ANNEX-8

Technical Proposal
HSE Plan

Content

1 HEARTH, SAFETY AND ENVIRONMENTAL MANUAL

1.1 Health, Safety & Environmental Protection statement

The Health, Safety & Environmental Protection shall be responsible by the Health, Safety and Environmental Management (HSE) Division in our organization structure. As such, the management system shall be divided into the following plans to cope with the requirements as specified in the tender document.

- Health and Safety Management Plan
- Environmental Management Plan

The aforementioned plans shall be submitted to the Engineer for review.

The Management Plan to be submitted shall defines the project requirements relating to Health, Safety and Environmental in engineering projects. It shall also include the procedures and methodology to integrate required measures with respect to the HSE during each project phase until hand-over of responsibility to the Employer.

1.2 HSE Management System

The HSE management system is designed to reduce risk and waste.

Risks are be reduced to their lowest practical levels through elimination, substitution, redesign, isolation, administrative controls, and the prudent use of protective equipment. Procedures to constantly monitor waste and energy in order to reduce waste and pollutants and energy use shall be enforced at the site.

As a minimum, the contractor shall comply with all plans and procedures controlling environment, solid waste, health and safety, security, sustainable development, all project HSE standards, and relevant legislation and regulations. Compliance shall be strictly enforced.

The HSE Manager shall be responsible for the preparation of Health & Safety Management Plan and Environment Management Plan including details of the approach, methodology and means to be applied by the contractor and sub-contractor to implement the environmental mitigation measures and monitoring, and it shall be submitted to the Engineer for approval.

In addition, the monitoring system shall be created in place to check and document that all project personnel, including contractors and their subcontractors, are properly trained and equipped to carry out their work assigned to them. Methods for avoiding or minimizing health and occupational risks has been evaluated shall be integrated in the monitoring system. It includes the procedures of site inspection and document audit related to HSE.

1.2.1 CHEC Policy Statement

As the contractor, the Health and Safety Policy Statement and Environmental Policy Statement as shown in attached shall be implemented and maintained by the project team, until the completion of the project.

The contractor has certified by the Occupational and Safety Management System and Environmental Management system, certificates of the aforementioned systems are shown in attached. Thus, the project team shall continue to implement and maintain these systems for the Project to prevent accident and minimize negative environmental impacts for the project.

1.2.2 Organization

The project manager is the first person to be responsible for the environmental protection, while the HSE manager will lead the environmental team perform regular site inspection to minimize environmental impact from construction activities, carry out environmental documentation audit, and report to the Employer and Project Manager related to environmental issues.

The Safety Officer and Environmental Specialist will be appointed to responsible for regular site inspection, carry out safety and environmental documentation audit, and daily safety and environmental management. In addition, the Safety Officer and Environmental Specialist will be delegated with sufficient authority to ensure site construction activities compliance with the safety and environmental requirements through the route report directly to the Project Director if necessary.

The HSE Manager will lead a team responsible for the Health, Safety & Environmental management and the following:

a)Prepare detail Site Safety and Environmental Management and Monitoring Plan and ensure the works are executed in accordance with the Safety and Environmental Management and Monitoring Plan;

b)Setup and implement Site Safety and Environmental Management and Monitoring System according to ISO14001 and related codes & regulations;

c)Setup Safety and Environmental Monitoring Program;

d)Review construction method statements to ensure appropriate mitigation measures are implemented prior to commencement of work;

e)Monitor and control the construction works compliance with the specified safety and environmental requirements;

f) Ensure appropriate safety and environmental mitigation measures are properly implemented;

g)Ensure that follow-up remedial actions are properly undertaken in the event of a non-compliance record issued by the Safety and Environmental Engineers;

h)Arrange follow-up actions for the recommendations stated in the environmental inspection reports;

i) Ensure the correct procedures are followed on-site;

j) Carry out safety and environmental document audit;

k)Liaise with relevant government authorities, the Employer and the Employer's Representative on all environmental concerns;

l) Arrange necessary training and keep records of all trained personnel in the site offices;

m) Review and update the site Safety and Environmental Management and Monitoring Plan regularly;

n)Manage the original copies of the following documents:

- All correspondences with Central Environmental authority (DEC) and complaints;
- Record of waste material that are reused, recycled and disposed of;

- Site logs including perimeter drainage, silt curtain, maintenance schedule, etc.

The Safety Officer and the Environmental Specialist will be employed to response for managing the safety and environmental related works, as the local staff, he has better understanding and familiar with the law and regulations of safety &environment in Pakistan.

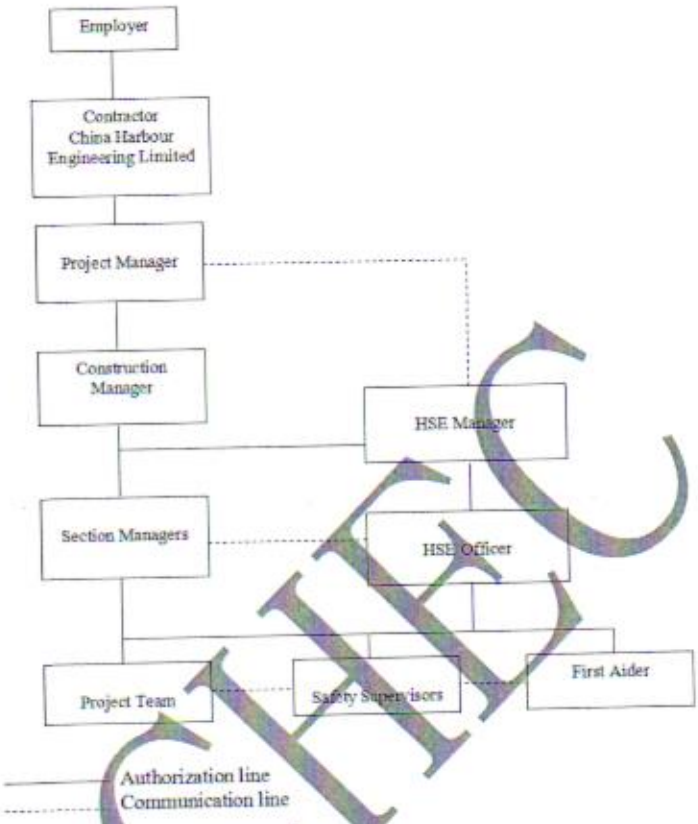


Figure1.1.2-1 HSE management organization

1.2.3 Regulation & Legal Requirement

The health, safety and environmental regulations and laws of the Pakistan for the HSE as well as the specifications & requirements as listed below will be implemented:

1)Safety and Health in Construction Work of the International Labor Organization (Geneva)

2)OHSAS 18001 – Occupational Health and Safety Management Systems

3)OSHA - Occupational Safety and Health Administration

4)ILO - International Labor Organization (ILO code of Practice)

5)NFPA - National Fire Protection Association

6)NBFU - National Board of Fire Underwriters

7)NFC - National Safety Council

1.3 Safety Management

1.3.1 Safety Committee

A Safety Committee shall be organized, with the project manager, construction manager, and security officer being the Committee members.

Monthly safety meeting shall be held. All project management staff, sub-contractors and safety officers must attend the meeting.

Project management staff and supervisors are invited to participate the regular monthly meeting which is held in project management division.

The management assessment is conducted once a year in order to review the management of the overall safety performance.

Internal safety meeting shall minutes with details of organization, time, location, participants, safety issues, solutions and person responsible during the inspection.

1.3.2 Emergency Management Procedure

The emergency management is to establish policies, procedures, and an organizational structure in response to a major emergency. The procedures setup shall include the following:

1)Establish the Incident Command System (ICS) to provide an organizational structure capable of responding to various levels of emergencies ranging in complexity;

2)Provides the flexibility needed to respond to an incident as it escalates in severity;

3)Setup clear and detail emergency reporting procedure to include who to report, how to activate the emergency plan;

4)HSE manager is responsible for accident and incident reporting, the Project Manager and the Employer Representative shall be informed immediately;

5)Comply with the Pakistan laws and regulations;

6)Sub-contractors, site management staff and workers shall be included and participated in the first-aid team;

7)HSE manager is also responsible for accident and incident investigation.

The accident or incident shall be investigated to includes the injury or damage to the health of the individual, any losses of property, justify safety procedure deficiencies or omissions, and till to seek for improvement measures required.

The accident or incident report shall cover the injured information, description of the environment conditions (location, time and the situation) and direct and underlying causes of the accidents or incidents, as well as the conclusion. For the report conclusion, the characters of accidents or incidents, extent of the damage, and suggestions to prevention the accidents or incidents shall be provided.

1.3.3 Safety Inspection and Audit

The safety inspections and audit are the effective measure to prevent accident and to enhance safety management. As a minimum, it shall include the following:

1)The program of the safety inspections shall be setup, and the inspection shall be carry out according to the program to verify site activities compliance with the project specifications and International & local codes requirements;

2)The sub-contractors safety staff and site operation staff should strictly follow the Hazards Checklist to carry out on-site safety and health inspections. Any problems must be promptly corrected. Operations shall be suspended if there is any endangering for the safety and health. Resumption work can be carried out only after corrective action;

3)Random or Ad hoc safety inspection shall be carried out to check construction site activities without advance notice;

4)The safety documentation audit shall be carried out and timing of audit shall be adjusted by the HSE Manager depend on the safety monitoring program.

1.3.4 Pre-Start workforce Meetings

Pre-start (toolbox) meetings shall be held with each work group prior to the commencement of each daily work shift. These meetings shall be convened by the supervisor and shall include all employees. The meeting shall focus on the work that the team intends to carry out that day and shall consider the safety issue relative to the work.

The safety meetings shall also be used as a general two-way communication process, where the supervisor has the opportunity to convey information and the employees are entitled to ask questions and pass comments.

1.3.5 Personal Protective Equipment

Personal protective equipment (PPE) shall be provided to construction work depending on nature of work. As a minimum, the PPE shall include Gloves, helmets, safety shoes, Safety belts, goggles etc. Safety inspection shall check the construction workers compliance with the safety procedures and requirements.

The construction worker shall attend the training section at the beginning of the construction works to learn the knowledge of how to use the protective equipment, and the safety regulations and requirements. The training section shall be given by the HSE manager.

1.3.6 Job Hazard/Risk Assessment

For those works with high risk or dangerous factors, such as confined space, welding, scaffolding erection, Excavation of steep slopes, proper guidance shall be provided for safety operational.

In accordance with related law, requirements and regulations of job hazard and risk assessment in Pakistan, prediction and evaluation of the present or anticipated hazards/ dangers in the operating environment shall be conducted.

To control HSE risks more effectively, all the engineering activities must comply with the plan, and with the other relevant applicable Pakistan HSE directives. In general, the HSE risks identified as having the most serious impact or consequences must be dealt with and controlled. All residual risks defined during HSE reviews shall be managed.

Most of the risks identified have direct repercussions on the construction and operational process; therefore, the continued management of these risks is an important part of Construction Management. Examples of risk that have been identified include:

- Storage of flammable material
- Environmental impact such as noise during machine operation

- Weather considerations
- Workforce issues such as theft
- Power outages
- Lack of skilled workforce leading to productivity issues
- Accidents.

For risks deemed to require action, the Construction Manager shall nominate a senior team member to carry out the mitigation strategy within a determined period.

The Construction Manager shall regularly review the progress of the actions, level of success, and decide what, if any, alternate actions/strategies may be required.

1.3.7 Health and Safety issues which identified during the construction.

- Working in high elevation
- Accidents on construction site.
- Failures of braking system of machinery/ trucks.
- Fire inside Store Building.
- Unauthorized access to the site.
- Contamination of drinking water.
- Epidemic associated with water.
- Mosquito breeding and associated deceases.
- Disposal of Solid & Liquid waste.
- Traffic protection is not in place.

1.3.8 Safety Manager& Safety officer

The safety Manager assigned by locally with has sufficient experience of similar nature of work. He is responsible to HSE manager for all the safety issues on site. His main objective is establish the project safety plans & implement those plans where necessary, Monitoring the project on safety.

The safety officer also assigned by locally with have similar nature of work experience. He is full time observe the site practice whether workers are practice the safety procedures, are they equipped with PPE etc. He further responsible for identification of safety hazards & risk on the construction site then report to the safety manager. He further responsible to monitor the health of the site personals then report to the medical officer.

1.3.9 Traffic Management

Managing traffic is essential to providing a safe construction workplace. Traffic Management Plan (TMP) will play a vital role in providing continuity for efficient traffic flow to the extent interruptions in normal flow necessarily for temporary traffic control operations or other events that will temporarily disrupt normal traffic flow. This TMP describes traffic controls to be used for facilitating all traffic through a temporary traffic control zone.

1.4 Health Assurance

The working environment is importance to the health of the worker working on site. The worker shall avoid or minimize to stay long in the hazardous or high risk working environment, except mitigation measures have been taken, such as carry ear protection in heavy noise environment. Other factors shall be taken into account including:

1)The safety officer is responsible to prepare and implement of the occupation safety health procedure in accordance with the regulation and specification requirements;

2)Safety officers shall be well trained to recognize the harmful/ hazardous work environment and take measures to avoid/ remove in construction activities;

3)Health and safety insurance schemes shall be covered for all the worker and employees working on construction site.

4)The safety engineer shall monitor the working environment to maintain safe and reasonable construction site condition, such as site lighting arrangement, flame-proof lamp in flammable/ explosive area, object likely to slip on slopes etc.

5)Check construction material used whether it contains dangerous chemical, especially paint and epoxy resin

6)Working conditions shall be checked include temporary formwork, ladders, electricity connections, explosive material storage, chemical or flammable storage, high temperature working environment, welding and cutting works, etc.

Site inspection shall be carried out by the safety engineer to monitor and check the working environment, provide safe and good working environment for the workers and compliance with the regulation & specification requirements.

1.4.1 Minimum Requirement

The site shall have an occupational health policy and an occupational health strategy. Both policy and strategy shall:

- Address key occupational health issues relevant to the facility's products and operations
- Be a guide to setting of objectives and targets
- Be endorsed by current management
- Be subject to regular review
- Be readily available to project personnel, including contractors and subcontractors
- Establish the priority of occupational health protection in relation to other business goals
- Define, designate, document, and communicate occupational health/ hygiene responsibilities and accountabilities.
- Set targets for all personnel as to how they are expected to contribute to the occupational health improvement action plan
- Include a system for identifying and correcting inadequate occupational health performance.
- Record and analyze incidents and anomalies.

Other prevention measures shall be planned and given into detail in the Health and Safety Management Plan after Notice to Proceed.

1.4.2 Occupational Health & First Aid

There shall be an occupational health organization structure with the following elements:

- A management coordination role designated for occupational health, with clearly definition
- Accountabilities.
- Operational Health and Safety (OH&S) improvement actions plans.
- A structure of divisional and/ or departmental committee that ensures occupational health
- Coverage of all area of the operation.
- A system to promote OH&S awareness.

The contractor shall provide and maintain throughout the duration of the contract,

A medical examining room and sick bay together with all necessary supplies and equipment at the Contractor's site office.

First aid equipment at all work sites which within 100m distance from each working area& workers are trained on simple treatments to be taken.

An annual summary of occupational hygiene and medical monitoring results for all areas where a risk assessment has indicated the need for those investigations shall be produced. As a minimum, the occupational hygiene summary shall include the appropriate exposure limits against which to judge these results, and a summary of the effectiveness of any work during the year to reduce exposures. The medical monitoring summary shall summarize, without identifying individuals, the monitoring results and draw attention to any new cases of illness of adverse trends.

The HIV prevention program shall be carried out for all the staff including labors to the project manager. The Program shall be discussed the prevention methods, Safe methods & required items shall be distributed among the participants. HIV diagnose program also shall be included to this session.

Occupational health effects and complaints shall be analyzed to identify causes and any necessary corrective actions.

1)The Medical officer

The medical officer is assigned by locally with having experience on emergency handling & treatments. He is responsible to the HSE manager on medical treatment for the project staff & emergency treatment and evacuation. He shall be expected to maintain close relation with the nearest hospital in order to action on major accident.

The deputy medical officer also assigned by locally with having experience of medical treatments. He is responsible mainly for the treatments for the project staff under the supervision of the medical officer.

2)Services provided to the project staff, engineer, Employer by the Medical office.

All personnel shall have access to the services of a medical advisor and/ or occupational hygiene adviser.

Detail of medical services provided by the Medical Examining Room include

(i)Treatment for Minor Injuries, mussel clamps

(ii) First aid for fracture

(iii) Simple Checkup such as Blood pressure & treatment for it.

(iv) Issuing painkillers or antibiotic on identified sickness

(v) Directing for further treatment as necessary

3)Procedures for monitoring the health of personnel on Site and reporting on prevention and treatment activities;

The monitoring of the health of the site personal are especially important .The worker may not be identified by himself the deficiency. The site safety officer is mainly responsible to monitor the behavior of workers, abnormalities of behavior. Once notice such abnormality safety officer shall immediately evacuate such persons to nearby first aid station & notify to the medical officer.

It's considered that the notification responsibility on abnormal behavior is lies on every person of the site. So per education programs shall be conduct prior to the commencement of the work for site persons.

1.4.3 Loss Prevention Control

An effective health and safety program relies on the use of various loss prevention and control techniques to prevent or control hazards that contribute to job related injuries and illnesses.

Hazards in the workplace take many forms, including air contaminants, tasks involving repetitive motions, chemical spills, equipment with moving parts, extreme heat or cold, noise, fire and toxic materials. A procedure to prevent or control the hazards shall be setup which includes;

a)Engineering Control: The method for controlling health and safety hazards is to eliminate or control the source of the hazard by the use of engineering controls. Such as isolation or enclosure of hazardous processes or noisy equipment, fire prevention/suppression systems, etc.

b)Procedure Control: When engineering controls are not feasible or affordable, procedural controls should be used to protect the safety and health of workers. Procedural controls include work rules, general work practices and specific safe operating procedures.

c)Personal Protective Equipment: A further method of controlling exposure to hazards when worker exposure cannot be completely engineered out of normal operations and maintenance work is to provide personal protective equipment (PPE). The term PPE includes safety glasses and goggles, hard hats, hearing protectors, chemical resistant clothing and gloves, steel toed shoes and respirators.

d)Medical Programs and Surveillance: The availability of first aid and emergency medical assistance is essential in order to minimize the harmful consequences of injuries and illnesses.

e)Medical surveillance involves the systematic collection and evaluation of employee health data and medical tests to identify specific instances of illness or health trends that may suggest an adverse effect from workplace exposures.

f) Emergency Planning: Planning and training for emergencies are essential in order to minimize the harmful consequences of an emergency incident.

g)Preventive maintenance: Preventive maintenance is achieved by conducting a comprehensive survey of the maintenance needs at each worksite, and establishes a maintenance schedule as well as assigned responsibility for performing each task identified in the survey.

1.5 Risk Assessment

1.5.1 Risk Assessment Approach

Risk Assessment shall critically review the key steps in each operational process and identify residual risk-taking account of control measures already in place. The Risk Assessment methodology presented in this section is developed to meet the project's HSE requirements.

Where appropriate, practicable improvement or additional control measures for individual operational activities are identified, then the safety & environmental standards of the process is further enhanced.

The risk assessment methodology used for the work activities relating to the replacement of aged circuits process is based on the classical risk assessment methodology, shown in the Figure 1.5.1-1 above.

In addition, the Risk Classification shall be used to determine the priority of management attention and resources that should be devoted to addressing the analysis and management of the risk associated with that particular hazard.

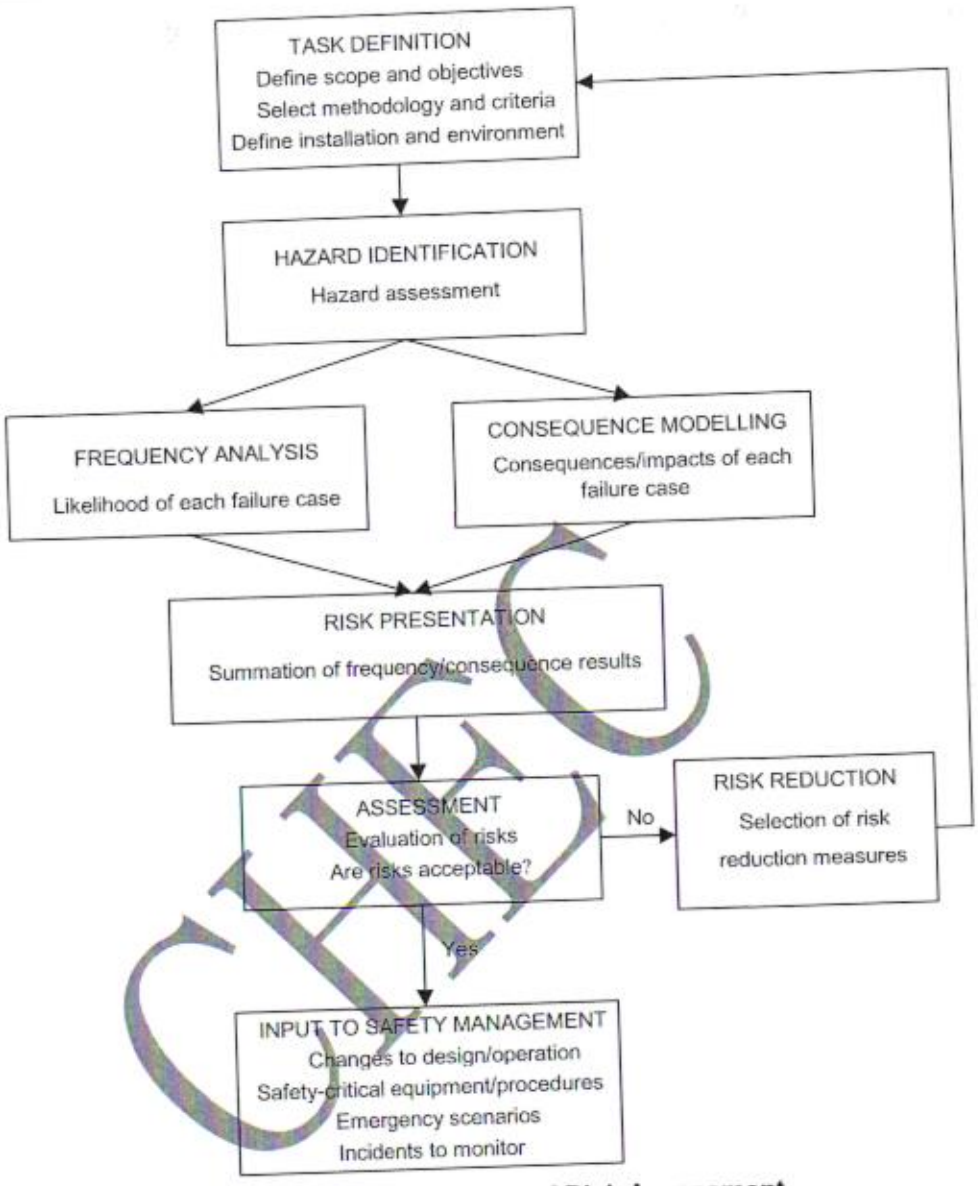


Figure 1.5.1-1 Generic Flow Chart of Risk Assessment

1.5.2 Risk Matrix

In order to quantitatively rank the identified risks, a risk matrix approach shall be utilized. The matrix shall be developed and adopted for the Project based on the range of possible consequences and respective likelihood's.

Risk definition and classification are given in Table 1.5.2-1, Table 1.5.2-2, and Table 1.5.2-3 below. Table 1.5.2-1 and 1.5.2-2 show the quantitative or descriptive scales for likelihood and consequences, whereas Table 1.5.2-3 is a risk assessment matrix in which risks are assigned to priority classes by combining their likelihood and consequence. These tables shall be further tailored at later stage for the risk evaluation process.

Table 1.5.2-1: Quantitative Measures of Consequence or Impact

	Descriptor	Example detail description
	Catastrophic	Death, toxic release off-site with detrimental effect, huge financial loss
	Major	Extensive injuries, loss of production capability, off-site release with no detrimental effects, major financial loss
	Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss
	Minor	First aid treatment, on-site release immediately contained, medium financial loss
	Insi	No injuries, low financial loss

	gnificant	

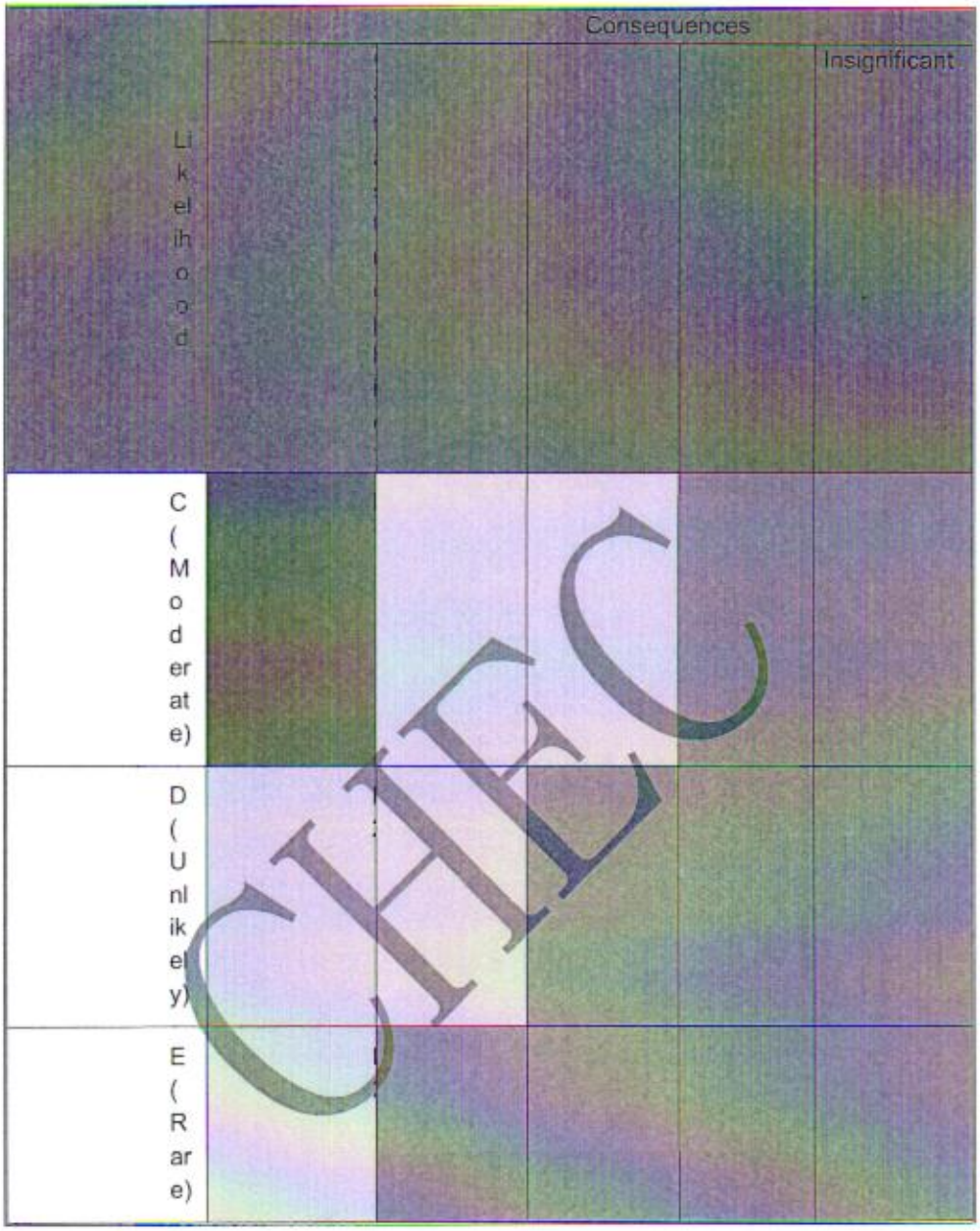
Table 1.5.2-2: Quantitative Measures of Likelihood

	Descriptor	Description
	Almostcertain	Is expected to occur in most circumstances
	Likely	Will probably occur in most circumstances
	Possib	Might occur at some time

		Ie	
		Unlikely	Could occur at some time
		Rare	May occur only in exceptional circumstances

Table 1.5.2-3: Quantitative Risk Assessment Matrix – Level of Risk

		Consequences			
					Insignificant
Likelihood					
	A (Almost certain)				
	B (Likely)				



Risk level definition:

R1: Extreme Risk, immediate action required

R2: High Risk, senior management attention needed

R3: Moderate Risk, management responsibility must be specified

R4: Low Risk, manage by routine procedures

1.5.3 Risk Register

All hazards identified and risk evaluated during the course of the life cycle of the Project shall be maintained in the Project Risk Register.

As discussed, hazards shall be identified via identification activities, such as, HAZOP, SWIFT or identified during the design process, manufacturing, construction or commissioning phase.

In addition, in service hazards experienced in the existing Employer operations related to design and construction projects shall also be used in the review process to ensure all aspects of project risks are being considered.

Since risk management is the complete process involved in identifying risks, assessing them for likelihood and potential impact, developing suitable strategies to eliminate the risks or reduce their impact. As risks will change throughout the life of the project and risk management will therefore be a continuing activity.

The project risk register shall be developed and become a continually evolving 'live' document to be reviewed and updated regularly, where updates shall be treated as part of the risk review and monitoring process. It shall track the identified risks until they are 'closed out' or when any 'residual risk' is transferred to the operator.

The Risk Register during construction for the project is shown in Table 1.5.3-1, it provides an example of how the hazard events is identified and recorded associate with likelihood, consequences, and risk level. In addition, a column of "Proposed mitigation measures" need to be provided by using the method as described below with reduction of likelihood, consequences and risk level. Finally, the responsible monitoring unit from the project is defined.

Table 1.5.3-1: Risk Register during construction

Item	Worst Credible Scenarios	Original Risk Classification			Proposed Mitigation Measures	Residual Risk Classification			Mitigation Control Unit
		Likelihood	Consequences	Risk Level		Likelihood	Consequences	Risk Level	
	Falling from Height	C	3	R2	Proper Fencing or railing, Use PPE	D	3	R3	Safety officer
	Vehicle run across an excavation	B	2	R1	Barricading road excavation, Signage, Illumination at night.	D	2	R2	Safety officer, Site Engineer, foremen

1.5.4 Risk Management System

The Risk Management System (RMS) involves the following activities:

- Hazard identification and risk assessment
- Risk reduction within practical design or procedure
- Performance monitoring to assess residual risk levels

In general, risk management system is iterative, with each risk being assessed, analyzed and appropriate action taken at a number of levels within the organization until the risk is at an acceptable level. The development of a risk register is central to this process. It is the principal means for monitoring progress on the risk management process and contains information on all identified hazards and actions currently in hand to reduce their associated risks to As Low as

Reasonably Practicable (ALARP).

A brief description of the individual steps within the Risk Management System as defined above is given as follows.

1.5.5 Hazards Identification and Risk Assessment

Primarily, the objectives of risk analysis are to separate the minor acceptable risks from major risks, and to provide data to assist in the evaluation and subsequently risk reduction. Risk analysis involves consideration of the sources of risk, their consequences and the likelihood that those consequences may occur. Factors which affect consequences and likelihood may be identified. Risk is analyzed by combining estimates of consequences and likelihood in the context of existing control measures.

The output of a risk assessment is a prioritized list of risks for further action. The objectives of the organization and the extent of opportunity which could result from taking the risk should be considered. Decisions shall take account of the wider context of the risk and include consideration of the tolerability of the risks borne by parties other than the organization which benefits from it. If the resulting risks fall into the low or acceptable risk categories they may be accepted with minimal further reduction. Low and accepted risks should be monitored and periodically reviewed to ensure they remain acceptable.

1.5.6 Risk Reduction with Practical Design or Procedure

Risk reduction involves identifying the range of options assessing those options, preparing the Risk Reduction Plan and eventually implementing them. Risk reduction options which are not necessarily mutually exclusive or appropriate in all circumstances include the following:

- Avoid the risk by deciding not to proceed with the activity likely to generate risk;
- Reduce the likelihood of the occurrence;
- Reduce the consequences;
- Transfer the risk;
- Retain the risk.

Reduction of consequence and likelihood may be referred to as risk control. Risk control involves determining the relative benefit of new controls in the light of the effectiveness of existing controls. Controls may involve effective policies, procedures or physical changes.

Selection of the most appropriate reduction option involves balancing the cost of implementing each option against the benefits derived from it. In general, the cost of managing risks needs to be commensurate with the benefits obtained.

1.5.7 Performance Monitoring to Assess Residual Risk Level

Plans should document how the chosen options will be implemented during the project cycle. A Risk Reduction Plan shall identify all key elements (see below) and set the review process in place. Responsibility for risk reduction shall assign by the Project Manager.

The successful implementation of the risk reduction plan requires an effective management system which specifies the methods chosen, assigns responsibilities and individual accountabilities for actions, and monitors them against specified criteria.

If a residual risk resulted from the risk reduction process, a decision shall be assessed as to whether to retain this risk or repeat the risk reduction process.

In summary, each stage of the risk management process shall be documented to demonstrate the process is conducted properly and to facilitate continuing monitoring and review. For instance, for each hazard identified, the risk register shall record:

- The nature of the hazard,
- Existing controls,
- Consequence and likelihood, and
- Initial risk ranking, etc.

Furthermore, a Risk Reduction Plan shall document the management controls adopted for risk reduction and list out information such as:

- Person(s) responsible,
- Expected outcome of the reduction,
- Budget allocation,
- Resources utilized, etc.

The contractor shall implement and manage a risk register until the project handover. The preliminary HSE risk register for the Project shall be established. It needs to develop further after Notice to Proceed of the project.

1.5.8 Risk owner

The Risk Owner shall be responsible for:

- Identification of suitable actions to reduce identified risks to a level which is ALARP.
- Performance of Qualitative Risk Assessment to demonstrate that the risk has been reduced to a level which is ALARP.
- Performance of additional actions to address risks following the Project Manager of the Risk Management Leader rejection or partial acceptance of a risk reduction options.

1.5.9 Design Safety Review

Design Safety Reviews shall be undertaken for the system design of the Project to verify that the work does not reveal any unacceptable risks and all design recommendations are sound.

1.6 Environmental Management and Monitoring

The occupational health, safety & environmental (HSE) Manager is arranged to be responsible for the management of occupational health, safety & environmental in our organization. To suit the tender requirements, the HSE proposal is then divided into Occupational Health & Safety Management Plan and the Environmental Management Plan. In this section environmental management is addressed hereafter.

The Outline of Environmental Management Plan will define the project environmental requirements for the construction of the project which include the environmental requirements before construction, during construction until completion of construction. The management

systems, procedures, and supporting documents will be setup to integrate necessary required environmental measures & required actions to be taken with respect to the environmental requirements in each project phase until hand-over of responsibility to the Employer.

This plan applies to all project sites and implementing engineering projects with internal and/or external resources. In addition, the Environmental Management Plan will be prepared and submit for Employer review and approval then after Notice to Proceed.

1.6.1 Objective

The Environmental Management Plan (EMP) sets out in detail the approach that the contractor will adopt to deal with the potential environmental impacts from various construction activities throughout the construction period of the Project. It includes systematic procedures and continuous monitoring to minimize adverse environmental impacts that may arise from the construction work.

- The main objectives of the EMP include:
- Making reference to statutory and contractual environmental requirements and obligations;
- Proposing an organization structure and clarifying responsibilities of the various parties involved;
- Addressing all potential impacts outlined in the Environmental Impact Statement Report, and other environmental related;
- Setting out environmental management approaches;
- Initiating and implementing mitigation measures;
- Setting out housekeeping practices.

1.6.2 Environmental Management System

The environmental management and monitoring system is designed to reduce, mitigate environmental risk and waste. It will be prepared and submitted to the Employer/ Engineer for review and approval after the commencement date.

The Environmental Management Plan (EMP) will include;

- All the necessary mechanism to evaluate and integrate all possible environmental risks into the management plan,
- Provide effective mitigation and reduction measures to overcome the risks,
- Organize experience team to manage and monitor the risks in order to meet the codes, regulations and specifications requirements for the construction of the project.

1.6.3 A list of all the Environmental Protection issues which are to be covered under the contract

- Prevention of contamination of natural water courses and groundwater
- Control of hazardous substances, fuel etc. and spillage prevention
- Establishment, operation and reinstatement of spoil areas
- Reinstatement of Site areas used for facilities, access etc.

- Reinstatement of temporary construction roads
- Protection and replanting of flora
- Atmospheric pollution and dust control
- Erosion control and storm water management
- Water extraction, treatment and supply
- Wastewater collection, treatment and disposal
- Collection, handling and disposal of solid waste and hazardous waste spillage
- Pollution control due to Braking and crushing
- Control of noise

The Environmental specialist shall be assigned locally who is more familiar with local rules. The nominated person shall have professional qualifications on environmental management & experience.

The Environmental specialist is responsible to project manager on establishing & implementing the project environmental plan.

1.6.4 Management Review

Top management of CHEC will review the Environmental Management System, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. Reviews will include assessing opportunities for improvement and the need for changes to the Environmental Management System, including the environmental objectives and targets.

We will follow the management structure of the ISO14001 Environmental Management System to develop our Environmental Management Plan to implement our environmental control/ measures effectively and efficiently.

1.7 Establish Environmental Protection Procedure

The environmental protection procedure will be established compliance to the ISO 14001 Environmental Management System and the needs for the project (i.e. to comply with local standard). The procedures will include environmental site inspection, audit, emergency preparedness and response, etc.

Work instruction related to the environmental issues such as solid waste management, chemical waste management, chemical spillage control, waste control, etc. will be prepared.

1.7.1 Formulation of Possible Environmental Risk and Hazard Event Procedure

The environmental risks and hazards events formulation procedure will be setup to summarize the possible hazard events identified and recommendation made from the Environmental Impact Statement, evaluate and identify the possible environmental hazard events during construction, provide environmental risk mitigation reduction measure, list down the possible environmental risks and hazard events need to be implemented and monitored.

1.7.2 Monitoring Plan

The environmental implementation monitoring plan will be prepared. The monitoring program will

be setup associate with the possible environmental risks and hazard events as well as the mitigation measures with respect to construction works.

The site visit, site inspection, and environmental audit will be carried out regularly to monitor the construction works compliance with specification requirements.

Environmental Specialist is responsible for reporting and liaising with the Employer and the Engineer (Employer Representative) on any environmental non-conformance.

1.7.3Environmental protection Training

The environmental protection training will be carried out for the project team members.

1.7.4 Reporting

Related environmental issues will be included in the monthly report including records from site inspection, environmental accidents, etc.

In addition, the Employer (DOW) / Employer Representative will be informed immediately if any major environmental accident happened.

The evaluation and identification of all possible hazard events will follow the procedure as described below.

1.8 Environmental Impact

CHEC realize that the project is to be manage with minimal environmental effect.

So Hazard events identified and recommendation are made here with. Other possible hazard events will also be evaluated and identified for the project related to the design and construction works. The methodology and procedures to identify the potential environmental impact are described in next section.

1.8.1 Proposed Mitigation Measures

Summary of the identified potential hazard events are listed below according to the tender specification. Moreover, the initial mitigation measures are proposed hereafter, but further investigation and evaluation will carry out after commencement of works, and the mitigation reduction measures will be included in the Environmental Management Plan submit to the Employer for review and approval.

- Water Quality

Surface Runoff and Construction Waste Water

The surface runoff from construction site may create potential pollution, siltation to the stream/river water during construction period.

The potential water quality impacts can be effectively mitigated through the implementation of standard measure, such as sediment traps, on-site waste water collection and treatment systems and chemical toilet etc.

Waste water discharges from general site activities will be controlled by properly diverted to waste water treatment units, oil traps, silt traps and settlement tanks before disposal to natural water source. The required water quality such as BOD5, COD & Turbidity shall be controlled according to the specifications of DEC.

Routine weekly site inspection/audit conducted by Environmental Officer is also a mean to continuously monitor the effectiveness and efficiency of water pollution abatement measures.

- Air Quality

Air Pollution Aspect and mitigation Measure

The potential of air quality impact during construction is limited. Breaking, Blasting, excavation, crushing, loading/unloading materials are the main potential dust emission sources.

Resultant Air Pollution Impact

According to conclusions of the Summary Environmental management out line plan, with the proper implementation of all air mitigation measures during the construction period, the air quality impacts can be mitigated and minimized to an acceptable level. In addition, throughout the construction period the Contractor will implement dust suppression measures such as use of water browsers on haul route, manual and/or automated sprinklers system to dampen the exposed excavated surface, during mechanical breaking. One potential major cause of air pollution is the land transportation of quarried materials for construction. This can be avoided by frequently wetting the materials & covered the material while transporting.

- Noise and Vibration

Noise Pollution Aspect and Mitigation Measures

The potential emission sources of noise pollution will be the construction works above ground and the construction traffic associated with activities on site. The construction activities for breaking, Vibrating, excavation, loading/unloading materials, and site formation work are the main potential noise emission sources.

Another major cause of noise pollution is generated from the land transportation of quarried materials for construction. This can't be avoided but can be limited to the day time so that disturbance to the public is minimized. With the proper implementation of all noise mitigation measure during the construction period, the resultant noise pollution impacts can be mitigated and minimized to an acceptable level.

The effectiveness and efficiency of these noise pollution abatement measures will be checked by Environmental Officer on a regular basis. Any deviation from the plan will be reported to the senior management immediately for quick rectification.

- Solid Waste

During the construction stage, there will be different types of waste generated from the sites including the construction and dredged materials, chemical waste and the general refuse. Unsuitable dredged materials, used materials for temporary works such as concrete, timber, paving materials, metal and glass etc. are unavoidable although the amount can be controlled and minimized. It is estimated that there will be a large volume of waste produced every month. CHEC management realizes the importance of proper management of waste arising from the construction works and has developed procedures for waste management to be strictly adhered to by all staff.

A Waste Management with appropriate mitigation measures, including practices like on site waste segregation, construction and excavated materials, Slurry disposal procedure, chemical

waste storage and collection guideline will be prepared. Day-to-day operations on site will comply with the approved waste management plan.

Generally slurry material & unsuitable excavated material shall be disposed to an identified safe location. Permission from the Relevant Government Authority shall be granted for those waste disposal yards. Required measures shall be taken to avoid wash off the heaped material to the surround such as trench excavation.

The Solid waste management flow chart is shown on the figure 1.8.1-1

- Liquid Waste

1)Sanitary Installation

Sanitary facility shall be installed at all site offices, Sub offices & main project office.

Toilet waste treatment shall be separated as solid waste & liquid waste then the solid waste shall be diverted to a soakage pit & urinals & liquid waste shall be treated by anaerobic filter.

2)Handling and disposal of used oils, hydraulic fluid etc.

Hydrocarbon shall not be disposed to the environment in any case. But there is no treatment for hydrocarbons except combust. So those hydrocarbon shall be reused as much as possible for different purposes & finally remaining shall be combust. Prior to the combustion permission from the Safety Officer is granted for the time Combust have no harm to the environment as they break into CO2& H2O.

- Other Environmental Impact

The Summary Environmental Impact Assessment also mentions other environmental impacts such as the potential light pollution, oil/ chemical spills, cultural heritage, hazard to Wild Life. The damaged to the wild life & site protection from the wild animals are dealt with the Environmental Management Plan.

Flow Chart for Solid Waste Disposal

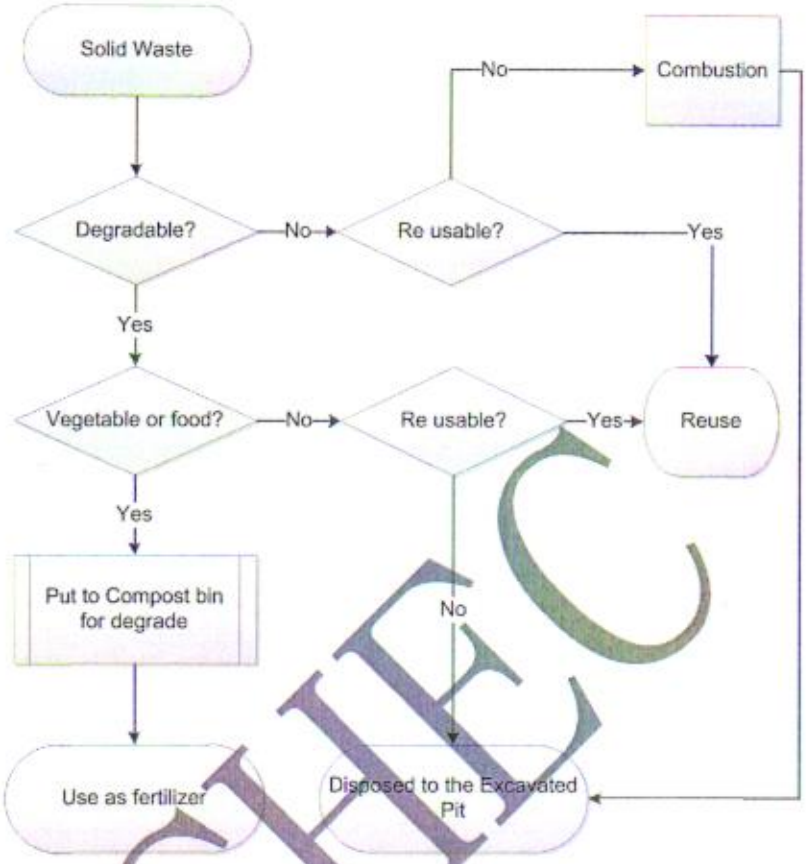


Figure 1.8-1 Flow Chart for Solid Waste Management

1.8.2 Potential Construction Environmental Impact

In addition to the environmental impact identified form tender document, the potential construction environmental impact will be evaluated after commencement of works follow the procedures setup in this document. Potential hazard events will be identified according to the construction methodology and techniques used for the project.

1.9 Site Restoration

Upon the completion of the project site shall be restored to similar environmental appearance to its original. All the temporary construction shall be demolished & disposed in secure manner. During the restoration process followings are considered but not limited to

- Surfaces to be treated to avoid further erosion
- If any pits used for waste disposal shall be filled with soil to a satisfactory level
- Site shall be cleaned from spoil of soil, concrete.
- Any remaining combustible waste material shall be burned with taking preventive measure on toxic release.
- Site shall free from un-degradable or flying material

Procedure of Site Restoration shall be prepared after commencement of works.

In addition, all site works should be carried out according to the contract requirements and agreed by the Engineer or Employer Representative. Otherwise, further works shall be carried out until the contract requirements is fulfilled and accepted by the Engineer.

1.10 Maintain Community Relation

It's realized that maintaining friendly relation with the community is essential factor for the success of the project. In general no construction activity shall be undertaken without the zero effect to the environment & to the public. So objections, complains from the public is common with construction activities. So following activities are taken to keep good relation with the community.

1.10.1 Awareness program

Most of the time public is misunderstanding on the construction activities. They believe that the construction activities are put them into more trouble in future. So awareness program is necessary prior to the commencement of the construction activities. During this process public are award on the benefit of the project to their community such as employment opportunity, business opportunity, educational opportunity, infrastructure development etc.

The nominated person shall be introduced to the public with the contact numbers for receiving of complains. Generally complains can made to their local representative such as "chief of the village, Government representative, or Political representative.

1.10.2 Compensation Program for Victims

The possibility of property damage should not be underestimated during the construction activities. It can be in several modes such as; crop damaged due to siltation, damaged to their housed due to movement of heavy equipment, damage of the public roads due to transportation of quarry materials etc.

So those cases shall be treated immediately before it grows to a level of a conflict. So those victims are regularly identified and compensations shall be awarded. The way of communicate with project public representative is notified in the awareness program.

The way of compensation may be in the form of money, repairing the damage or if it's road regular maintenance.

1.11 Environmental Risks, Hazards Events Formulation Procedure

The environmental risks and the hazard events formulation procedure include the following:

- Setup risk assessment procedure: Develop Risk Matrix, create Risk Register;
- Review, summarize, and list down the possible hazard events identified and recommendation made from the Environmental Impact Statement and other related environmental reports into the Risk Register;
- Evaluate, identify, and list down other possible environmental hazard events during construction;
- Assign level of Risk for the possible hazard events as listed on the Risk Register by judging different likelihood and possible consequences;

- Provide risk mitigation reduction measure for the possible hazard events;
- Similar process of assigning level of Risk is used, but taking into consideration of the consequences after reduction measures are applied;
- The mitigation reduction measures will be monitored until the hazard event is 'close out' or through continuous improvement to bring the residual risk to an As Low As Reasonably Practicable (ALARP) level;
- Handover the residual risk to the operator for continuous improvement, if any.

1.11.1 Risk Matrix and Risk Register

For Risk Matrix formulation, the elements of the "Quantitative measures of consequence or impact" and "Quantitative measures of likelihood" will be evaluated, and definition of Risk levels will be assigned.

The Risk Register includes Worst Credible Scenarios, Original Risk Classification, Proposed Mitigation Measure, Residual Risk Classification, and Mitigation Control Unit.

1.11.2 Anticipated Environmental Impact or Hazards Events

These requirements involve with the elements as addressed in the Contract Documents including Air quality, Noise & vibration, Waste Management, Hazardous material, social impact, etc.

In these environmental impact studies, the overview of key area of risks and list of mitigation measures are provided in the Contract documents, and follows with the performance criteria, management action, recommendations for further works in the contract documents.

The anticipated environmental impact and/ or hazard events to be integrated into EMP for the Project include:

a) The environmental risks and/ or hazard events, as described in contract documents;

b) The environmental impact, mitigation measures, monitoring programme, recommendations for further works from all the elements addressed in the contract documents;

c) Additional environmental impact and/ or hazard events based on the construction methodology and equipment adopted for the project.

d) Ecological impact as identified during the construction & post construction.

The aforementioned environmental impact and/ or hazard events related to the project construction in items a) to b) will be evaluated and summarized. Furthermore, the environmental impact and/ or hazard events as mentioned item c) will be evaluated and identified by risk assessment. Finally, all possible environmental impact and/ or hazard events will be listed and grouped in the "Risk Register" table, and likelihood/ consequences/ risk level will be assigned.

1.11.3 Risk Mitigation and Reduction Measures

The related Mitigation Measures and Controls as recommended in tender Document & the Environmental Impact Assessment Report will be reviewed and summarized, and it will be added into the column of "Proposed Mitigation Measures" on Risk Register table. Similarly, the likelihood, Consequences, and Risk Level will be assigned for the Residual Risk Classification after mitigation. Finally, the Mitigation Control Unit in our organization will be assigned. However,

related Mitigation Measures and Controls should also be provided for other hazard event identified.

At the end, all the environmental risks and hazard events and the relevant risk mitigation reduction measures as listed on the Risk Register will be brought into next implementation stage: "Implementation & Monitoring". The hazard event will be monitored to provide continuous improvement in accordance to the mitigation measures to even lower ALARP level.

1.12 Implementation and Monitoring

The Environmental Monitoring Plan is a process of observing the tasks to be carried out on site after environmental risks and hazard events identified and environmental mitigation reduction measures allocated in order to control and monitor the construction works executed according to the codes, regulations, and specification requirements. The construction works executed will be observed and checked from time to time through site inspection or Ad-hoc inspection, any non-conformance found will be recorded and collective action will be taken. Thus, work procedures will be setup for controlling and monitoring the construction works to be implemented within the codes and specifications requirements.

The Environmental Monitoring Plan includes the following:

- Setup EMP Monitoring Program
- Carry out preliminary survey and take necessary records for all elements involved before construction;
- Setup EMP site inspection, audit, and reporting procedures;
- Carry out daily site visit to monitor project construction compliance with codes and regulation requirements;
- Carry out EMP site inspection and audit, issue Non-Conformance Record (NCR), request Corrective Action Report, etc.;
- Regular communication with local community, and record any complain regarding to environmental issues;
- Report to the HSE Manager, Project Manager, Employer and Employer Representative on any non-conformance;
- Documentation of records

The Environmental Specialist will be responsible for the monitoring of the risk mitigation and control.

1.12.1 Monitoring Program

The Environmental Monitoring Plan started from setting up the monitoring program based on the results as listed on Risk Register which are the environmental risks/ hazard events identified and environmental mitigation reduction measures allocated, each and individual task (mitigation reduction measures) will be taken into account and assign a time frame on the detail monitoring program.

The monitoring program is a detail environmental monitoring work program, it defines each and individual mitigation action needs to be taken during construction period.

Within the monitoring period, site inspection, environmental audit frequency will be planned according to the construction works program. Furthermore, environmental monthly meeting will be assigned on the monitoring program. The environmental monthly meeting will include Employer, Employer Representative, contractor and sub-contractors (if any).

1.12.2 Environmental Permit Application

The conditions and requirements as setup in the EPA will be taken into account both in design and construction of the Project. Other environmental permission will be granted from relevant Environmental Authority such as DEC or any other, for construction activity such as rock quarry & sand mining.

1.12.3 Preliminary Survey and Records

Before commencement of construction, each and individual item listed in the DEC report will be reviewed. Action plan will be prepared for the necessary testing items to be carried out on site. Finally, the necessary investigation will be carried out to verify of any changes on the existing environmental conditions. Detail records and testing report will be kept and documented, and it will submit for review and approval.

1.12.4 Environmental Inspection and Audit

In the EMP, the site inspection and audit procedures will be setup.

To enhance the environmental management and control, environmental inspections and audit are the effective mitigation measure to reduce the environmental impact. As a minimum, it will include the following:

1)The environmental site inspection will be carry out according to the program to verify site activities compliance with the project specifications and local codes requirements;

2)The environmental non-conformance records will be listed in the monthly construction progress report to bring the attention to the project team;

3)Non-Conformance Record (NCR) will be issued after inspection, and Collective Action Report (CAR) will be verify before closing;

4)Random or Ad hoc environmental inspection will be carried out to check the site activities without advance notice;

5)The Environmental documentation audit will be carried out periodically and adjust to suit the needs;

6)The anticipated environmental impact will be monitored to provide continuous improvement and maintain at the As Low as Reasonably Practicable level;

7)All NCR, CAR will be reported to Project Manager, Engineer & Employer, and in the monthly meeting.

8)Monitoring report will be prepared and included in the monthly report.

The Environmental Specialist will be response to carry out the environmental site inspection and audit.

1.12.5 Monitoring and Report

The Environmental Specialist will be response for the preparation of monitoring report, and the coordination and communication among Engineer, Employer, and CHEC project team. He is also response for reporting to the Engineer, Employer, HSE Manager, and Project Manager on major environmental issues or non-conformance found.

1.13 Emergency Preparedness and Response

CHEC will establish, implement and maintain a procedure(s) to identify potential emergency situations and potential accidents that can have an impact(s) on the environment and how it will respond to them.

Examples: Chemical spillage or Infiltration to Ground Water, spills of any hazardous materials, etc.

The emergency response approach will be as below.

Table 1.13-1 Pre-Preparedness

Item	Worst Credible Scenarios	Original Risk Classification			Proposed Mitigation Measures	Residual Risk Classification			Mitigation Control Unit
		Likelihood	Consequences	Risk Level		Likelihood	Consequences	Risk Level	
	Chemical Spillage	B	1	R1	Limit the handling to the authorized persons, Floor shall be cemented & spread the saw dust or sand on to the floor,	c	4	R3	Safety officer

By using risk management original risk level shall be reduced in grate amount.

As a mitigation measure to avoid further spreading the chemical into the soil,

Trench shall be formed around the spoil area. Then surface runoff will not wash the chemical.

- Covered the spillage area by a membrane. So that chemical penetrate into the soil by rain is controlled.
- Carried out sample analysis in suspected location & verified the magnitude of damaged.

1.14 Prevention of Pollution

Pollution prevention can only be controlled by educating the people & control by procedures. So all possible pollution risk shall be managed by risk register & residual shall be controlled by procedure & education.

Possible Pollution means,

- Spillage of fuel and hazardous substances

- Spillage of non-degradable materials
- Siltation of stream, river channels

E.g.; pollution prevention of spreading polythene to the environment.

Table 1.14-1Risk management then reduce the risk

Item	Worst Credible Scenarios	Original Risk Classification			Proposed Mitigation Measures	Residual Risk Classification			Mitigation Control Unit
		Likelihood	Consequences	Risk Level		Likelihood	Consequences	Risk Level	
	Spreading polythene	A	1	R1	Educate the people, Introduced the disposal bins at construction sites which is easy accessible	E	1	R3	Safety officer/Environmental officer

So proper managing of activity can reduce the hazards significantly.

1.15 Performance Monitoring

The HSE Manager will responsible for the monitoring on the environmental and waste management carried out on site. He will check regularly either on site activities or the records documented.

The performance of the environmental and waste management will be properly monitored through the site activities, inspection records, audit records, and other reports. Any abnormal situation appeared or happened, action will be taken either inform site staff to take immediate action or report to the Project Manager/ Employer regarding to the issue.

1.16 Training

The objective shall be to convey information, upgrade skills and build teamwork and leadership and to provide employees at all levels with the opportunity to work safely as a team and develop their skills.

The project management team members shall receive a training that shall equip with the skills and knowledge they need in relation to statutory requirements, and enable them to develop the abilities required to implement engineering project HSE requirements. The training shall include the following:

1)Understand the laws and regulations of health, safety and environmental protection;

2)participate the fire drill to familiar the usage of the fire equipment;

3)Avoid stay in hazardous or high risk environment or location;

4)Realize health and safety conditions on site.

1.16.1 Safety Training

Health, safety awareness training shall be aimed at supporting the project's zero incident objectives.

The Project HSE group shall identify training aimed at maximizing safe working practices. The actual training sessions may be carried out by members of the HSE group, members of the management team with knowledge and the capacity to provide training or by contract training specialists.

The Employee Relations Training Supervisor shall provide organization, training facilities and a trainer if required.

1.16.2 Environmental Protection Training

CHEC will provide environmental training in the site-specific environmental aspects and its refresher training courses for all the project staff and the sub-contractors. The training will cover the environmental policy, waste management, targets, mitigation measures, legislations and contract requirements on the Site.

CHEC will ensure that site management staff in his employment of Works will have attended and completed the Environmental Management training courses. If any of site management staff has not attended the course, he will be arranged to attend the required environmental course setup in the site office.

Training on waste management will be given to the site managers and by the Environmental Specialist, who has experienced and qualifications on environmental and waste management.

An extension of minimum 15 minutes to site specific induction training for all staff and workers employed for the Works to cover environmental management delivered by Environmental Specialist.

All the workers employed on the Project directly or in connection with the Project indirectly will attend the Environmental Toolbox Talk regarding the environmental nuisance abatement and waste management. The topics of toolbox training will include:

- Air pollution & Dust control,
- Wastewater treatment,
- Strom water discharge,
- Discharge of dewatering,
- Noise control, etc.

1.16.3 Pre-Employment Training

The contractor site management shall organize pre-employment training in skills where local people can gain a foothold to skills in the construction industry.

Training subject shall focus on non-trade skills such as finishing work, M&E works, Air Conditioning scaffolding, operating equipment etc.

1.16.4 Project Orientation Induction

Orientation shall be provided for all new employees on their first day of work on the site. As

orientation will be the employee's introduction to the project, it shall focus on safety work practices, site rules, and sharing the Project's goals and values with employees.

1.17 Access Control

A program of securing the project camp site and store yards environment is required for protection of property and public duty of care obligations.

Site access control systems shall be developed to integrate Project employment, safety, and procurement systems to ensure access to/egress from the site is monitored and limited to authorized personnel, visitors, material and plant. Site access control personnel also undertake random bag and vehicle searches.

Site access control personnel shall staff their posts 24 hours a day in a combination of static and random patrols of site and facilities.

1.18 Report and Documentation

The HSE quality records shall be archived in accordance with engineering documentation procedures. Non Conformance Records (NCR) shall be monitored to close out with the Corrective Action Records (CAR).

The monthly environment report shall be prepared and included in the monthly project progress report. All the HSE issues shall be summarized and shown in the report.

Appendix-1: CHEC Health and Safety Policy Statement

中国港湾工程有限责任公司
CHINA HARBOUR ENGINEERING COMPANY LTD.
东直门外春秀路 9 号 中国 北京 100027
No. 9 CHUNXIUROAD, BEIJING-100027, CHINA
电话(TEL):64154455 传真(FAX):64168276 电子邮件(E-mail): cheebj@eastnet.com.cn

Health and Safety Policy Statement

This statement is a declaration that China Harbour Engineering Company Ltd (CHEC) is committed to ensuring that all its activities and operations are undertaken safely and with minimum harm to its employees, the environment and the general public. To achieve this goal the company has established detailed procedures, documented in the Quality, Environmental and Health & Safety Manual, to give guidance to its employees. The objectives of these procedures are:

- To prevent accidents
- To observe local legislation and other relevant requirements
- To maintain a high stand of safety on the company's work sites
- To provide training to employees to enable them to realise the company's health and safety goals
- To set targets for achievement and improvement
- To monitor the effectiveness of the Healthy and Safety Management System
- To provide adequate resources and priority for the implementation of the policy

Mr Yun Liang is hereby appointed responsible for the overall co-ordination and implementation of this policy. Occupational health and safety, however, remains a prime responsibility of every employee. All staff shall ensure this policy is understood, implemented and maintained. As an integral part of the company's aim to continually improve, this policy will be reviewed and updated annually.

健康安全政策声明

此声明表明中国港湾工程有限责任公司的一切活动及操作都保证员工、环境、公众的安全，把危害降到最低限度。为达成此目的，公司确立了详细的规程，并体现在质量、环境、职业健康安全手册中，供员工参照。该程序的目标为：

- 预防事故
- 遵守地方法规及相关要求
- 保持公司施工现场的高度安全
- 提供员工培训，以确保其实现公司健康安全目标
- 监控健康安全管理系统的有效性
- 提供适当的资源，优先实施该政策

任命贠亮副总经理为此政策协调及实施的全权负责人。当然，职业健康安全是每位员工的第一要务。所有人员应保证理解、贯彻、保持此政策。作为公司目标不可分割的一部分，应不断改进，重审更新。

唐桥梁

Mr.Tang Qiaoliang
President
30th March 2016

Appendix-2: CHEC Environmental Policy Statement

中国港湾工程有限责任公司
CHINA HARBOUR ENGINEERING COMPANY LTD.
东直门外春秀路 9 号 中国 北京 100027
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Environmental Policy Statement

China Harbour Engineering Company Ltd (CHEC) recognises that it business activities may have a direct or indirect impact on the environment and as such we are committed ensuring such activities are undertaken in a manner sensitive to the environment by conserving natural resources, reducing waste and minimising pollution to land, water and air. To achieve this goal the company has established detailed procedures, documented in the Quality, Environmental and Health & Safety Manual, to give guidance to its employees. The objectives of these procedures are:

- To minimise negative effects of the company's activities on the environment
- To observe local legislation and other relevant requirements
- To maintain a high standard of environmental protection on the company's work sites
- To provide training to employees to enable them to realise the company's environmental goals
- To set targets for achievement and improvement
- To monitor the effectiveness of the Environmental Management System
- To provide adequate resources and priority for the implementation of the policy

Mr Yun Liang is hereby appointed responsible for the overall co-ordination and implementation of this policy. Environmental consideration, however, remains a prime responsibility of every employee. All staff shall ensure this policy is understood, implemented and maintained. As an integral part of the company's aim to continually improve, this policy will be reviewed and updated annually.

环境政策声明

中国港湾工程有限责任公司（CHEC）认识到在作业过程中可能直接或间接的对环境造成影响，因此我们承诺：保证在进行此类操作时时刻注意保护环境及自然资源，减少废物，并把对土地、水、空气的污染减到最低限度。为了实现这一目标，公司建立了详细的操作规程，并体现在质量、环境、职业健康安全手册中，供员工参照。该规程的目标为：

- 把对环境的负面影响控制在最低限度
- 遵守地方法规及相关要求
- 在施工现场高标准的对环境进行保护
- 提供员工培训，以确保其实现公司的环保目标
- 设定改进及成果目标
- 监控环境管理体系的有效性
- 提供适当的资源，优先实施该政策

任命负亮副总经理为此政策协调及实施的全权负责人。环境保护是每位员工的首要责任。所有人员应确保理解、贯彻、保持此政策。作为公司目标不可分割的一部分，应不断改进，重审更新。

唐桥梁

Mr.Tang Qiaoliang
President
30th March 2016

Appendix-3: Occupational Health and Safety Management System Certificate

格式：MI1102R03

中国船级社质量认证公司
CHINA CLASSIFICATION SOCIETY CERTIFICATION COMPANY

职业健康安全管理体系认证证书
OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM CERTIFICATE

编号：No.**00516S22188R4M**

兹证明

中国港湾工程有限责任公司
（注册/生产地址：北京市东城区春秀路9号 邮编：100027）

This is to certify that the Occupational Health and Safety Management System (OHSMS) of

CHINA HARBOUR ENGINEERING COMPANY LIMITED
(Registered/Production Add: No.9, CHUNXIU ROAD, DONGCHENG DISTRICT, BEIJING, 100027, P.R.CHINA)

建立的职业健康安全管理体系符合标准：**GB/T 28001-2011/OHSAS18001: 2007**。
has been found to conform to standard: **GB/T 28001-2011/OHSAS18001: 2007**.

本证书对下述范围的职业健康安全管理体系有效：*港口及航道工程（含疏浚、水工）、公路工程、桥梁工程、隧道工程、铁路工程、房屋建筑工程、市政公用工程、环保工程、机场工程、水利水电工程的工程总承包；港口及航道工程、公路工程、桥梁工程、隧道工程、铁路工程、房屋建筑工程、市政公用工程、环保工程、机场工程、水利水电工程的工程施工总承包；港口成套设备、自动化控制系统、供电系统、专用船舶等设计与制造的总承包；投资决策*。

This certificate is valid to the following scope for OHSMS: *GENERAL CONTRACTOR OF PORT AND WATERWAY PROJECT (INCLUDING DREDGING & MARINE WORKS), HIGHWAY & EXPRESSWAY PROJECT,BRIDGE PROJECT, TUNNEL PROJECT, RAILWAY PROJECT, BULIDING WORKS, MUNICIPAL PUBLIC WORKS,ENVIRONMENTAL PROTECTION PROJECT, AIRPORT PROJECT, WATER RESOURCES & HYDRO-POWER PROJECT; GENERAL CONTRACTOR FOR CONSTRUCTION OF PORT AND WATERWAY PROJECT, HIGHWAY & EXPRESSWAY PROJECT, BRIDGE PROJECT, TUNNEL PROJECT, RAILWAY PROJECT, BULIDING WORKS, MUNICIPAL PUBLIC WORKS, ENVIRONMENTAL PROTECTION PROJECT, AIRPORT PROJECT, WATER RESOURCES & HYDRO-POWER PROJECT;GENERAL CONTRACTOR FOR DESIGN, MANUFACTURE, SUPPLY AND COMMISSIONING OF COMPLETE SET OF PORT EQUIPMENT & MACHINERY, AUTOMATIC CONTROL SYSTEMS, POWER SUPPLY & LIGHTING SYSTEM, SPECIAL-PURPOSE VESSELS & MACHINERY; AND INVESTMENT STRATEGY*.

上一认证周期截止时间：2016年11月14日/Last cycle Deadline: 14 November 2016
再认证审核时间：2016年9月28日-2016年9月30日/Recertification audit time: 28 September 2016-30 September 2016

本证书有效期至：**2019年11月14日**。
This certificate is valid until: **14 November 2019**.

证书专用章
Seal for Certificate
CC00

发证日期：**2016年10月28日**。
Issued on: **28 October 2016**.

总经理：
General Manager **Huang Shiyuan**

OHSMS

CNAS
中国认可
管理体系
MANAGEMENT SYSTEM
CNAS C005-M

Appendix-4: Environmental Management System Certificate

格式：MI1102R02

中国船级社质量认证公司
CHINA CLASSIFICATION SOCIETY CERTIFICATION COMPANY

环境管理体系认证证书

ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

编号：No.**00516E22187R4M**

兹证明

中国港湾工程有限责任公司
（注册/生产地址：北京市东城区春秀路9号 邮编：100027）

This is to certify that the Environmental Management System (EMS) of

CHINA HARBOUR ENGINEERING COMPANY LIMITED
(Registered/Production Add: No.9, CHUNXIU ROAD, DONGCHENG DISTRICT, BEIJING, 100027, P.R.CHINA)

建立的环境管理体系符合标准：**GB/T 24001-2004 / ISO 14001:2004**。
has been found to conform to standard: **GB/T 24001-2004 / ISO 14001:2004.**

本证书对下述范围的环境管理体系有效：*港口及航道工程（含疏浚、水工）、公路工程、桥梁工程、隧道工程、铁路工程、房屋建筑工程、市政公用工程、环保工程、机场工程、水利水电工程的工程总承包；港口及航道工程、公路工程、桥梁工程、隧道工程、铁路工程、房屋建筑工程、市政公用工程、环保工程、机场工程、水利水电工程的工程施工总承包；港口成套设备、自动化控制系统、供电系统、专用船舶等设计与制造的总承包；投资决策*。

This certificate is valid to the following scope for EMS: ***GENERAL CONTRACTOR OF PORT AND WATERWAY PROJECT (INCLUDING DREDGING & MARINE WORKS), HIGHWAY & EXPRESSWAY PROJECT,BRIDGE PROJECT, TUNNEL PROJECT, RAILWAY PROJECT, BUILDING WORKS, MUNICIPAL PUBLIC WORKS,ENVIRONMENTAL PROTECTION PROJECT, AIRPORT PROJECT, WATER RESOURCES & HYDRO-POWER PROJECT; GENERAL CONTRACTOR FOR CONSTRUCTION OF PORT AND WATERWAY PROJECT, HIGHWAY & EXPRESSWAY PROJECT, BRIDGE PROJECT, TUNNEL PROJECT, RAILWAY PROJECT, BULIDING WORKS, MUNICIPAL PUBLIC WORKS, ENVIRONMENTAL PROTECTION PROJECT, AIRPORT PROJECT, WATER RESOURCES & HYDRO-POWER PROJECT;GENERAL CONTRACTOR FOR DESIGN, MANUFACTURE, SUPPLY AND COMMISSIONING OF COMPLETE SET OF PORT EQUIPMENT & MACHINERY, AUTOMATIC CONTROL SYSTEMS, POWER SUPPLY & LIGHTING SYSTEM, SPECIAL-PURPOSE VESSELS & MACHINERY; AND INVESTMENT STRATEGY*.**

上一认证周期截止时间：2016年11月14日/Last cycle Deadline: 14 November 2016
再认证审核时间：2016年9月28日-2016年9月30日/Recertification audit time: 28 September 2016-30 September 2016

本证书有效期至：**2019年11月14日**。
This certificate is valid until: **14 November 2019.**

注：GB/T24001-2004/ISO14001：2004 认证标准有效期至 2018年9月15日。
Remarks: The certification to GB/T24001-2004/ISO14001：2004 is valid to 15 September, 2018.

证书专用章 Seal for Certificate CC00

发证日期：**2016年10月28日**。
Issued on: **28 October 2016.**

中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C005-M

EMS

总经理：
General Manager **Huang Shiyuan**

2 Quality Manual

2.1 Introduction

2.1.1 Purpose

The purpose of this Project Quality Plan is to set out the strategy and techniques to be employed to manage the Contract Works including the establishment of a management quality policy statement and quality objectives for execution of the Contract Works.

The Plan shall also set out the basic structure and interaction of the management documentation, the management processes to be controlled by which the control referred shall be achieved.

2.1.2 Scope

This Project Quality Plan shall be applicable to the management of all aspects of the works being undertaken by China Harbour Engineering Company Limited (hereafter referred to as "CHEC" or "Company") in completing this project.

2.1.3 Project Management System Structure

The Project Management System will be established in accordance with the RFP requirements as specified in Part 3, and AS/NZS ISO 9001 series to ensure that the project works carry out conforms to the contract requirements. CHEC adopt a process-based approached in managing the Contract Works. This strategy reflects the integration of the major requirements of AS/NZS ISO 9001 – Quality Management System standard to manage the Contract Works.

CHEC have setup the Quality Policy in accordance with the quality objectives expected to be achieved for the Project, and we have completed and carried out many on-going large infrastructure projects followed with the quality objective and Quality Policy as shown in Appendix 1, Appendix 2, including container terminal project, airport project, highway project, hydropower project, etc.

The Project Management System Structure describe hereafter will be divided into two parts.

Part 1: The Quality, Environment & Occupational Health and Safety Management Manual of CHEC

Part 2: Project specific documentation. This part includes:

a)Project Quality Plan (this document)

b)Project Management Procedures

c)Department Manuals including:

- Department Procedures/Instructions
- Inspection Procedures/Inspection Instructions
- Forms

d)Method Statements

e)Quality Records

The System Structure and Hierarchy are shown schematically in Figure 2.4-1 of this document.

2.1.4 Applicable Procedures

PP01 Procedure for Undertaking Management Review

PP02 Procedure for Formulating Plans and Procedures

PP03 Procedure for Undertaking Contract Review

PP04 Procedure for Executing Permanent Works Design

PP05 Procedure for Control of Documents and Communications

PP06 Procedure for Control of Purchasing including Evaluation of Subcontractors and Suppliers

PP07 Procedure for Materials Receiving Inspection, Testing, Identification and Traceability

PP08 Procedure for Managing of Resources and Recording of Works Executed and Resources Utilized and Site Records

PP09 Procedure for Control of Inspection, Monitoring, Measurement and Test Equipment

PP10 Procedure for Control of Non-Conforming Product

PP11 Procedure for Implementing Corrective and Preventive Actions

PP12 Procedure for Handling and Storage of Permanent Materials

PP13 Procedure for Control of Management Records

PP14 Procedure for Management Auditing

PP15 Procedure for Conducting Management Awareness Training

PP16 Procedure for Carrying Out Statistical Analysis of Data

PP17 Procedure for Dealing with Complaints and Enquiries

PP18 Procedure for Mobilization and Demobilization of Staff and Associated Resources

PP19 Procedure for Identification of Staff Training Needs

2.2 Management Responsibility

2.2.1 Management Commitment

Construction and Finance Contract to ensure that the management objectives for the Works are met through the implementation of the project quality plan described hereinafter.

The management commitment for the works comprises eight fundamental steps which are:

1)Establish executive responsibility, Contract quality policy, objectives and targets for the management of the Contract Works.

2)Establish a Project Organization Chart identifying the principal people to be employed for the management of the Contract Works.

3)Delegate responsibility from the Project Director to first tier Managers and subsequently from first tier managers to other management staff.

4)Formulate the management documents necessary to manage the Works including their overall structure, hierarchy and interaction.

5)Schedule the employment of resources and thereafter employ resources as required including Sub-Contractors and Suppliers to complete the Contract Works.

6)Manage the Works through to completion, including monitoring of progress, co-ordination and sequencing of the Works and the implementation of the requirements of management documents to ensure compliance with budget, quality, programme, safety, environment and the further requirements of the Contract Specification.

7)Review matters arising from the management of the works and take appropriate follow-up action as required ensuring Contract objectives are met.

8)Sign off and hand over of completed works to the Engineer as required.

2.2.2 Responsibility, Authority and Communication

The CHEC Management Board is directly responsible for the successful completion of the project compliance with the project quality, budget, and milestones requirements, and monitor the project planning, execution according to the contract requirements. While, the Project Management team report to the Management Board, is responsible for the project operation, management, execution to meet the contract & specifications requirements.

The Management Responsibility for the development and maintenance of the Quality Plan is delegated to the Project Quality Control and Assurance Manager.

For the general administration and management of the Project, responsibility is delegated to the appropriate Project or functional Manager.

1)Organization Structure

Eight departments is planned to be established for the project according to the RFP requirements and the needs of the project nature. The key personnel are appointed as per RFP and contract requirements.

The Seven Departments are those of:

- Engineering (Design Department)
- Construction
- Quality Assurance
- Health, Safety and Environmental
- Procurement
- Commercial
- Administration

The initial Organization Chart and the key personnel CVs for the Project are shown in Section 5.1 of Technical Proposal-General.

2)Delegation of Authority and Responsibility to Management Staff

i.General

Authority is defined within this plan as having the power or right to give orders that others are obliged to obey.

Responsibility is defined within this plan as being duty bound to do something and being accountable for same.

ii.Authority and Responsibility

The Project Manager shall define the lines of responsibility of key project management staff with clear description of authorities to ensure that consistent quality with their specific task is achieved. The authority and responsibility of the management staff are shown in Section 1.2 of Technical Proposal-General.

3)Quality Assurance Authorities and Responsibilities

The following listed Quality Assurance related responsibilities are the minimum requirements of the stated job functions, Additional requirements can be added to those below.

Detail key personnel responsibility is shown in Section 1.2 of Technical Proposal.

CHEC Management Board

The Contractor's Management Board is responsible for the satisfactory execution of all activities in the scope of work in accordance with all applicable contract documents.

With regard to Quality Assurance matters the responsibilities are the appointment of the Project Manager and the fulfillment of all stated requirements of the Project Quality Policy statement as well as the approval of the Project Quality Policy and all major revisions thereto.

In addition, the Contractor's Management Board also responsible for the initiation of corrective actions of the Quality Assurance Plan at Management level, and support the Project Manager in relation to quality.

Project Manager

To ensure the effective management of the Works, the Project Manager shall upon taking up his Contract role, appoint first tier managers as defined hereinbefore. Upon their appointment they shall implicitly be delegated the authority and responsibility as outlined hereinafter. Subsequent to their appointment further and better particulars of authority and responsibility may (if required) be delegated to them, either formally or informally (i.e. via memorandum, letter of appointment or verbally) by the Project Manager.

Other detail responsibility of Project Manager is shown in Section 1.2 of Technical Proposal.

Quality Control and Assurance Manager

The Quality Control and Assurance Manager reports to the Project Manager and responsible for the orderly and complete work activity of inspections and documentation of all site construction activities. Specific duties include the overall implementation of the Construction Quality Program and:

- Development of the Project Quality Plan after Notice to Proceed utilizing the CHEC Quality Procedures as the guidance;
- Coordinates all the management procedures preparation including quality control procedure, Quality records procedure, Inspection Test Plan (ITP);
- Monitors quality control activities from site inspection, witness testing, site audit;

- Assist the Materials Engineer with materials issues;
- Perform surveillance of document and drawing control;
- Review and sign the quality report;
- Implement and maintain the nonconformance program;
- Report to the Employer on quality related issues.

i.Department Managers

Department Managers are responsible for:

- The control, operation and administration of their Department's activities;
- The implementation of the Quality System within their areas of responsibility;
- Ensuring the preparation of Department Quality Manuals and their distribution as necessary;
- Preparing procedures/instructions as necessary to control the works under their responsibility;
- Approving documents in accordance with the authorities delegated to them by the Management.

2.3 Quality Assurance Systems

2.3.1 General

The Contractor intent to established and maintain on the Project a documented Quality Assurance System to ensure that the products conform to contract requirements.

2.3.2 Structure of Quality Assurance System

As an international contractor, we are committed to carry out the project by implementing the project management system to guarantee the successful completion of contract. The structure of the project management systems is shown below.

Figure 2.3-1 CHEC Quality Assurance Structure

1)The CHEC Management Manual(Level 1)

The highest level of quality documentation is the CHEC Management Manual.

It describes the general CHEC quality policy, CHEC Management Manual and interrelation between CHEC Organizations, departments and the Employers.

2)The Project Quality Plan(Level 2)

The highest level of project quality documentation is the Project Quality Plan. It is a supplement to the CHEC Management Manual. It contains:

a)The Quality Policy, which describes the Contractor's commitment to deliver products within the scope of work in full compliance with all relevant contract specifications through the development, implementation and maintenance of a documented Project Quality Assurance System in accordance with AS/NZS ISO 9001.

b)The Contractor's Organization Structure.

c)Quality Assurance responsibilities

d)A summary of the methods by which the Contractor shall address the AS/NZS ISO 9001 Quality System elements.

The Project Quality Plan is maintained under the responsibility of the Project Quality Manager and monitored by the Project Manager as well as the Project Quality Representatives.

3)Project Management Procedures(Level 3)

Project Management Procedures are the documents laying down the requirements for the administration of the Project Quality Assurance System, and the procedures extend the Project Quality Plan.

The Project Quality Manager is responsible for the development and implementation of the Project Management Procedures. They shall be prepared under the supervision of the Project Manager.

The Project Management Procedures are approved for use by the Project Director. Compliance with the contained instructions is mandatory for all project related staff.

The Project Management Procedures and revisions are on controlled distribution to registered holders of the Project Quality Assurance System

4)Department Manuals/ Procedures/ Work Instructions(Level 4)

The Department Managers is responsibility for the preparation and implementation of the Department Manuals.

Department Manuals shall be prepared under observance of the Project Quality Plan and the Project Management Procedures. Department Manuals shall be approved for use by the Project Manager.

Department Procedures/ Work Instructions which are supplementary documents to Project Management Procedures, describe the sequence of events and the actions to be followed by the department in a defined operation. Department Procedures/ Instructions are prepared by the departments responsible for the activity following the guidelines and format described in the relevant Project Management Procedure.

Department Procedures and instructions are approved for use by the Project Manager.

Procedures/ Work Instructions are issued on controlled distribution by the Quality Management Department. Compliance with the contained instructions is mandatory for all personnel when engaged in the activities covered by the procedures.

Consideration shall be given to the need for procedures/ Instructions shall be bi-lingual or multi-lingual

5)Method Statements(Level 5)

Where required by the Project, Method Statements shall be prepared. These Method Statements shall be prepared in accordance with the Project's specifications and requirements. In addition, the Inspection Test Plan (ITP) for the construction item shall be included in the particular Method Statement.

Where subcontractors/ suppliers are supporting a department's works they shall follow the same requirements as enforced on the department by the relevant Contract.

6)Quality Records (Level 6)

All records from Site Inspection, Quality audit, Site Observation are to be treated as the Quality Records. All the Quality Records shall be filed with relevant corrective action records as a complete set Quality Record.

A documentation filing system shall be maintained and organized to keep all the Quality Records, and maintained a non-conformance program in order to keep the filing system easy to access. We envisaged that the Quality Records will increase to large volume of document when the construction progress moving ahead with increasing of quality control activities.

2.3.3 Quality Control Measures

The effective project quality control shall adopt proper control measures to discover and locate the deficiency and apply appropriate quality procedures to determine the non-conformance during the construction processes for the Project.

The effective quality control measures which CHEC intended to carry out for the Project are

- Monitoring
- Observation
- Review
- Checking
- Site Visit
- Site Inspection
- Quality audit
- Witness Testing

To improve the construction quality, frequency of carry out the above mentioned quality control measures becomes importance. Each quality control measure has its own targeted nature, such as quality audit is carry out to check the system paper works compliance with the management procedure, site inspection is carry out to examine the construction works in accordance with the

method statement, specifications and code requirements.

The procedures of quality control measures as mentioned above shall be prepared after Notice to Proceed of the project.

1)Monitoring

Monitoring is one of the most effective means of quality control. Periodic Monitoring Report could be produced through the findings from the monitoring of all activities within a period of time. The located findings may come from anyone or from different site activities, such as site inspection, site observation, audit, witnessing, meeting, conversation, etc. These findings from the activities need to be grouped, and some "suspected" non-conformance even required further verification or proof before it can be summarized in the monitoring report.

2)Observation

Observation is one of the quality control measures without preparing any quality record. It needs to observe from time to time in any site activities. Any conformances or non-conformities found need to be organized and grouped in the diary to assist the planning of site inspection, quality audit, and witness testing, or became part of the monitoring result. In addition, warning may needs to be given to the related individual or team in advance for the specific task beforehand.

3)Checking

Checking is another quality control measure, it is used in associate with the site inspection, quality audit or document review. No quality record need to be issued from checking, but the findings from the checking operation shall be appeared in the Non-Conformance Records from site inspection, quality audit or review comments from document review.

4)Site Visit

Site visit shall be carried out regularly, and it doesn't need to prepare quality record, but it is necessary to keep site visit record in Engineer's diary for future tracking purpose.

Site visit is carry out to understand the construction progress, realize any non-conformity from construction activity and provide the key items need to be examined in the next site inspection operation or quality audit. It shall be carried out in random basis.

5)Site Inspection

Site inspection is the key quality control measure to examine the construction quality on site. The first stage is to check the correct version document and drawings to be used for construction on site to ensure the constructed item follow the right document. Follows with the site inspection on construction items, and examines the construction in accordance with the drawings, method statement and code requirements. Then, site records shall be checked to ensure site engineer and quality engineer inspected items with respect to the Inspection Test Plan and the inspection procedures. Any non-conformity found shall be recorded and Non-conformance Record (NCR) shall be issued.

To enhance the construction quality, Random/ Ad hoc inspection shall then be carried out if the common non-conformance found at the same construction items or location, until the common non-conformance has been improved. Otherwise, the non-conformance shall be appear in the monitoring report to bring the attention to the project management level, or official letter shall be

issued and requested for improvement within limited period of time.

Furthermore, additional site inspection also needed to verify the corrective action taken in accordance with the related requirements before closing the NCR.

To active control the NCR and Corrective Action Record (CAR), control log shall be prepared and maintained for easy tracking.

6)Document Review

All document need to be reviewed before submit to Employer, issue for procurement or issue for construction. Any inconsistence found shall be recorded and review comments shall be sent to relevant party for improvement or correction.

The document required for review includes construction drawings, calculations, method statement, etc.

A document control log shall be established and maintained for tracking control.

7)Quality audit

Quality audit shall be performed on QA/QC system, safety and environmental system, laboratory testing management, documentation system, etc. The schedule of audit shall be prepared in advance and relevant party shall be informed. Non-conformance Record (NCR) shall be issued if any non-conformity found during the audit process, and corrective action required to verify the system has been improved.

An audit control log also required to be established and maintained in Quality Management department.

a)Internal Audit

It is the Company's policy to carry out a comprehensive system of planned and documented internal quality audits to establish whether management activities comply with planned arrangements, and to determine the effectiveness of the implementation of the requirements of the management documentation.

The Quality Control and Assurance Manager shall organize and lead the internal audit at the appropriate procurement, construction, installation, and commissioning stages. Audit reports shall be maintained on file in the Quality Management Department archives.

Audit results shall be reported to the Project Manager, and it shall be recorded and results of audits shall be addressed in the Management Review. The information derived from audits shall be used by the Company to make improvements to his operations.

b)Audit Frequency

Audit frequency shall be adjusted from time to time depend on the information feedback from monitoring report, but shall at least be on a quarterly basis. The audit frequency shall be adjusted if one or more of the following conditions exist:

i)Result from surveillance indicates there is a need to increase frequently;

ii)Significant changes are made in the PQP/ Management Procedure;

iii)Verification of audit corrective implementation.

c)Periodic Audit by Parent Company

CHEC Auditor from headquarter shall conduct site audit for important projects. It shall be carried out on quarterly basis, but it shall also carry out project audit with two quarters interval. Similar NCR and corrective action required for the audit. Result of the audit shall be sent to Supervisory Board for necessary action.

8)Witness Testing or Sampling

Witness testing is importance for site material sampling and laboratory testing to maintain qualified material to be used on site. Full time engineer shall be allocated to performance witness testing on site. NCR shall be issued if any non-conformance found.

A witness testing control log shall be established and maintained for tracking control.

2.3.4 Procedures& Work Instructions

It is the policy of the Contractor to put in place plans and procedures for the respective project areas of Safety, Environment, Quality, Construction, Engineering and Commercial activities. The plans and procedures which are effectively the management documentation shall enable the unique activities and processes required in the areas referred, to be managed in a planned, consistent and efficient manner.

1)Quality Control Procedures

For the Energas LNG Project, following quality control procedures shall be prepared:

- Monitoring procedure
- Observation procedure
- Checking procedure
- Site visit procedure
- Site inspection procedure
- Document review procedure
- Audit procedure
- Witness testing and sampling procedure

2)Project Management Procedures

The management procedures related to each individual management plan shall be prepared and developed. For control purpose, all the procedures involved in the project shall be extracted and grouped into the Project Procedures Manual from each individual management plans. The Quality Control Procedures shall also be included in the Project Procedures Manual.

The related management plan and procedure shall be prepared by related engineering discipline, approved by the Project Manager, and issued by the QA/ QC team.

The QA/ QC manager is responsible for updating the Quality Control Procedures, and providing notice to the related departmental Manager of updating related management procedure, if required.

Project Procedures Manual shall only include the management procedures, quality control

procedures, documentation control procedures, etc. Any other procedures related to the specific construction work processes shall be included in the related Method Statement.

As a minimum, the Project Management Procedures Manual shall include the following

- Undertaking Management Review Procedure;
- Formulating Plans and Procedure;
- Undertaking Contract Review Procedure;
- Control of Documents and Communications Procedure;
- Control of Purchasing including Evaluation of Subcontractors and Suppliers Procedure;
- Managing of Resources and Recording of Works Executed and Resources Utilized and Site Records Procedure;
- Control of Inspection, Monitoring, Measurement Procedure;
- Quality Control Procedures include
  - Monitoring procedure;
  - Site inspection procedure;
  - Document review procedure;
  - Audit procedure.
- Implementing Corrective and Preventive Actions Procedure;
- Safety and Emergency Procedure;
- Environmental Management Procedure;
- Document Control Procedure;
- Material & Storage Procedure;
- Procurement Management Procedure;
- Schedule Management Procedure;
- Design Change Notice (DCN);
- As-Built Drawing Management Procedure;
- Acceptance and handover Procedure

2.3.5 Method Statement and Inspection & Test Plan

The Method Statement covers the construction works, provides the construction sequence and methodology, as well as the specifications requirements to be used. It will be submitted for review before commencement of work.

The Method Statement shall include the inspection and test plan for the work item to be carried out. In addition, the inspection and test plans shall specified the necessary inspection points, holding points in the plans.

The Project Manager shall ensure to carry out inspection and testing in accordance with Contract requirements and as may be specifically outlined in the management documentation. The detail

in respect of inspection and tests to be carried out shall be outlined in relevant inspection and test plans.

As a minimum, the Inspection and Test Plan (ITP) may include what is to be tested or inspected and the relevant specification clause, the method of inspection or test, the specified acceptance criteria, the form of record of results and the frequency and timing of the tests. Nevertheless, details of Hold Points for inspections& audits and Witness Point to be carried out by the Contractor's QA engineer &PQR.

2.4 Document and Data Control

2.4.1 General

Documents referred to in this section shall include any Contract documentation maintained on hard copy and electronic copy. The communications referred to within this section shall include minutes of meetings, written correspondence, facsimile and electronic (including e-mail) communication. It is the Company's policy to ensure that all Contract documentation and communication will be managed and controlled in order to meet the integrated requirements of the Company and the Contract.

The Contractor shall ensure that procedures are prepared to control documents and data relating to the requirements of the Contract including, to the extent applicable, documents of external origin such as standards and Employer supplied drawings.

2.4.2 Documentation Structure and Hierarchy

The client's requirements consisting of the Management Documentation for the project shall be formulated to comprise the following items in the hierarchy as shown. The layout shown also indicates the interaction between the various documents and the interaction between the relevant processes. The specific detail of such interaction shall be contained in the detailed documents.

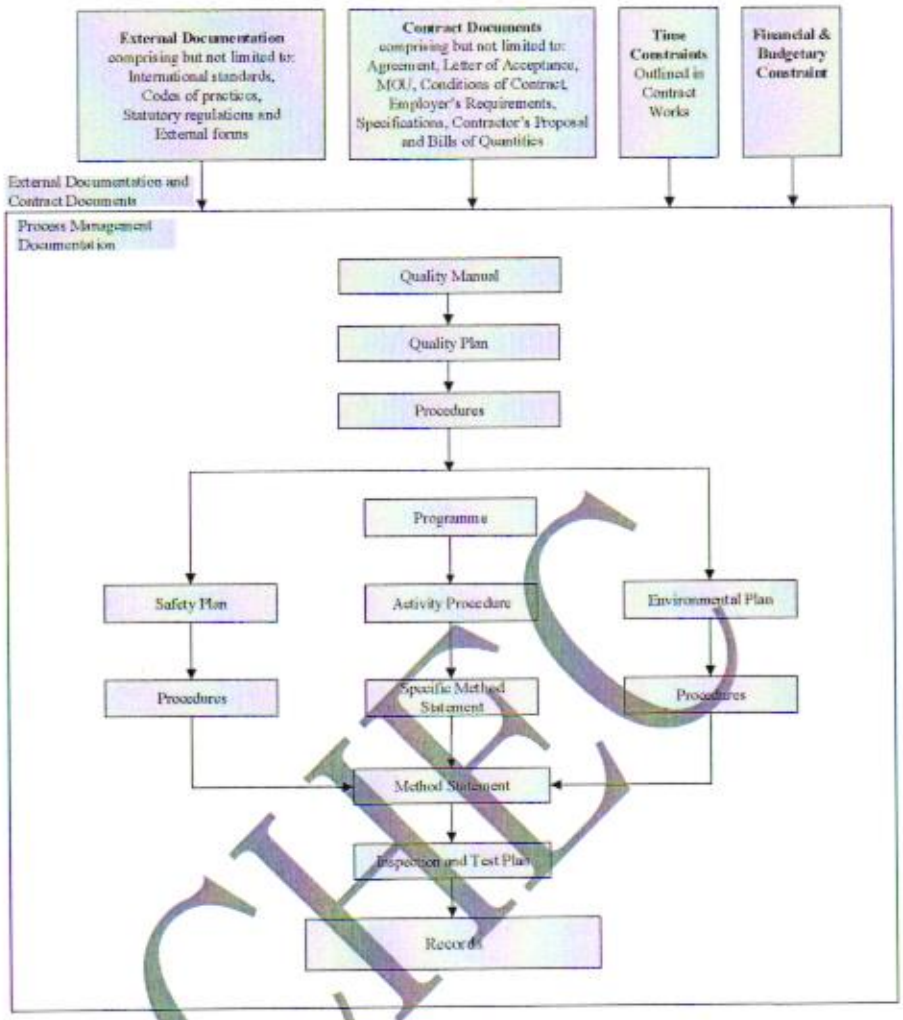

Figure 2.4-1 Documentation Structure

2.4.3 Management Documentation

The Contract Documents which comprise (but are not limited to) the Contract Agreement, the Letter of Acceptance, the Letter of Tender, the Memorandum of Understanding, the Particular Conditions, General Conditions, Employers' Requirements, the Specifications, the Contractor's Proposal, and the Bills of Quantities are effectively the documents which provide the basis on which the Company's organization works. These documents take precedence (as required) over the Company's operational documentation.

2.4.4 Preparation of Management Documentation

The Project Manager shall prepare plans and procedures for the respective project areas of Safety, Environmental, Quality, Construction, Engineering and Commercial activities. The plans and procedures shall enable the unique activities and processes required in the areas referred, to be managed in a planned, consistent and efficient manner.

2.4.5 Project Management Review

The Project Manager conducts Project Management Review once in six months and whenever

he finds an urgent need to do so. The project quality plan is updated and re-issued if necessary. Results of the Project Management Review are forwarded to the Head Office for inclusion on the agenda of the Corporate Management Review when it is next held.

2.4.6 Document and Data Approval and Issue

Procedures shall ensure that:

- where necessary, documents and data are uniquely identified,
- documents and data are reviewed and approved by appropriately qualified personnel prior to issue,
- pertinent issues of documents and data are distributed to those locations where operations affected by the content of the document/data are performed,
- Superseded documents/data are clearly marked as such or are removed from the place of use, as appropriate.
- Document and data schedules are prepared which adequately inform personnel of the revision status of documents/data.

2.4.7 Document and Data Changes/ Modifications

The Change Control Procedure shall include:

- Identification
- Effective Date
- Responsibility
- Revision Level
- Validation
- Communication
- Updating Documentation
- Documentation Distribution
- Remedial Actions
- Regulatory Submissions

The Contractor shall ensure that, where practicable, document and data changes are reviewed and approved by the same function/organization having performed the original review and approval, if not designated otherwise.

Where practicable changes to documents and data shall be identified in the document or the appropriate attachments.

2.5 Project Implementation, Control & Monitoring

The Works shall be managed through to completion in accordance with the requirements of the quality management documentation to meet the requirements of the Contract, the Contract Works Programme and Company's budget. Such management of the Works shall include establishment of the necessary resources at the appropriate time, monitoring of the progress of

the Works against the Contract Works Programme and monitoring the implementation of the requirements of the quality management documentation to verify that the works are being carried out in a manner that meets with the requirements of the Company, the Contract and the criteria for workmanship.

The monitoring of the progress of the works shall be carried out an on-going daily basis by the Project Management Team staff through review of works progress on site, review of the Contract drawings and regular meetings with relevant parties as required. The further formal review of the implementation of the requirements of the quality management documentation shall be undertaken via the process of internal quality audits.

2.5.1 Purchasing

The Contractor shall ensure that purchased products or services conform to the requirements specified in the contract documents and ensures that they meet the requirements of the Company in a manner which satisfies the requirements of AS/NZS ISO 9001 Standard.

The Contractor shall ensure that potential subcontractors are evaluated and selected on the basis of their ability to meet sub-contract requirements including any quality requirements.

Purchasing documents shall contain data clearly describing the product/ service ordered. The Contractor shall ensure that purchasing documents are reviewed and approved for adequacy of specified requirements prior to release.

The Contractor shall ensure that purchased Items and services meet specified requirements and shall perform inspections of purchased products and services and Quality Audits on suppliers and subcontractors, as appropriate.

2.5.2 Product Identification and Traceability

The Contractor shall ensure that traceability requirements are identified from the contract specifications and routines shall be developed which allow, to the extent required by the Contract, traceability of products.

Where such traceability is required and, where practicable, products shall be uniquely identified and marked.

The Project Manager shall ensure that where required, products are identified and traceable to the source of supply during all stages of production, delivery and installation.

2.5.3 Process Control

Process control activities are detailed as appropriate in Procedure, Method Statements, Work Instructions, etc.", as appropriate"

The Contractor shall ensure that the production and installation processes are identified and planned and shall ensure that these processes are carried out under controlled conditions. Controlled conditions may include but not be limited to documented Method Statements, Procedures and Work Instructions defining the manner of production and installation, use of suitable production and installation equipment, suitable working environment, compliance with referenced standards/codes and other process-oriented information.

Records shall be maintained for qualified processes/operations, equipment (inspection, measuring and test equipment and personnel.

Special processes shall be identified at the method planning stage. Procedures, personnel and equipment (as appropriate) for special processes shall be qualified to ensure that specified requirements are met. Records shall be maintained for such process.

The following Special Processes shall be undertaken as specified below:

a)Survey Control

Survey Control shall include surveying, measuring and computation processes including:

- establish project survey control and permanent marks as specified
- set out the Works and verify survey control
- progressively monitor and check dimensions, tolerances, position and levels during construction
- verify conformance to the Drawings and Specification in relation to dimensions, tolerances, position and levels
- prepare construction record drawings of all constructed works
- determine lengths, areas or volumes of materials or products, where required for measurement of work

Survey instruments shall be calibrated according to the requirements, and similar to other equipment or plant.

Surveying and measuring processes to verify survey conformance shall be carried out by competent Surveyor registered with the Association of Surveyors PNG.

Where survey control is used to verify product conformance, it shall be performed as soon as practicable but not later than twenty four (24) hours after the lot or component has become accessible for survey control.

Dimensional verification may be carried out by leading hands, foreman, surveyors or engineers as appropriate to independently progressively check the Works.

b)Program Control

The CHEC's procedures for preparation and updating of program will include review and verification of the scheduled periods and dates by relevant line management, sub-Contractors and suppliers.

2.5.4 Inspection and Testing

As far as deemed necessary for the activities, and based on the requirements of the Contract, the Contractor shall ensure that inspection and test plans are prepared which will specify hold points, inspection points, inspection methods, the extent of the inspection, responsibility for performing or ensuring performance of the inspection, criteria of acceptance and form of documentation.

Inspection and test plans, shall cover delivery, process and final control as well as inspection and testing.

2.5.5 Inspection, Measuring and Testing

The Contractor shall control, calibrate and maintain inspection, measuring and test equipment,

required for the execution of the works and used to demonstrate the conformance of the works and products to the specified requirements.

Subcontractors shall be required to demonstrate equivalent control of inspection and test-equipment in accordance with contract requirements.

The equipment manufacturing and installation shall follow the Validation and Verification Process as shown in the following figure.

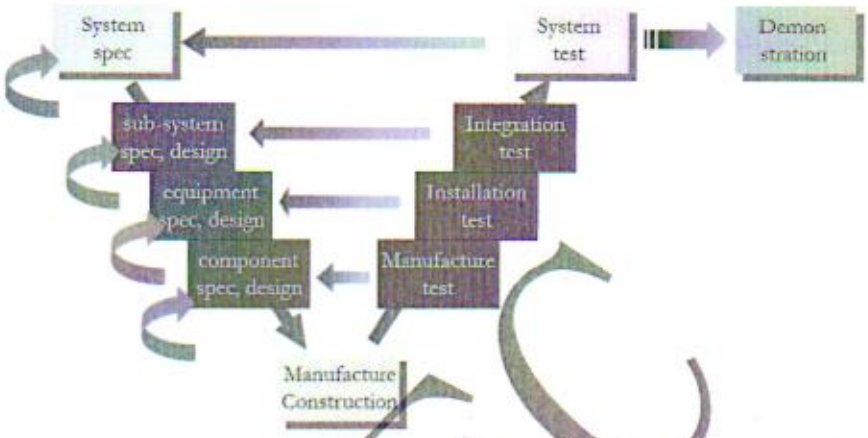

Figure 2.5.5-1 Validation and Verification Process

To ensure supply align with the project scope and Employer requirements during the manufacturing processes, appointed Contractor's personnel shall participate in monitoring and control the extent is needed to assure supplied products meet the design and specification requirements. The Employer's Personnel shall at all reasonable times during production, manufacturing (either at project site or factory), be entitled to examine and inspect the workmanship, as well as to check the progress of manufacture of production. There are three main points in inspection activities while manufacturing processes is performed:

- Controlling the raw materials prior to entering the production line.
- Checking and monitoring of parts in the manufacturing process (Inspection hold points shall be identified for each process before work started).
- Finalized inspection activities such as sub-component, component, and system performance test before delivery.

2.5.6 Inspection and Test Status

The Contractor shall establish and maintain procedures to ensure that the inspection and test status of products will be identified by appropriate methods (e.g. markings, authorized stamps, tags, labels, etc.) and by controls which indicate the conformance or non-conformance with regard to tests and inspections performed.

The test and inspection status shall be maintained throughout production.

2.5.7 Control of Non-conforming Product

The Contractor shall establish and maintain procedures to ensure that a products not conforming to specified requirements are prevented from inadvertent use or installation.

The Contractor shall ensure that all non-conforming works and materials that do not conform to the specified requirements shall be prevented from use. Nonconformance Reports are issued when deficiencies occurs in materials, works, work processes or services that result in a condition that does not conform to the requirements contract.

Non-conforming final products shall be identified using non-compliance sheets and shall be notified to the Employer. Control shall be provided for identification, documentation, evaluation, segregation (when practical), pending review, disposition of nonconformance and for notification to the Department Manager concerned.

Records regarding the Contractor's controls of non-conforming product shall be kept on file.

2.5.8 Corrective and Preventive Action

The Contractor shall ensure that corrective action procedures exist so that nonconformities are reviewed and resolved to prevent recurrence and appropriate records are maintained to demonstrate resolution of corrective actions implementation.

It shall also undertake preventive action to eliminate potential causes of nonconformities.

Results from corrective/preventive action taken shall be documented and discussed, as appropriate in the Management Review.

2.5.9 Handling, Storage, Packaging, Preservation and Delivery of Product

The Contractor shall establish procedures for the handling, storage, packaging and delivery for products purchased for or on behalf of the project. These procedures set out to prevent damage and deterioration, by providing, where necessary, secure storage area, and/or stock rooms as far as required.

Procedures shall ensure the protection of the quality of product after final inspection and test as far as contractually defined.

2.5.10 Quality Control Management

Through the monitoring, observation, Checking, site visit, document review, site inspection, quality audit, witness testing or sampling most common non-conformances shall be identified and corrected, example of the most common non-conformances such as honey, segregation of cement and aggregates, over vibration during concreting, insufficient concrete cover protection, unequal rebar spacing, rust marked from steel formwork, etc. Usually, the non-conformance can be controlled within a low percentage if the most commonly non-conformances are eliminated or rectified.

To improve construction quality, the quality control measures as described should be implemented mutually. Frequency of control measures need to be adjusted from time to time.

On project site, the field engineering group shall be responsible for the final verification of the quality of construction through continuous monitoring of the construction process. Work shall be performed in accordance with the Project Procedures Manual of Standard Work Process Procedures.

Field engineers shall provide in-process inspection of materials, equipment, and workmanship to ensure compliance with the drawings, specifications, and applicable codes.

The field engineers shall initiate, witness, record, and verify installation and performance checks and tests as required by the project documents. They shall determine the test requirements for certain systems and establish testing procedures and criteria as part of the project field inspection and testing program, perform walk-downs, and prepare the necessary punch lists and system turnover documents.

All quality records shall be logged into Quality Management Department archives and monthly report.

2.5.11 Quality Verification and Documentation

The project QC engineer shall inspect the construction works according to the "Hold Point" as specified in the Inspection Test Plan (ITP) as provided in the related Method Statement. Non Conformance Record (NCR) shall be issued if any nonconformity found from the site inspection, or any works not comply with the specifications and contract requirements.

Similar procedure shall be followed on the system documentation audit periodically, the QA/ QC Manager shall issue the NCR if any nonconformance found or any records on the document not comply with the management procedure.

With the collective action (CAR) records provided, site inspection or witness required verifying the quality of the collective action taken, and the related NCR could then be closed if the quality of the collective action conformed to the specification requirements. Or the QA/ QC Manager need to check the collective action taken for the documentation system before close the NCR from the Audit.

All the quality records for the NCR and CAR records shall be filed in the document control system.

2.5.12 Quality Records

Records shall be maintained to adequately demonstrate the achievement of specified requirements.

Requirements and the extent of quality records shall be identified from project specifications and stated in the relevant inspection plans.

Records shall be stored and maintained a suitable environment to minimize deterioration or damage and to prevent loss.

All records are duplicated and second copies are stored separately from the first copy for fire protection and loss prevention purposes. One set of records maybe that held by the Engineer or Sub-Contractors provided such arrangements are notified and recorded as such.

Retention time of quality records shall be in accordance with project requirements or as deemed necessary by Management.

The record system shall contain at least the following:

a)records of inspection and test plans

b)records of non-conformances

c)records of corrective action

d)records of audits

e)original records of certification/approvals by statutory authorities

f)certificates and warranties of manufacturers and suppliers

g)material quality records and analyses

h)Records of surveys.

2.5.13 Training

It is CHEC's policy that all management staff understands the requirements of quality policy and procedures. CHEC also ensures that management staffs assigned to specific task are qualified and/or adequately trained. Such training includes the following:

- Safety Induction Training – all new employees shall receive safety induction training within one week upon their arrival on site.
- Quality, Safety and Environmental Toolbox Training
- Operational / Technical Skills Training – this training aims at maintaining an acceptable standard of workmanship and will be conducted to all management staff when particular performance of executed work has fallen below the standard.

The CHEC will provide any relevant instruction to the Employer's staff to familiarize them with any relevant installations and enable them to operate and maintain any relevant systems as nominated by the Engineer.

CHEC will run a course of instruction for the Employer's staff in operating and maintaining the civil and electrical elements of the work. Such instruction shall be at a time and for a period as necessary to demonstrate the operation and maintenance requirements for all installed equipment and make the Employer's staff competent in operating and maintaining those systems.

2.5.14 Analysis of Data

Statistical analysis will be employed to analysis data established during execution of the works. The detailed process for relevant statistical analysis shall be outlined. The results of the statistical analysis shall be used as a tool to facilitate continual improvement in the quality management system.

The statistical analysis of data to be carried out may be in the form of: -

- works progress comparisons against programme
- visual observation of occurrences on site
- Register analysis of NCRs, inspection forms including complaints raised. Furthermore analysis of miscellaneous Contract records and quality documentation to demonstrate achievement of quality objectives
- other suitable method

2.5.15 Complaints and/or enquiries

It is the Company's policy to deal with all formal complaints and enquiries from external and internal sources in a controlled manner.

1)External Complaints

External complaints may be in the form of written, client's / engineer's complaints raised in the meeting, verbal complaints from the general public.

2)Internal complaints

Internal complaints from Company own management and staff should be channeled through any of:

- immediate manager,
- the Project Manager or
- Head Office Human Resources Department

2.6 Management Review & Improvement

Review and improvement of the management of the Works shall be carried out through a number of forums including: -

2.6.1 Contract Review Meeting or Project Progress Meeting

Contract Reviews will be undertaken on a regular basis within the forum of the Project Progress Meeting. The Project Progress Meeting will facilitate discussion on the current progress of the Works, the impact of changes and amendments on the Contract programme and resources, and ensure that such changes have been adequately defined and documented. Safety, environmental and quality issues arising will also be discussed. The meeting will also discuss the requirement as appropriate for further constructions to be given to Sub-Contractors or Suppliers arising out of said changes and amendments.

2.6.2 Progress Review Meeting

A Weekly Contract Review Meeting or Progress Review Meeting shall be chaired by Project Manager and attended by management and supervision staff and other staff who may be invited by the Project Manager at which the overall effectiveness of the management and the progress of the Contract Works shall be reviewed.

2.6.3 Monthly Technical Review Meeting

A Monthly Technical Meeting shall be shall held to discuss the Permanent and Temporary Design Works for the project and/or the various elements of the Works which may need to be designed. Such meeting shall not be generally minuted. They may typically be initiated and attended by the Project Manager and other staff that may be requested to attend as necessary.

2.6.4 Financial Review Meeting

This meeting shall be held as required and the frequency will be determined by the Project Manager. This meeting shall be chaired by the Project Manager and shall be attended by the Quantity Surveyor and Section Managers. Site Engineers and other staff may attend at the discretion of the Project Manager. The meeting shall be minuted.

Appendix-1: CHEC Quality Policy Statement

中国港湾工程有限责任公司
CHINA HARBOUR ENGINEERING COMPANY LTD.
东直门外春秀路9号 中国 北京 100027
No. 9 CHUNXIU ROAD, BEIJING-100027, CHINA
电话(TEL.):64154455 传真(FAX):64168276 电子邮件(E-mail): chechj@enstnet.com.cn

Quality Policy Statement

China Harbour Engineering Company Ltd (CHEC) is committed to ensuring that its products and services meet with the requirements of their clients at all times. To achieve this goal the company has established detailed procedures, documented in the Quality, Environmental and Health & Safety Manual, to give guidance to its employees. The objectives of these procedures are:

- To provide a high level of client satisfaction
- To uphold the company's reputation
- To ensure continued compliance with ISO9001:2008
- To maintain a high standard of workmanship and service provision at all of the company's work sites
- To provide training to employees to enable them to realise the company's quality gnals
- To set targets for achievement and improvement
- To monitor the effectiveness of the Quality Management System through regular internal and external audits
- To provide adequate resources and priority for the implementation of the policy

Mr Yun liang is hereby appointed responsible for the overall co-ordination and implementation of this policy. Quality assurance, however, remains a prime responsibility of every employee. All staff shall ensure this policy is understood, implemented and maintained. As an integral part of the company's aim to continually improve, this policy will be reviewed and updated annually.

质量政策声明

中国港湾工程有限责任公司（CHEC）承诺：保证在任何时候，生产、服务均符合业主的要求，为了实现这一目标，公司建立了详细的操作规程，并体现在质量、环境、职业健康安全手册中，供员工参照。该规程的目标为：

- 保证业主高满意度
- 提升公司信誉
- 时刻保持续遵守 ISO9001：2008 标准
- 在所有施工现场保持高品质的技术水平和服务
- 提供员工培训，以确保实现公司质量目标
- 设定达成及成果目标
- 通过内外审计监控质量管理体系的有效性
- 提供适当的资源，优先实施该政策

任命负亮副总经理为此政策协调及实施的全权负责人。质量保证是每位员工的首要职责。所有人员应确保理解、贯彻、维持此政策。作为公司目标不可分割的一部分，应不断改进，重审更新。

唐桥梁

Mr.Tang Qiaoliang
President
30th March 2016

Appendix-2: CHEC Quality Management System Certificate

格式：MI1102R01

中国船级社质量认证公司
CHINA CLASSIFICATION SOCIETY CERTIFICATION COMPANY

质量管理体系认证证书
QUALITY MANAGEMENT SYSTEM CERTIFICATE

编号：No. 00516QJ2185R1M

兹证明

中国港湾工程有限责任公司

（注册/生产地址：北京市东城区春秀路9号 邮编：100027；统一社会信用代码：91110000710933796P）

This is to certify that the Quality Management System (QMS) of

CHINA HARBOUR ENGINEERING COMPANY LIMITED

(Registered/Production Add: No.9, CHUNXIU ROAD, DONGCHENG DISTRICT, BEIJING 100027, P.R.CHINA; Uniform Code of Social Credit: 91110000710933796P)

建立的质量管理体系符合标准：GB/T 19001-2008 / ISO 9001:2008；
has been found to conform to standard: GB/T 19001-2008 / ISO 9001:2008.

本证书对下述范围的质量管理体系有效："施工及航道工程、公路工程、桥梁工程、隧道工程、铁路工程、房屋建筑工程、市政公用工程、环保工程、机场工程、水利水电工程的工程施工总承包"。
This certificate is valid to the following scope for QMS: "GENERAL CONTRACTOR FOR CONSTRUCTION OF PORT AND WATERWAY PROJECT, HIGHWAY & EXPRESSWAY PROJECT, BRIDGE PROJECT, TUNNEL PROJECT, RAILWAY PROJECT, BUILDING WORKS, MUNICIPAL PUBLIC WORKS, ENVIRONMENTAL PROTECTION PROJECT, AIRPORT PROJECT, WATER RESOURCES & HYDRO-POWER PROJECT".

上一认证周期截止时间：2016年11月14日/Last cycle deadline: 14 November 2016
再认证审核时间：2016年9月28日-2016年9月30日/Recertification audit time: 28 September 2016-30 September 2016

本证书有效期至：2019年11月14日。
This certificate is valid until: 14 November 2019.

注1：GB/T19001-2008/ISO9001：2008认证标准有效期至2018年9月15日。
Remarks 1: The certification to GB/T19001-2008/ISO9001：2008 is valid to 15 September, 2018.

注2：本证书不能在中国境内使用和展示。Remarks 2: This certificate cannot be used and demonstrated in China.

证书专用章
Seal for Certificate
CC00

发证日期：2016年10月28日
Issued on: 28 October 2016.

总经理：
General Manager Huang Shiyuan

CNAS 中国认可 国际互认 管理体系 MANAGEMENT SYSTEM CNAS C005-M

QMS

HSE Plan for Protection of Covid-19

China Harbour Engineering Company Ltd.

Prepared by: Gan Fuhua

Checked by: Zhou Yuanye

Approved by: Zheng Yuhe

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