- Any other field where technical proficiency is required and HSE hazards exist.

Additionally, the contractor is to provide any hands-on training that is identified in the HSE risk assessment, such as; safe confined space entry, working at heights, welding, handling of pesticides, or hazardous spill clean-up.

The contractor is required to maintain a training register containing details of the following: name and date of training session, list of attendees with signatures, and name of trainer.

During inspections of the contractor's areas, qualifications and/or workers knowledge of environmental, health and safety issues may be examined.

6 ISSUE SPECIFIC SPECIFICATIONS

6. 1 WASTE MANAGEMENT

6.1.1 Implementation of waste management hierarchy

Undertake all activities in a manner that minimizes generation of waste as far as practical. Incorporate this concept into all site planning and activities.

Identify opportunities to maximize the reuse and recycling of waste products from activities.

6.1.2 Waste separation

Separate solid waste at each site into the waste streams identified in Annex 1. Train workers in identifying these streams, and the requirements for waste separation.

6.1.3 Waste facilities

At each site, provide the following waste facilities:

- Temporary adequate number of bin(s) for each category of waste; or
- Temporary storage areas for each category of waste

Calculate the size of each waste storage area based on the nature of activities and the amount of waste generated in each stream.

Construct all storage areas with impermeable bases, roofing and bunding. Use bins or waste receptacles in preference to storage areas on the ground.

Clearly mark all storage areas/receptacles in Lao and English.

6.1.4 Register of waste

Develop and maintain a register of Group A2, Group A3 and Group B1 wastes generated or received, and disposed on or off-site. This register must be present on-site for inspection by NTPC.

6.1.5 Approval for transporting waste offsite

Obtain approval from NTPC for any solid waste (either hazardous or non-hazardous) to be sent offsite, including waste sent to *Gnommalath Solid Waste Facility*, prior to transport of the waste. Develop and maintain a register of all solid waste sent offsite as per the requirement in Section 0.

6.1.6 Non-hazardous waste management Temporary non-hazardous waste storage areas

Collect all non-hazardous waste in bins or a temporary waste storage area with a bunded area and roof cover, prior to being transported to the *Gnommalath Solid Waste Facility* for disposal.

6.1.7 Hazardous waste management Temporary hazardous waste storage areas

Collect all hazardous waste in a single, central Temporary Hazardous Waste Storage Area with a bunded area and roof cover. This is required until a viable disposal or treatment options are determined. If no viable disposal or treatment options are determined, NTPC will advise the

Contractor to move the wastes/materials to a designated area managed by NTPC.

Prior to the commencement of activities, confirm the location of the Temporary Hazardous Waste Storage Area. NTPC must approve the location prior to activities commencing.

Prior to the commencement of operations, prepare a *Hazardous Waste Storage Area Plan* per site containing at least the following:

- Site boundaries and layout;
- Construction details including bunding and provision of smooth, hard, non-porous floors with no cracks or spaces that might allow spilled wastes to fall into inaccessible areas;
- Emergency spill clean-up equipment is to be provided.

Management of Group B1 waste

Record the composition of Group B1 waste at each site prior to its transfer to the Temporary Hazardous Waste Storage Area.

Transport Group B1 waste in covered vehicles to the Temporary Hazardous Waste Storage Area. Meet the following requirements at the Temporary Hazardous Waste Storage Area:

- No sources of ignition permitted within 50m of the perimeter of the storage area (such as heat, sparks, flames);
- Store liquid wastes in leak proof, securely sealed containers;
- Store solid wastes in covered receptacles or bins;
- Separate wastes to allow easier disposal, e.g., keep oils and solvents separate;
- Check storage containers periodically for signs of leakage or damage;
- Label containers “Hazardous”;
- Record all waste movements to the storage site on a register in order to track and reconcile quantities;
- Provide safety data sheets (SDS) for chemicals in the storage area, where they exist;
- Do not discard unused commercial products containing a hazardous substance, and make all reasonable efforts to use them until their container is completely empty; and
- Keep spill kits at the storage location in case of a spill.

Prior to a decision on the hazardous waste treatment or disposal facility to be used, do not transport hazardous waste off the site.

Do not sell, or dispose of hazardous wastes, unless approved by NTPC.

6.2 HAZARDOUS MATERIALS – MANAGEMENT AND EMERGENCIES

Minimise the use of hazardous materials (HazMat) such as fuel, oil, waste oil, acids, paint, concrete admixtures, and pesticides. Provide a list of proposed hazardous materials to be used to NTPC for approval. Use of hazardous materials identified as banned in the NTPC Chemical Database will not be permitted.

Maintain a register of all hazardous materials with type, quantities stored, and quantities used or generated. Maintain Material Data Sheets (MDS) for all hazardous materials onsite.

6.2.1 Storage of hazardous materials

Store hazardous materials in a storage area protected by roof, and sealed floor with bunded sides. The volume of bunded areas must be greater than:

6.2.1.1 25% of the total volume inside the bund; and

6.2.1.2 110% of the volume of the largest container within the bund.

If the bund contains hydrocarbons, collect drainage from the bund in an oil-water separator before discharge.

6.2.2 Labeling of hazardous materials

Label containers of hazardous chemical or waste with:

- the words 'Hazardous Material' or 'Hazardous Waste';
- name of the user or generator;
- the date of storage of chemical, or date that waste accumulation began in the container;
- the name of the material and its physical state (solid or liquid);
- the hazard characteristics of the waste (ignitable, corrosive, toxic, reactive); and
- main danger for user (poison, burning, dangerous for eyes, skin, lungs, etc.).

6.2.3 Handling Safety Procedures and Personal Protective Equipment

Establish safety procedures for handling and use of HazMat. Translate safety rules into Lao, and provide posters for buildings where HazMat are used or stored. Provide Personal Protective Equipment to workers, and enforce their use.

6.2.4 Refueling procedures

Store fuel in drums supplied by fuel distributors. Refuel machinery from drums with measures to prevent oil spillage, including placement of buckets under refueling nozzles.

Facilities for refueling must include a sealed concrete floor, bunding and roof cover. The volume of the bunded area must be greater than 110% of the volume of the largest container within the bund. Collect drainage from the bund in an oil-water separator before discharge.

Post safety procedures regarding fire and accidental spill management, and the requirement for no smoking, on site where fuel is handled or stored.

6.2.5 Spill response

Use spill response kits to contain any spills that may occur. Keep spill response kits at workshops, bund areas and refueling points. These should contain dry sawdust or dry sand to clean up spills that may occur.

Report all spills of hazardous materials outside of bunded areas to NTPC immediately as per the QHSE Incident Reporting Procedure.

6.2.6 Pesticides for insect control

Select pesticides in accordance with the list of authorized pesticides identified as "Approved" in the NTPC Chemical Database.

Pesticides must be labeled and stored as per Sections 6.2.1 and 6.2.2. Translate all information relating to safe handling and toxicity of pesticides into Lao language.

6.2.7 Cleaning products

Select and use only detergents, soaps, washing powders and other cleaning materials with the following properties:

- in concentrate form;
- low in nitrogen;
- low in phosphorous;
- low in sodium; and
- bio-degradable.

6.3 CONFINED SPACES

6.3.1 Prior to confined space entry

Entry to a confined space must only be allowed after a written approval, in the form of a permit, has been issued by NTPC.
All persons required to work in a confined space, or to act as a standby person, must be trained by an appropriately qualified person, competent and tested.

Specific safe work procedures must be developed for work activities that are more hazardous when carried out in a confined space than elsewhere. These activities would include hot work (cutting and welding), chemical cleaning and steam cleaning.

A competent standby person will be assigned that has no other duties and is to be positioned outside the confined space entry point at all times while personnel are within the space. The standby person will also:

- Be trained to respond to a confined space emergency situation;
- Continuously monitor the wellbeing of those inside the space via voice, radio, hand signals or other appropriate means;
- Be authorized to instruct people to leave the Confined Space at any time; and
- Confirm there are no emissions in the near vicinity of the confined space e.g. Vehicles, diesel powered welders, etc. and be alert to wind direction changes that may bring new hazards.

All work near a confined space needs to be assessed to determine if that work will increase the risk of entering and working in the space. If it is determined that this work might increase the risk, the work needs to cease or the risk controlled. Where the JHA indicates a risk, atmospheric testing is required. Testing shall be carried out by a competent person using a suitable, correctly calibrated gas detector before and during the work at regular intervals.

6.3.2 Isolation and blocking

Mechanical and electrical blocking of equipment is required if it could be operated inadvertently. If gas, fumes or vapor could enter the confined space, pipe work needs to be physically isolated. Prior to entry into the confined space a check is required to ensure the blocking is effective.

6.3.3 Atmosphere inside the confined space

Where relevant, the atmosphere in a confined space needs to be tested for:

- oxygen content;
- airborne concentration of flammable contaminants; and
- airborne concentration of potentially harmful contaminants (e.g. hydrogen sulphide, carbon monoxide and methane).

If the atmospheric testing identifies an unsafe environment, purging, ventilation and frequent retesting is required.

If it is not reasonably practicable to ensure the confined space contains a safe oxygen level, or safe levels of atmospheric contaminants, then appropriate respiratory protective equipment (RPE) needs to be provided and on stand-by for all work inside a confined space.

It is a requirement that the RPE fits properly and is safe to use. In the following circumstances, an air supplied RPE is to be used:

- Where a safe oxygen level cannot be established and maintained;
- Where any contaminant in the space has an exposure standard, and it is not reasonably practicable to reduce the concentration of a contaminant to or below the exposure standard for that contaminant, contractors must use appropriate RPE (air-supplied or air purifying);
- Where there is uncertainty about the concentration of atmospheric 'contaminants' due to inaccessibility, no appropriate testing methodology or the work activity generates atmospheric contaminants, such as cleaning processes;

Where an atmospheric contaminant does not have an exposure standard, an air-supplied RPE is to be used unless a lower level of protection will be adequate to ensure health and safety.

6.3.4 Emergency preparedness

Suitable emergency procedures are required to be developed that reflect the nature of the confined space, the risks identified in the JHA and the likely nature of an emergency rescue. Planning, establishment and rehearsal of emergency, rescue and first aid procedures are to be conducted. All personnel entering a confined space or acting as the standby person need to be aware of the applicable emergency procedures.

6.4 CRANES AND LIFTING EQUIPMENT

6.4.1 Lift Activities and classifications

All lifts/activities are to undergo a JHA and will be classified in one of following three categories:

- *Standard/Basic Lifts/Activities*
  - Minimum Planning and Control Requirements:
  - Pre-activity Meeting / Toolbox Talk with operator(s) and rigger(s)
  - May require completion of Lift/Activity Planning Sheet
- *Serious Lifts/Activities*
  - Minimum Planning and Control Requirements:
  - Method Statement to be in place (consideration to be given for the requirement of a method statement)
  - Pre-activity Meeting / Toolbox Talk operator(s) and rigger(s)
  - Completion of a Lift/Activity Calculation Form and Sketch (consideration to be given of a load chart form and Sketch)
  - Personnel hoisting permit (if applicable)
  - Power line approach permit (if applicable)
- *Critical/Complex Lifts/Activities*
  - Minimum Planning and Control Requirements:
  - A lifting/activity plan must be implemented by a competent person
  - When necessary a Method Statement to be part of the lift/activity plan
  - Preparation of a Job Hazard Analysis
  - Pre activity Meeting / Toolbox Talk led by the supervisor and attended by the operator(s) and riggers to review and verify compliance to the requirements of the JHA and Critical Activity Plan.

6.4.2 Planning

Where practicable cranes should be fitted with:

- A clear sign that states the Working Load Limit for the device;
- A load cell with the weight of the load displayed in the visual range of the operator;
- Anti-collision devices;
- Deceleration devices;
- Load-limiting devices; and
- Anti-fall devices.

Every hook, sling and accessory used in lifting must have the Working Load Limit Clearly displayed.

6.4.3 Operation

Tag-lines shall be used where practicable and all riggers shall wear distinctive clothing

Cranes and lifting equipment must not be operated with an inoperable or defective safety

device. There must be documented procedures that require:

- All rigging connections and lifting lugs to be checked by a competent person and correct prior to commencing a lift;
- Checks that the load being lifted is within the rated capacity of the crane and lifting attachments and is also within the limits set out in the lift plan; and

Checks of all safety devices or overload limiters to ensure they are not overridden or cut out.

All lifting hooks (except for grab and chain shortening hooks) will be fitted with a safety latch to prevent the load from accidentally detaching, unless otherwise specified in a risk assessment.

- Loads must not swing over people, hazardous equipment or occupied buildings and no person shall be under a suspended load or in a position where they could be struck by a falling load.
- Where there is a risk of a load falling and striking a person, barricading or similar controls to prevent access must be in place.

Access to areas where lifting operations are carried out shall be restricted, protection provided or procedures put in place such that persons in the vicinity are not subject to danger.

Overhead travelling cranes must be fitted with audible travel alarms or an equivalent

warning device. All cranes must be locked out when:

- Not in use, to prevent unauthorized use
- Being worked on, to ensure safety of maintenance staff or operators
- Deemed unfit for use either following an incident or

inspection. Personnel must be trained, competent and

authorized to:

- Operate cranes and lifting equipment;

- Set-up or rig loads;
- Provide signals for controlling lifts; and
- Inspect, maintain or test cranes and lifting equipment.

The operator shall not commence lifting before lifting area is properly secured and shall not leave the crane controls while a load is suspended.

6.4.4 Maintenance and Inspections

Any crane or lifting equipment brought to an NTPC

- Must be inspected and verified by HSE Department prior use on site to ensure the equipment is fit for purpose. Any defective equipment identified in this pre-use safety inspection must be tagged out of service and remove form working area.
- Must have an inspection certificate by certified testing third party.
- Must have appropriate crane operator certifications; and
- Must have crane load chart;

Inspections, modifications and repairs to cranes, cables and lifting equipment must comply with the manufacturer's specifications as a minimum.

Records of maintenance inspections and cable tests must be kept.

6.5 ELECTRICAL SAFETY

The contractor shall provide demonstrated job and equipment-specific electrical competency standards and safe work procedures for all electrical work.

All electrical work conducted by the contractor must be conducted by competent and authorized personnel in accordance with appropriate codes of practice and design criteria.

Equipment shall be isolated prior to work. Energized electrical work will require specific approval from NTPC.

Work in wet or damp work locations (i.e., areas surrounded or near water or other liquids) should not be performed unless it is absolutely critical. Electrical work should be postponed until the liquid can be cleaned up. The following special precautions must be incorporated while performing work in damp locations:

- Only use electrical cords that have Ground Fault Circuit Interrupters (GFCIs);
- Place a dry barrier over any wet or damp work surface;
- Remove standing water before beginning work. Work is prohibited in areas where there is standing water; and
- Do not use electrical extension cords in wet or damp locations.

Proximity Limit Clearance and Minimum Approach boundaries will be defined for work near live bare parts. Work within these areas will be managed to a level that is comparable to the risks within the area.

6.6 FITNESS FOR WORK

6.6.1 Safety Critical Jobs

Safety Critical jobs must have fitness for work identified as a risk in the JHA for the task and have appropriate controls identified and implemented to address the issue.

All workers in safety critical jobs must report to their supervisor/manager any condition that might impair their ability to safely perform the functions of their position.

6.6.2 Drugs and Alcohol

Any contractor under the influence alcohol and other (including prescription, pharmaceutical or illicit) drugs must not conduct any of the following tasks:

- Enter an Industrial Facility Site
- Drive a vehicle
- Operate Machinery
- Conduct any task with significant QHSE implications.

NTPC reserves the right to test any contractor for alcohol and any other illicit drug whilst at work on NTPC sites,

If the contractor is found to be under the influence of illicit drugs or have a blood alcohol reading above
0.05 they will be immediately banned from work at NTPC facilities.

6.7 MANUAL HANDLING AND VIBRATION

6.7.1 Job hazard Assessment

Workplace vibration sources that could contribute or have the potential for impact on worker musculoskeletal fitness must be identified in the JHA for the task and be adequately managed.

Manual handling tasks assessed as having potential to cause an LTI (i.e. with potential for impact on worker musculoskeletal fitness) must be identified in the JHA for the task, assessed using biomechanical factors (e.g. posture, bending, twisting, repetitive motions, working overhead, exerting force away from the body) and be adequately managed.

6.7.2 Control measures

Control measures must be in place to minimize exposures to vibration or manual handling and protect contractors from adverse exposure. Where possible, machines or equipment, or alternative systems of work, must be employed to conduct heavy, awkward or repetitive tasks.

6.8 NOISE, DUST AND VAPOR

6.8.1 Identification of designated areas for contractor safety

The contractor must designate areas where:

- it is likely that the eight hour L

mean exceeds 85 dB(A);

- impulse noise exceeds 140 dB(A); or
- agents with an acute effect, such as particulate hazards, gases or vapors (e.g. Carbon Dust, Acid Vapor, CO, NH3, HF, etc.), exceed 50 per cent of the relevant operating exposure limit.

6.8.2 Noise generation during construction

Limit general construction works, including vehicle movements, to between 06.00 and 18.00.

If complaints are received about excessive noise near villages, consult with the complainant to identify mitigation measures (such as changing equipment, restricting work hours in particular area, shielding) to be implemented.

The contractor must position generators and noisy equipment as far as possible from villages, construction camps and resettlement areas.

Where possible, use topographic features to provide shielding between noisy equipment and villages, construction camps and resettlement areas.

Provide all construction personnel working in the vicinity of noisy construction activities (defined as those activities generating noise levels greater than 80dBA) with hearing protection, or if any construction personnel requests hearing protection.

6.8.3 Dust management during construction

Water shall be applied to exposed dust prone surfaces in the following situations:

- During windy conditions when high level of disturbance;
- When visual inspection indicates excessive dust generation is likely from project activities;
- When dust generating activities are being carried out within 100m of a village or construction work camp;
- During period of heavy project traffic use on unsealed haul roads; or
- In response to complaints by external parties.

If complaints are received about excessive dust levels in the vicinity of villages, consult with the complainant to identify appropriate mitigation measures to be implemented.

6.9 VEHICLES AND DRIVING

6.9.1 Vehicle condition

All vehicles used on NTPC sites by contractors must be fitted with:

- fixed seats and safety belts for driver and all passengers, unless a risk assessment specifies otherwise; and
- a speedometer or like means of informing operators of vehicle speeds for vehicles capable of exceeding the lowest applicable speed limit.

All contractor vehicles used on NTPC sites must receive an annual safety inspection from the NTPC Health and Safety Department and be deemed fit for use.

6.9.2 Vehicle use

No person may drive a vehicle unless they are trained, competent, tested and licensed to operate that vehicle. The training must address hazards assessed for (a) that vehicle and (b) the tasks for which it is to be used.

All vehicles being used by the contractor on NTPC sites and in project areas must drive below the defined speed limits.

The driver and all passengers must wear their seat belts, where fitted, at all times. The number of passengers in a vehicle is not to exceed the number of seats and seat beats provided. Faulty, damaged or worn seatbelts must be replaced and will not be taken into account for the number of persons permitted to ride in that vehicle.

If on inspection contractor personnel are seen to be riding in the rear of pick up or truck or exceed the number of functional seatbelts, the excess passengers will be requested to step out of the vehicle and wait for the next available transport.

All riders of motorbikes must wear at a minimum whilst riding:

- A full face or “anti-knock” helmet; and
- Enclosed footwear.

6.9.3 Parking

The following rules apply to the parking of light vehicles.

- Endeavor to park on flat ground;
- Stop engine; apply handbrake and select first or reverse gear,
- If on an incline, turn the wheels to full lock;

Do not park directly behind, in front or adjacent to heavy vehicles, either stationary or operating. The following rules apply to the parking of heavy vehicles.

- Park only in designated areas;
- Lower all attachments on equipment fitted with moveable attachments (i.e., forks, buckets, blades and rippers) when parking;
- If on an incline, chock or wedge the wheels;
- Turn wheels into the side of the bank or road;
- No personnel are allowed to sit or rest:
  - Under any vehicle or piece of heavy equipment; or
  - Directly in front of or behind any vehicle or piece of heavy

equipment. The following shall apply if a vehicle or other piece of equipment becomes inoperable:

- If broken on a road, operate hazard warning lights (if fitted) and leave parking lights on, if it is dark;
- Turn the front wheels into the side of the road, apply the park brake, and chock the wheels;
- Arrange for repair/removal of the vehicle as soon as practicable; and Place road hazard markers 50 meters in front of and behind the vehicle.

6.10 WORKING AT HEIGHTS

6.10.1 JHA and Controls

A risk assessment or JHA will be conducted prior to the commencement of any task where there is the potential for a fall or which involves working at heights.

The following hierarchy of controls is to be implemented where any such risks have been identified:

- Work on the Ground
- Work from a solid work area
- Passive Fall Prevention Devices
- Scaffolds

- Elevating Work Platforms or Boxes
- Industrial Rope Access Systems
- Travel Restraint Access Systems
- Fall Arrest Systems
- Ladders
- Administrative Controls
- Personal protective equipment

6.10.2 Fall Prevention

Work platforms and scaffolds must be constructed by duly qualified personnel, have complete floors, guardrails and toe-boards and safe access and egress must be provided.

Where overhead work is being conducted, barricades must be erected around the work area to protect others below from falling objects.

All ladders shall be tied off or supported below and person may only climb or descend a ladder without fall protection if they are able to use both hands and legs to do so, face the ladder and use one step at a time.

A person must be designated to control a work platform, scissor lift or man-lift ("the basket"), who is trained and competent to do so and appropriately qualified.

Every person in the 'basket' must be secured at all times with proper fall protection equipment and there must be systems in place to prevent tools and equipment from falling from the 'basket'.

6.10.3 Fall Protection

Fall protection equipment shall be used for all elevated work above 2 meters.

Anchorage points must, where practical, be above the head of the worker, and must ensure that in the event of a fall the worker will neither swing nor touch the ground. Anchorage points are to be tested and approved by a competent person to ensure that they are secure and can take the required load.

Fall protection equipment is required to be:

- tested and certified for use;
- inspected by the user before use; and
- destroyed following a fall or where inspection has shown evidence of excessive wear or mechanical malfunction.

6.11 WORKING ENVIRONMENT

6.11.1 Hot working conditions

Hot areas or activities where contractors have experienced or could experience excessive fatigue, muscle cramp, dehydration, dizziness and other symptoms of heat stress must be identified and described in the JHA for the task.

Where a risk of heat stress is determined, a competent person must conduct monitoring surveys on site, in consultation with workers. The following exposure controls must be considered by a competent person:

- work/rest regimes and job rotation based on measurements conducted;
- suitable rest areas with a provision of cool drinking water and cool conditions;
- selection of appropriate clothing or other PPE for extreme temperature conditions;

- the use of engineering controls; and
- undertake hot tasks during a cooler time of the day.

When a risk of heat stress is identified as a risk, at a minimum the following exposure controls must be implemented:

- training in the recognition of signs and symptoms of heat stress, emergency procedures and preventative measures; and
- protective observation (buddy system or supervision).

6.12 UXO CLEARANCE

All constructions sites require UXO clearance before work is able to commence. A valid UXO clearance certificate certified by a competent person must be held by NTPC before the contractor is allowed to mobilize any equipment to the site.

6.13 VEGETATION CLEARING

6.13.1 Identification of vegetation to be cleared

Prepare an A3-sized *Vegetation Clearing Plan* per site prior to commencement of works, showing:

i. Boundaries of vegetation required to be cleared.

ii. Any areas of 'sensitive vegetation' located on-site which require specific protection, including:

- Vegetation adjoining drainage channels;
- Vegetation identified as having significant value by GOL or Forestry Department;
- Corridors of vegetation; and
- Other vegetated areas defined in the plan as uncleared areas.

iii. Any required temporary timber storage sites for placing prior to its removal from site.

iv. Anticipated revegetation.

'Sensitive vegetation' is defined as vegetation within 20m of streams or water bodies.

No clearing of vegetation outside of those areas identified in the *Vegetation Clearing Plan* is permitted. Minimise vegetation clearing, and maximise the use of existing cleared areas.

Where possible, corridors of vegetation are to be left intact to form connections with larger areas of un- cleared vegetation to allow dispersal of fauna during clearing activities.

Mark areas of vegetation to be cleared and the boundaries of 'sensitive vegetation' areas with temporary fencing or similar.

Construction works, storage of materials/equipment, or access by construction personnel are not permitted in 'sensitive vegetation' areas.

6.13.2 Clearing methods

Use only manual and mechanical methods of clearing vegetation. No clearing shall be undertaken using chemical methods. Due to high risk of UXO, no fire clearing is permitted.

Burning is not permitted as a clearing method, and burning of waste vegetation can only take place in accordance with the requirements of Section 0.

Chemical clearing using herbicides is prohibited.

Clearing shall be in accordance with the *Vegetation Clearing Plan* and shall avoid damage to vegetation identified to be retained including sensitive vegetation. Spoil and clearing debris shall be stored well clear of retained vegetation.

Following the removal of vegetation, the Contractor is to separate topsoil and subsoil and stockpile it for use in rehabilitation activities.

6.13.3 Retention of large trees

Maximise the retention of existing vegetation, especially large trees to provide shade and improve visual amenity and vegetation along drainage lines.

6.13.4 Qualified logging firm

Only locally licensed logging firms are permitted to undertake logging clearing work. Firms shall be briefed on the requirements of this General Health, Safety, and Environmental Specification prior to the commencement of clearing.

6.13.5 Storage and disposal of timber products

Design any required temporary timber storage areas to ensure that they are stable and protected from the risk of fire.

6.14 SPOIL DISPOSAL AND BORROW AREAS

6.14.1 Spoil Disposal

Store all excess spoil excavated at each site in 'spoil disposal areas' identified on the *Site Environmental Management Plan* required by Section 1.1, and which must be located more than 50m from any waterway.

Spoil disposal areas must not be placed in any floodways, flood storage areas, drainage lines and must be placed in cleared areas or areas to be cleared as part of the works.

Spoil disposal areas are not to exceed 6m in height, and a 2m berm is required at a height of approximately 3m. Batter slopes are not to exceed 1.5:1 during construction, unless verified by engineering design and calculation.

Prior to establishment of spoil disposal areas:

- remove topsoil from the site, and stockpile it as per Section 3.2;
- install temporary sediment control fences on the downhill side of stockpile sites and diversion drains on the uphill side of stockpile sites; and
- establish any temporary sediment ponds required to capture any turbid runoff.

Spoil disposal areas are to be reshaped to have stable batters with slopes not to exceeding 3:1, provided with erosion protection as outlined in Section 5.2 and rehabilitated as outlined in Section 12.2.

6.14.2 Borrow Areas

Minimise the number of borrow areas.

Minimise visual impact by preserving a strip of buffer land between the road alignment and the borrow area.

Where possible, select areas where the landform has been previously

disturbed. Minimise disturbance to agricultural land and assets.

Provide adequate setback distances from village areas.

Where an excavated borrow area can be reasonably drained, reshape the slopes to stable batters no great than 3:1 and rehabilitate the area as outlined in Section 12.2

Where an excavated borrow area cannot be reasonably drained, Minimise their number and consult with the local population as to that population's preference for their location for reuse for fish farming or other community purposes.

6.15 EROSION AND SEDIMENTATION CONTROL

Prepare an A3-sized *Erosion and Sediment Control Plan* per site prior to commencement of works, showing:

- Conceptual design of erosion and sediment controls to be implemented on-site; and
- Preliminary assessment of potential flooding area, locations of stockpiles, changes in topographical/ hydrological conditions

6.15.1 Measures to minimise erosion

Minimise vegetation clearing, and maximise the use of existing cleared areas.

Maximise the retention of existing vegetation, particularly along streams, to reduce flow rates and act as a sediment filter.

Undertake clearing in the sequence or areas required for construction. Retain areas not required to be disturbed in their original condition.

Remove and stockpile topsoil and subsoil for use in future revegetation and rehabilitation activities.

Construct diversion banks uphill of construction sites and stockpiles where there is a potential for run-off to erode the area or base of stockpiles.

6.15.2 Erosion and sediment controls

Construct erosion and sediment controls and drainage prior to the commencement of construction works.

Construct sediment trapping devices such as gravel and/or sand bags, sediment basins along with adequate drainage to treat runoff from disturbed areas. Refer to **Annex 2** for a guide to the selection of appropriate devices and design specifications.

'Sensitive erosion areas' are defined as any disturbed areas with:

- exposed slopes greater than 20 degrees; or
- exposed areas within 30m of a natural watercourse; or
- cut and fill slopes with erodible geology

'Sensitive erosion areas' must have one of the sediment trapping devices, defined in **Annex 2**, installed and maintained from April to October.

Exposed slopes greater than 20 degrees must have one of the following slope protection devices installed and maintained from April to October:

- Bamboo fences;
- Netting; or
- Fiber logs/pillows.

Install rip-rap, or similar hard protection, at the inlet and outlet of all culverts to prevent scour erosion.

Where sediment basins are used, Total Suspended Solids (TSS) in the discharge must meet the water quality guidelines outlined in **Annex 3**. TSS testing of sediment basin discharge will be undertaken regularly by NTPC. TSS discharges above the water quality guidelines will be identified by NTPC and reported using the Environmental Incident Reporting System. Where discharges fail to meet the water quality guidelines, the contractor is responsible for making alternations to the erosion and sedimentation controls, to improve their performance.

6.15.3 Maintenance and inspection of erosion and sediment controls

Inspect erosion and sediment controls at least once per week to ensure effectiveness.

At the beginning of May, prior to the start of wet season, review the effectiveness of the existing erosion and sediment controls, and make any necessary modification to erosion and sediment controls.

6.16 PHYSICAL CULTURAL RESOURCES

Potential Physical Cultural Resources (PCR) includes:

- remains left by previous and current human inhabitants (for example, temples, cemeteries, spirit sites, middens, shrines, and battlegrounds); and
- unique natural environmental features such as canyons and waterfalls.

NTPC has documented and identified locations of PCR in and adjacent to the concession areas. This will be used to identify PCR sites in and adjacent to construction sites. It is also possible that further PCR sites will be discovered during construction. In this case, steps described below are to be followed by the Contractor:

6.16.1 Protection measures for existing PCR sites

Implement the following protection measures to protect identified PCR sites, where relevant:

- fencing of the PCR site;
- signs at the site indicating no entry for workers;
- review of design to ensure temporary and permanent works avoid PCR sites; and
- other measures to be determined.

6.16.2 Steps to be implemented if new PCR sites are identified

Undertake the following steps to protect any previously unidentified sites of potential cultural significance:

1. If a construction worker identifies a potential site or item of cultural significance, immediately notify the construction supervisor on-site.
2. The construction supervisor is to immediately cease work within a 50m area.
3. The construction supervisor is to immediately notify NTPC or WQB.
4. NTPC's '*PCR Chance Find Procedure*' will then be implemented, including completing reporting forms within 24 hours of a potential site being identified.

Work cannot restart within 50m radius of a potential site until directed by NTPC or WQB. Directions or requirements from the WQB for measures to protect the item or site will be communicated to the Contractor.

6.17 CONSTRUCTION CAMPS

6.17.1 Use of camps

Accommodate all workers who are based on the construction site in construction camps. No other accommodation of workers is permitted.

6.17.2 Preparation of camp site layout plans

A *site layout plan* is required prior to the commencement of construction of construction camps. The plan is to include information on the location of the components and be based on the following principles:

- maximise the use of cleared areas for locating construction camps;
- maximise retention of existing vegetation, especially large trees to provide shade and improve visual amenity and vegetation along streams;
- minimise potential for disease transmission within the constructions camps, including provision of suitable drainage, water supply and sewage disposal methods;
- minimise work within 30m of a watercourse, and no work within 10m of a watercourse;
- locate residential facilities a suitable distance from waste management and sanitary facilities; and
- locate buildings within the existing topography to maximise screening of the camps from public vantage points.

6.17.3 Camp disease control, health and safety issues

Make buildings in camps 'mosquito-proof' as far as possible through ensuring adequate sealing of doors and windows, provision of suitable ventilation and as necessary, installing mosquito-nets and other prevention devices.

Keep camp sites and surrounds in a tidy and clean manner. Inspect camp sites weekly.

6.17.4 Camp potable water supply

Water supply at camps is expected to be from wells or treated drinking water. Wells are to be sealed at surface with concrete pad sloping away from entrance. Secure access to all potable water supply and storage facilities to authorized personnel.

Manage wells using current best practice. Prepare operating procedures and precautionary measures to protect freshwater ecosystems

6.17.5 Camp rules and regulations

Develop a set of rules and regulations applicable to camps, including:

- Prohibitions on hunting and poaching of wildlife, pets, purchasing wildlife meat, fishing, gathering and harvesting medicinal or valued plants and trees, and possessing firearms, snares, traps and other hunting equipment;
- Housecleaning and waste management requirements; and

- Measures for preserving health and the dissemination of vectors and transmissible diseases.

Provide residents of camps with written information and training on camp rules and regulations. Display camp rules and regulations in the camp areas.

6.18 REVEGETATION

6.18.1 Progressive revegetation of disturbed areas

Rehabilitate all areas disturbed by construction activities.

Progressively revegetate disturbed areas as soon as practical following completion of construction works in that area. Species used for revegetation will need prior approval by NTPC.

Where an alternative beneficial use for the land can be demonstrated, and the landowner agrees, NTPC may waive to requirement for permanent revegetation.

6.18.2 Revegetation works

Establish permanent revegetation:

- When the area to be revegetated shall not be disturbed by future construction activities; or
- When the area to be revegetated is not identified for use as agricultural

land use. The establishment of permanent revegetation requires:

1. The reinstatement of original land contours and drainage patterns, including filling of local depressions;
2. The temporary fencing of area to be revegetated;
3. The removal of weeds and/or temporary seeded vegetation using manual methods or herbicides;
4. The spreading of topsoil taken from site during clearing activities;
5. The planting under-storey and over-storey vegetation using manual or mechanical methods;
6. The application of rice straw mulch, fertilizers and/or manure to enhance growth;
7. The watering of vegetation as required to enhance growth.

It is a requirement to maintain fencing around permanent revegetation to exclude people and animals until the vegetation is well-established and construction works in the immediate vicinity of the area have ceased.

6.18.3 Avoidance of weed spread

Reuse topsoil and vegetation (for mulching) removed from an area during site-clearing activities only at the same area to avoid the spread of weeds between different construction sites.

6.18.4 Restoration of other land uses

Restore land that was used for agricultural activities prior to disturbance from construction activities to a condition that allows agricultural land use to continue. This includes, as necessary:

- Re-spreading of topsoil;
- Installation of drains, channels etc.; and
- Erection of fencing or other structures.

Restore water courses and drainage paths to their former paths before construction, if possible.

Annex 1: Waste Classification

Table 1: Waste Classification Table

A: Non-Hazardous Waste	B: Hazardous Waste

GROUP A1: General Waste	***GROUP B1: Hazardous Waste***
Plastic bags Biological waste (e.g. pests removed from pest traps) Polystyrene Plastic wrapping General plastic waste ***GROUP A2: Recyclable Waste*** Plastic bottles Metal Can s Glas s Machinery parts Rubber waste Tires Cardboard Pallets Clean paper Wood waste Printer cartridges ***Group A3: Compostable Waste***	Fluorescent light tubes Mercury vapor bulbs Acids and acid waste Acid and caustic cleaners Alkalis (caustics) and caustic waste Batteries Catalysts and waste Chemicals Empty containers which held chemicals, paint, oil, solvents Fuel drums, oil drums, and cans First aid and clinical waste Filters Electrical wastes Hydraulic fluid Insulation material Paint and paint waste Plastic Oily rags Solvents Spill clean-up waste Used oil Waste from grease traps Waste from septic tanks Other waste when its composition is unknown
Note: When any waste in this column (A) gets mixed with waste from the other column (B), all of the waste is to be classified as hazardous waste.	***Note: Waste in this column (B) is to be labeled HAZARDOUS and by name, source and components***

Annex 2: Erosion Control Devices

DEVICE	PURPOSE

Check dam	To be used to Minimise water velocity in flow corridors and channels to reduce erosive action. Typically constructed of clean rock fill, manufactured silt fence or straw bales.
Contour ditches	To be used to collect and convey water from a slope to a suitable outlet point.
Culvert protection	To be used to prevent scour erosion at the inlet and outlet of culverts. Typically constructed of clean rock/rip-rap.
Diversion dike	To be used to divert clean runoff away from the construction site or divert runoff around sensitive areas (eroded or bare soils, steep slopes etc.).
Interceptor drains	To be used to intercept and divert clean runoff away from the construction site or intercept and divert runoff around sensitive areas (eroded or bare soils, steep slopes etc.).
Perimeter bank /	To be used to divert clean runoff away from construction areas.
Sediment basin	To be used as a medium to long-term sediment trapping and storage facility. Located off-line of waterway. Must include an emergency spillway, dry and wet storage capacity and anchored riser pipe. Can be used for a large area than sediment traps.
Bamboo fences;	Bamboo fences are best made of woven bamboo mats up to 30cm high. These mats are placed along the contours of the slope and placed in a small trench (<5cm) to limit water passing below the fence. For strength, the fence is then fastened to live stakes 40 -100cm long. These stakes are placed about 1m apart. Distances between the bamboo fences can vary between 2-6m depending on the slope conditions, the steeper the slope the closer the fences should be located together. For a slope of 40° a distance
Netting	Netting involves pinning a netted material over the surface of the slope. Typically this technique is used on slopes steeper than 40 degrees. There are many different types of netting material, some that are synthetic and some that are natural. There are even a few that are both synthetic and natural and can be made out of straw, coconut fiber, aspen fiber, jute and
Fiber logs/pillows	Fiber pillows are a type of erosion control device used on slopes less than 40°. These pillows usually consist of organic matter, such as rice waste, held inside some type of netting to form pillows and can be made to just about any size. The purpose of these logs is to pool up and slow down water long enough for any sediment that is in the water to settle out. The most appropriate netting material is 100-200 g/m^2 Jute netting. Where appropriate netting material is not readily available, it is possible to construct fiber pillows
Sediment trap	To be used as a short-term sediment trapping and storage facility. Typically to be used for discharge from areas less than 2 hectares. Can be constructed by excavation alone or with embankment.
Sand/gravel bags	To be used to reduce water velocities, divert flows and direct/divert runoff to sediment traps. Should be used in areas of sheet flow.
Slope drains	To be used to transport collected water down slopes during construction or prior to installation of permanent collection facilities. Typically constructed
Temporary revegetatio n	To be used to temporarily stabilize exposed surfaces, including stock-piles, prior to establishment of full vegetative cover, re-use of stockpiled materials or commencement of construction activities on exposed area.

Annex 3: Camp Discharge Guidelines

Parameter	Unit	Guideline
Biochemical Oxygen Demand (BOD)	mg/l	<30
Aluminium	mg/l	<2
Ammonia	mg/l	<4
Chemical Oxygen Demand (COD)	mg/l	<130
Conductivity	µS/cm	<3500
Lead	mg/l	0.2
Manganese	mg/l	<1
Nitrate	mg/l	<30
Oil and Grease	mg/l	<5
Iron (Total)	mg/l	<2
Phosphate (Total)	mg/l	10
Total Suspended Solids (TSS)	mg/l	<40
Sulfate	mg/l	<2
Temperature	°C	<40
Zinc	mg/l	<1
Faecal Coliform	CFU/100ml	<1000

Annex 4: Criteria for Contractor HSE Performance Evaluation Form

Criteria for Contractor HSE Performance Evaluation
Contractor Name: …… Project Name: …….. Contact No/ Period.: ……/……..

No.	Description for evaluation	Measurement items	HSE Inspection result										Scoring
			#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
	Health & Safety												100% complied HSE requirements from all inspections = 4 or 5, 85-99= 3, 60-84=2 and <60 =1
1	**As expectation for HS Management**												
	1.1 Supervisor and manager take more attention on HSE	Safety office works on time/there is safety meeting , safety inspection and safety report (weekly monthly)											
	1.2 Supervisor and manager are strongly take corrective action on HSE	All HSE problems are quickly solving and put them into account.											
	1.3 HSE Site control (Incident , violate HSE Rules)	LTI, contractor staff violates rules											
2	**As standard and HS requirements**												
	2.1 OHSAS 18001 certified	OHSAS 18001, BBS or PSM											
	2.2 Follow to HSE Requirement (JHEA & PPE)	Compliance to NTPC HSE rules and JHEA											
3	**Incident prevention**												
	3.1 HSE Plan and follow up	HSE Plan											
	3.2 HSE Inspection by safety officer /supervisor	Evident of inspection											
	3.3 HSE Information in the team	Recorded											
4	**Corrective and preventive actions**												
	4.1 All problems from site inspection are taken C&P actions	% of opening and closing of problems											

5	**Advising & solving problem**											
	5.1 Find out the HSE problem it may happen then give suggestion to solve the problem then inform to NTPC	There is the comment for improvement and improvement items were improved.										
6	**Housekeeping**											
	6.1 Good house keep during working	Materials, equipment store in safe area										
	6.2 Good housekeeping after work	Materials, equipment store in safe area										
7	**Cooperation**											
	7.1 Good cooperation during conducting site inspection	Participation										
	7.2 Good support all items of HSE improvement	Participation & action										
	Environmental											
1	**As expectation for HS Management**											
	1.1 Supervisor and manager take more attention on HSE	Environment office works on time/there is meeting , environment inspection and report (weekly monthly)										
	1.2 Supervisor and manager are strongly take corrective action on HSE	All environmental problems are quickly solving and put them into account										
	1.3 HSE Site control (Incident , violate HSE Rules, PPE)	Major problem, contractor staff violates rules										
2	**As NTPC Requirements (waste)**											
	2.1 Correct waste separation	Correct waste separation and JHEA										
	2.2 ISO 14001 Certification	Certification										

3	**Advising & solving problem**												
	3.1 Find out the HSE problem it may happen then give suggestion to solve the problem then inform to NTPC	There is the comment for improvement and improvement items were improved.											
4	**Environment protection**												
	4.1 Information in the team about environmental protection	Information recorded / interview staff											
	4.2 Follow all JHEA measuring items	Follow up JHEA											
5	**Cooperation**												
	7.1 Good cooperation during conducting site inspection	Participation											
	7.2 Good support all items of HSE improvement	Participation & action											

Annex 5: Contractor HSE Performance Evaluation Form

Nam Theun2 Power Company Limited

Contractor HSE Performance Evaluation Form

Contractor Name: ……

Project name or contact No.: …….. Duration: ……..

Score: 5 = excellent 4 = very good 3 = good 2 = fair 1 = poor

	Title	Point					Remarks
		5	4	3	2	1	
1	**Health Safety**						
	HS 1. As expectation for HS Management						
	HS 2. As standard and HS requirements						
	HS 3. PPE Wearing						
	HS 4. Tools condition						
	HS 5. Incident prevention						
	HS 6. Corrective and preventive actions						
	HS 7. Advising & solving problem						
	HS 8. Housekeeping						
	HS 9. Cooperation						
2	**Environment**						
	E 1. As expectation						
	E 2. As NTPC Requirements (waste)						
	E 3. Advising & solving problem						
	E 4. Environment protection						
	E 5. Cooperation						

Recommendation for improvement (**Score <3)**

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