

ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN DHABEJI RISING MAIN NO. 05 REHABILITATION PROJECT



**FINAL REPORT
JANUARY 2023**



**Karachi Water & Sewerage Services
Improvement Project [KWSSIP]**

**Environmental & Social Management Plan of
Dhabeji Rising Main No. 05 Rehabilitation
Project**

January 2023



**Project Implementation Unit (PIU)
Karachi Water & Sewerage Services Improvement Project (KWSSIP)**

**Environmental & Social Management
Plan of Dhabeji Rising Mains
Rehabilitation Project**

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List of Acronyms

| | |
|-----------------------|---|
| ADB | Asian Development Bank |
| AIIB | Asian Infrastructure Investment Bank |
| AOI | Area of Influence |
| BOD | Biochemical Oxygen Demand |
| CBOs | Community Based Organizations |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CO | Carbon Monoxide |
| CO₂ | Carbon Dioxide |
| COC | Code of Conduct |
| COD | Chemical Oxygen Demand |
| CSC | Construction Supervision Consultant |
| dB | Decibel |
| DIA | Direct Impact Area |
| DMC | District Municipal Corporation |
| DPC | Dhabeji Pumping Complex |
| EHS | Environment, Health and Safety |
| EIA | Environmental Impact Assessment |
| EMF | Environmental Management Framework |
| EPRP | Emergency Preparedness and Response Plan |
| ESA | Environmental & Social Assessment |
| ESIA | Environmental & Social Impact Assessment |
| ESMP | Environmental & Social Management Plan |
| FGD | Focus Group Discussion |
| FY | Fiscal Year |
| GRM | Grievance Redress Mechanism |
| HIV/AIDS | Human Immunodeficiency Virus / Acquired immunodeficiency syndrome |
| HSE | Health, Safety and Environment |
| IEE | Initial Environmental Examination |
| IFC | International Finance Corporation |
| IIA | Indirect Impact Area |
| ILO | International Labour Organization |
| ISO | International Standards Organization |
| IUCN | International Union for Conservation of Nature |
| JICA | Japan International Cooperation Agency |
| KWSB | Karachi Water & Sewerage Board |
| KWSSIP | Karachi Water & Sewerage Services Improvement Project |
| LMP | Labour Management Procedures |
| MGD | Million Gallon Per Day |
| MMP | MM Pakistan (Pvt.) Ltd. |
| MS | Mild Steel |
| MSDS | Material Safety Data Sheet |
| NCR | Non-Compliance Reports |
| NO₂ | Nitrogen dioxide |
| OHS | Occupational Health and Safety |

| | |
|-------------------------|--|
| PIU | Project Implementation Unit |
| PM₁₀ | Particulate Matter 10 Micron |
| PM_{2.5} | Particulate Matter 2.5 Micron |
| SEP | Stakeholder Engagement Plan |
| SEPA | Sindh Environmental Protection Agency |
| SEQS | Sindh Environmental Quality Standards, 2016 |
| SMF | Social Management Framework |
| SO₂ | Sulfur dioxide |
| SOPs | Series of Projects |
| SPs | Safeguard Policies |
| SSEMPs | Site Specific Environmental Management Plans |
| SSWMB | Sindh Solid Waste Management Board |
| TBD | To be Design |
| TBT | Toolbox Talks |
| TCU | True Colour Units |
| TMP | Traffic Management Plan |
| UC | Union Council |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| USEPA | United State Environmental Protection Agency |
| VU | Vulnerable |
| WB | World Bank |
| WBG | World Bank Group |
| WHO | World Health Organization |
| WMP | Waste Management Plan |

Executive Summary

The First Karachi Water and Sewerage Services Improvement Project (KWSSIP-1), funded by World Bank (WB) and Asian Infrastructure Investment Bank (AIIB), is an initiative of Government of Sindh (GoS) through Karachi Water and Sewerage Board (KWSB) to improve water and sewerage services in Karachi.

One of the planned interventions under KWSSIP-1 is the Rehabilitation of Dhabeji Rising Main No. 05 which comprises replacement of existing Rising Mains No. 05 with a new 72" diameter Mild Steel (MS) Rising Main spanning over a 4.5 km stretch, starting from Dhabeji Pumping Complex (DPC) to Dhabeji Forebay (High point). Keeping in view the urgent need of the project, these works have to be performed as Emergency works under SOP 1, Component 2 of KWSSIP-1.

Project Background

Water is being supplied to the Karachi city from a distant source i.e. Keenjhar Lake, located around 150 km away from the city. A considerable amount of the water supplied from the source is wasted because of the massive leakages in the bulk transmission network. This is not only causing loss of this precious and scarce commodity but also causing financial loss to KWSB due to heavy leakages and frequent bursting. The major objectives of the proposed project are to restrict major leakages in the system by replacing / repairing the outlived section of Dhabeji Rising Main No. 05. The integration of the project will strengthen the KWSB's water transmission infrastructure and increase KWSB's operational performance for effective sanitation services delivery to the residents of the city.

Project Overview

Dhabeji pumping complex is in Dhabeji Union Council – Mirpur Sakro Tehsil, District Thatta, whereas the Forebay (High point) is located in the jurisdictions of Union Council Ghagar - Bin Qasim Town, District Malir. KWSB owns a 1000 ft wide – Right of Way (RoW) from DPC to Forebay, in which sufficient space is available for replacing the old and laying of new proposed MS line. The proposed project will involve laying and installation of a new 72" diameter MS Rising Main in place of rising main no. 05, starting from the Dhabeji Pump Station up to the Forebay High-point, including installation of full-bore EM flow meters and installation of Air Release Valves. The replacement of air valves is proposed to avoid water loss from the leaking air valves and for the safety of the rising main.

Regulatory and Policy Requirements

The proposed project is in Sindh; therefore, the Sindh Environmental Protection Act (SEPA) is the core applicable environmental law for this project. Following the SEPA's 'Review of IEE/EIA Regulations – 2021' the proposed project falls under the category of projects that requires preparation of an Initial Environmental Examination (IEE). Similarly, based on the WB OPs, the project falls in Category B, therefore this ESMP Study has been carried out.

Besides this ESMP, Labour Management Procedures (LMP) attached as **Annexure 1-1** has also been prepared for the project to promote sound worker management relationships and enhance the

development benefits of a project by treating workers in the project fairly while also providing them with safe and healthy working conditions.

Area of Influence (Aoi)

Since, the proposed project is under the Category B in view of its associated environmental and social impacts, which means that the project impacts are not anticipated to go beyond the project boundaries. The Area of Influence (Aoi) covers the project's direct (Direct Impact Area-DIA) and indirect (Indirect Impact Area-IIA) impact areas. DIA includes the main project construction sites where direct impacts of construction activities are envisaged such as cutting of trees and disturbance to livelihood. IIA includes areas / communities adjacent to the main project construction sites that may experience impacts such as nuisance associated with community safety, dust and noise during construction or operational phases of the Project.

Table ES-01 defines the Area of Influence including Direct and Indirect Impact Areas considered for the impact assessment in terms of environmental, ecological and social aspects.

Table ES-01: Project Area of Influence (Aoi)

| S. No. | Project Components / Sites | Direct Impact Area (DIA) | Indirect Impact Area (IIA) |
|--------|--|--|--|
| 1- | Rising Mains No. 05 spanning over 4.5 km stretch starting from Dhabeji Pumping Complex (DPC) and terminating at Fore-bay High point. | Main construction / trenching area, space for the movement of machinery / dumper trucks and spaces for temporarily stocking the excavated material along excavated trenches. | 200 m (100 m from the center line on both sides) |
| 2- | Construction Site Location | Main site area | 100 m radius |

Baseline Conditions of the Project Area

The total stretch of the rising main no. 05 is about 4.5 km, with 3 km section located under the jurisdiction of Dhabeji Union Council – Mirpur Sakro Tehsil, District Thatta and the rest 1.5 km in Union Council Ghagar - Bin Qasim Town, District Malir. Overall, the project area lies in Subtropical - Arid Climate Zone, with mild winters and hot summers.

Air, Noise and Water Quality

Air, Noise and Water Quality monitoring were carried out in the project area on 25 February 2022. Monitoring point was selected with the objective that it is located in proximity to the project intervention areas as well as to the nearby residential settlements. Monitoring has been carried out at KWSB Colony, Dhabeji with monitoring point located at 24.7813° N, 67.5081° E. Air and Noise sampling was performed for a 24 hour period whereas grab water sample has been collected from the monitoring point for water quality analysis. The resultant values compared with the SEQS and WBG Standards. According to the air quality results, NO and PM2.5 values have been found exceeding the standards. It is anticipated

that higher NO and PM2.5 levels at Dhabeji were due to the excessive emissions made by earthmoving machinery that remained engaged in excavation activities in proximity to the sampling location for at least 10 hours. As the air pollutant levels are already towards the higher side, the project will implement strict air pollution control measures to ensure that it does not aggravate the prevailing baseline conditions.

Noise results have been found meeting the SEQs as well as WHO/WBG limits for day and night time noise standards. The water sample has been collected from tap, with overhead tank of KWSB Colony – Dhabeji as source of water. The results showed presence of bacterial contamination in the water sample, whereas all other parameters were found within the SEQs / WHO limits. It is anticipated that the overhead tank may not be cleaned and disinfected since long, which could be the major cause for the presence of bacterial contaminations in the sampled water.

Flora and Fauna

Generally the vegetation in the project area comprises following major species:

Acacia nilotica (Babur), *Azadirachta indica* (Neem), *Conocarpus lancifolous* (Conocarpus), *Eucalyptus sp.* (Safeeda), *Ficus palmata* (Phagwara), *Ficus religiosa* (Peeple), *Leucaena leucocephala*, (White lead tree), *Mangifera indica* (Mango), *Phoenix dactylifera* (Khajoor), *Pithecellobium dulce* (Jungle Jaleebi) and *Prosopis glandulosa* (Vilayati keekar) along with 20 species of shrubs and 08 species of grasses.

Approximately 35 trees existing in the Direct Impact Area (DIA) will require to be cut for the execution of construction activities. All these tree species are common and none of them is of critical nature. As environmental compensation, the contractor shall be required to plant 10 trees for every cut / uprooted tree. Suitable spaces for compensatory tree plantation will be identified by the PIU KWSSIP / KWSB before execution of construction activities in consultation with Forest Department and District Municipal Corporations (DMCs). A Compensatory Tree Plantation Plan providing details on different aspects of compensatory plantation and to be followed by the Contractor is attached as **Annexure 4-4**.

07 species of mammals and 06 of reptiles have been recorded during the field visits. All recorded species are common in nature. No significant impacts are expected on recorded faunal species as these can be naturally dispersed easily from one habitat to the other during construction activities. 21 bird species have been recorded in the broader project area and none of them is on IUCN Red List. None of the bird species is expected to be disturbed by project's construction activities.

Socioeconomic Baseline

Nearest settlements to the project area include KWSB Colony and Yaqoobabad. Primary data has been collected from these settlements through formal and informal consultation with primary and secondary stakeholders. The predominant land use in the vicinity is cultivation, whereas some farmhouses are also operating in proximity to Dhabeji Pumping Complex and rising mains. Towards Forebay area, most of the surrounding lands are barren with sparse vegetation composed of small trees and shrubs. Throughout the span of the project area, the dominant settled ethnic groups in or near the Aol include Sindh, Urdu-speaking and Pashtuns. The majority population is Muslim with Christians and Hindus as minorities. Availability of health and educational services is limited and of low quality.

Project Potential Environmental and Social Benefits

The implementation of proposed project will lead to following benefits:

- ◆ Financial gains to KWSB because of improved bulk water supply networks with no water leakages.
- ◆ Approximately 58 jobs are expected to be created during the construction phase. Most unskilled positions are likely to be sourced from the nearby residential areas and communities, thereby sharing project benefits with communities.

Environmental and Social Impacts and Risks and Mitigation Measures

The potential impacts of the proposed project are summarized in the Tables below:

Pre-Construction Phase

| S. No. | Potential Issue | Likelihood (Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|---|--|--|--|---|
| 1. | Permits, NOCs, Clearances | Likely | Moderate | Medium | Short Term |
| 2. | Lack of appropriate E&S personnel with Construction Supervision Consultant (CSC), and Contractors | Likely | Moderate | Medium | Short Term |
| 3. | Inappropriate Planning for Traffic Management | Likely | Major | Medium | Short Term |
| 4. | Improper location of worker camp leading to environmental and social issues | Likely | Major | Medium | Short Term |
| 5. | Lack of Community Awareness | Likely | Moderate | Medium | Short Term |
| 6. | Lack of ESMP Implementation Training | Likely | Moderate | Medium | Short Term |
| 7. | Land acquisition and resettlement impacts | Unlikely | Moderate | Low | Long Term |

Construction Phase

| S. No. | Potential Issue | Likelihood (Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|---|--|--|--|---|
| 1. | Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans. | Likely | Major | Significant | Short Term |

| S. No. | Potential Issue | Likelihood (Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|---|--|--|---------------------------------------|---|
| 2. | Occupational Health & Safety and Emergency Preparedness & Response | Likely | Major | Significant | Short term |
| 3. | Communicable Diseases - COVID- 19 and Camp Management | Likely | Major | Medium | Short term |
| 4. | Employment of Child Labor | Unlikely | Major | Moderate | Long Term |
| 5. | Employment Generation | Overall Positive | | | |
| 6. | Dust Emissions | Likely | Moderate | Medium | Short term |
| 7. | High Noise Levels from Construction Activities | Likely | Moderate | Medium | Short term |
| 8. | Solid Waste Management - Generation of Excavated Material, Kitchen Waste, Hazardous Waste | Likely | Major | Significant | Short term |
| 9. | Untreated Disposal of Effluent from Worker Camp | Likely | Moderate | Medium | Short term |
| 10. | Soil Contamination | Likely | Moderate | Medium | Short term |
| 11. | Improper Site Restoration | Likely | Major | Medium | Short term |
| 12. | Community Health & Safety | Likely | Major | Significant | Short term |
| 13. | Labor Influx / SEA – SH – GBV Incidents | Likely | Moderate | Medium | Short term |
| 14. | Construction Traffic Management and Safety | Likely | Moderate | Medium | Short term |
| 15. | Vegetation Loss and Disturbance to Fauna | Likely | Moderate | Medium | Short term |
| 16. | Cultural Heritage Sites | Unlikely | Moderate | Low | No residual Impact |
| 17. | Stakeholders Concerns and Engagement | Unlikely | Moderate | Low | No residual Impact |

Operational Phase

Operational phase impacts may include OHS Risks Associated with Maintenance & Repair of the rising main.

The potential impacts and their mitigation measures are briefly discussed below.

- ◆ Lack of Environmental and Social (E&S) personnel's environmental safeguard capacity or selection of environment non-responsive contractors may result in failure of Environmental and Social Management Plan (ESMP) implementation and may be a source of number of non-compliances. Appropriate E&S personnel are essential to implement, supervise, and monitor the ESMP,

Occupational Health and Safety (OHS) Plan, Community Health and Safety (CHS) Plan and other plans specified in this document. Before initiation of construction activities, the PIU will recruit qualified CSC and Contractors who are able to implement the Project's Environmental, Social, Health and Safety requirements as per the desired standards and Contractors with poor environmental, health, and safety management will not be hired. Contractor will also recruit qualified and experienced Environment, Health, Safety and Social Staff in line with the ESMP requirements to manage E&S aspects of the project.

- ◆ OHS and CHS risks may arise due to construction works for workers as well as communities. Mitigation measures include implementation of OHS Plans and CHS Plan during construction, implementing workers code of conduct, providing proper training, and having adequate supply of Personal Protective Equipment (PPE). The Health & Safety Framework (**Attached as Annexure 5-1**) by the World Bank will be followed by the PIU-KWSSIP and the Contractors, and reflected in OHS plan.
- ◆ During construction phase the major waste streams will include Excavated Material from construction sites, Domestic Waste from construction camp, Hazardous Waste including used oil filters, used oils from workshop and small quantities of Medical Waste resulting from first aid treatments. Medical waste if any will be handed over to SEPA certified handlers for disposal. A waste management plan will be developed by the Contractor prior to the start of construction for ensuring effective management of waste. At maximum, the excavated material will be reused for backfilling.
- ◆ Dust and Noise may generate at higher than baseline levels during construction. Mitigation measures include; Control of dust and noise at source through standard abatement measures.
- ◆ Due to influx of labor and their accommodations in the construction camp, the issues such as Gender Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) may arise. However, these risk levels are assessed as low due to communities being located away from the proposed construction camp location. Moreover, the Contractor will implement worker's Code of Conduct (CoC) as its contractual binding to ensure further protection of communities.

Environmental and Social Management Plan (ESMP)

- ◆ An ESMP has been prepared as part of the present report in order to define the implementation mechanism for the mitigation measures and preventive actions. The ESMP includes descriptions and requirements for Contractor's Qualification, Inclusion of Environmental, Social, Health and Safety (ESHS) Conditions in the Bidding Documents, Criteria for the Selection of Sub-Contractors, Various Mitigation and Control Measures, and Environmental and Social Code of Practices for Construction. Contractor will prepare SSESMP, OHS Plan, CHS Plan, Code of Conduct (CoC) and all other plans as specified in the ESMP, prior to commencement of work. ESMP recommends inclusion of relevant components in Contract Documents, such as, requirements of Job Hazard Analysis, Environment, Health and Safety (EHS) aspects in Method Statement, Requests for Inspection, Field Engineer's EHS Oversight, Payment Milestones linked to EHS, Contractor's EHS staffs' education, experience and training and various management, monitoring, and mitigation plans. The monitoring activities for important parameters are also included in the ESMP to ensure that it is implemented in a timely manner, in accordance with the procedures described, and in compliance with the national as well as World Bank standards.

- ◆ The key entities involved during construction phase of the proposed project are the PIU as employer / proponent, SEPA, the Construction Supervision Consultant (CSC) and the Contractor(s).
- ◆ As per Sindh Environmental Protection Act, 2014, SEPA is responsible for environmental protection and pollution control. SEPA will undertake audits (as and when required) of the proposed project activities with respect to the protocols as defined in ESMP and environmental approval. SEPA shall be responsible for granting Approval (NOC) for the IEE / ESMP before initiation of construction activities. SEPA shall also be responsible for providing a separate operational phase approval in the light of Section 14 (2) of SEPA (Environmental Assessment) Regulations, 2021, after the fulfilment of requirements mentioned therein by the KWSSIP.
- ◆ The Project Director (PD) of PIU is the executive head of the entire KWSSIP project. The PD is responsible for necessary policy, administrative and financial decisions and actions for effective and timely implementation of the project as per the approved framework and implementation schedules. The PD will be responsible for overall implementation of the project including environmental and social management aspects and hiring of contractors and consultants. PD-PIU shall be responsible for approving the overall project's as well as the ESMP budget and finances. These finances will be allocated by the Government of Sindh with assistance from the WB / AIIB.
- ◆ An Environment and Social Cell (ESC), comprised of one environmental specialist, one social development specialist and one gender specialist has already been established in PIU. ESC will be responsible for overall implementation of ESMP and other related tasks. They will be responsible for ensuring the ESMPs are included in the contract documents as well as supervision of ESMPs implementation. The ESC under PIU will take care of environmental and social aspects of the project activities. ESC will arrange environmental and social monitoring and prepare compliance reports and submit to PD-PIU for further submitting to the WB, AIIB and SEPA, to fulfil their monitoring, reporting and compliance requirements of environmental and social aspects of the project. The ESC will be responsible to ensure compliance of ESMP during construction phase. The compliance will require measurements of environmental and social parameters and observations at the construction sites to evaluate compliance. Construction Supervision Consultants (CSC) will support the PIU and provide overall supervision on implementation of ESMP. PIU with the assistance of CSC will review and approve various site-specific plans to be prepared by the contractor and will ensure implementation of these plans by the Contractor under CSC supervision. The Contractor will be responsible for implementation of measures to avoid or minimize adverse environmental and social impacts during construction. Contractor will be required to prepare the Site Specific Environmental Social Management Plan (SSESMP), i.e., contractor's ESMP, OHS / CHS Plans and all other plans as required under the ESMP and implement those plans in a manner in which they will comply with the requirements of ESMP.
- ◆ The total indicative cost of ESMP implementation is estimated to be about **PKR 47.9 Million**.

Training

- ◆ The E&S training will be implemented during the project life cycle to ensure all staff receive the required training in both general and job-specific issues. Training will be provided to all new recruits and continual refresher courses will be organized for the existing staff. The implementation of the E&S training would help ensure that all site personnel fully understand requirements of the ESMP. Moreover, the training programs would also ensure that all site personnel are well aware of their work responsibilities for instance, the environmental and social requirements of the Project and how

they will be implemented and monitored on site. The trainings would enable the staff to be well aware about the roles of PIU, the CSC and the Contractors. Each organization will be responsible to provide training to their own staff before the start and during the execution of the Project. Training will cover all staff levels, including management, supervisory personnel as well as both skilled and unskilled workforces. Adequate budget has been kept for capacity development trainings in the ESMP Cost.

Grievance Redress Mechanism (GRM)

- ◆ The Grievance Redress Mechanism (GRM) has been proposed to address any complaints or grievances arising during the implementation of the project. Efforts will be made to avoid grievances through strong consultations at grass root level. Nevertheless, it may be expected that some complaints cannot be resolved through consultation and participation, therefore, an accessible and effective GRM is needed. The proposed project will establish the GRM from the beginning, i.e., as soon as activities for project design start and will remain functional till its closure. For effective coordination in the field, stakeholders will be involved at each sub-project level to build / maintain a close rapport with affected persons and local community throughout project implementation. The GRM will remain intact throughout the project implementation to address the community concerns and grievances arising during execution of project works.
- ◆ The formal GRM will be set up with a three-tiered structure; the first at the community level enabling immediate local responses to grievances, second at sub-project and third at PIU level for reviewing and addressing grievances. A separate GRC will be established to deal with the GBV-related complaints and grievances. Female participation will be ensured in all GRCs.
- ◆ The complaints received will be properly recorded and documented by a designated staff in the Complaint Register. The information recorded in the register will include the date of the complaint, particulars of the complainant, description of the grievance, actions/steps taken/to be taken to resolve the complaint, the person responsible to take the action, follow up requirements and the target date for the implementation of the mitigation measure. The register will also record the actual measures taken to mitigate these concerns. The aggrieved stakeholders will be kept informed about the actions on their complaints.
- ◆ A separate GRM will be established for the project workers also, addressing their grievances regarding wages, payments, living and working conditions, terms of employment and other similar issues.

Stakeholder Engagement and Information Disclosure

The stakeholder engagement and consultations have been carried out for the proposed project by following the methodological steps, guidelines and procedures for environmental and social screening defined in the Environmental Management Framework (EMF) and Social Management Framework (SMF).

Consultations mainly in form of "Focus Group Discussions" (FGD) have been carried out with the communities located nearest to the project's Aol that include KWSB Colony – Dhabeji and Yaqoobabad. 20 male and 23 female community members have been consulted. Discussions with the communities have been made in an open and transparent manner in order to solicit their comments and suggestions in the studies. The community perception about the project was found reasonably good. Majority of

respondents favoured the proposed project based on the expectations that the project will provide work opportunities for the local communities. Besides male members, consultations with female members of the communities were also carried out in the project area. Women's main concerns were generally related to the existing hardships they are facing.

Institutional stakeholders such as Government Departments, public and private institutions have also been consulted. The representatives of the different line departments supported the project development and ensured their complete support for timely and successful completion of the project.

The Environmental and Social Management Plan (ESMP) study reveals that overall the impacts of Dhabeji Rising Main No. 05 Rehabilitation Project shall be positive. The project shall improve city's overall water supply scenario. Contrary to the present situation, loss of water through leakage points will be restricted and leakage reduction will reduce the KWSB's energy footprint, resultantly improving its financial health.

1 Introduction

The First Karachi Water and Sewerage Services Improvement Project (KWSSIP-1), funded by World Bank (WB) and Asian Infrastructure Investment Bank (AIIB), is an initiative of Government of Sindh (GoS) through Karachi Water and Sewerage Board (KWSB) to improve water and sewerage services in Karachi.

Recent severe monsoon rains in different parts of Karachi city caused extensive devastation to the city's infrastructure especially its water supply and sewerage system that are damaged and exposed at different strategic locations. This may lead to disruption of water and sewerage services of the city. Some major works have been identified by KWSB to control the posed damage to the water supply and sewerage system of the city. These works have been included as Emergency works under SOP 1, Component 2 of KWSSIP.

Dhabeji Rising Mains No. 05 Rehabilitation Project is part of Component 2 of SOP-1 that involves replacement of existing Rising Mains No. 05 with new 72" diameter MS Rising Mains, starting from Dhabeji Pumping Complex to Dhabeji Forebay (High point).

This Environmental and Social Management Plan (ESMP) has been prepared for the above mentioned sub-project of KWSSIP-1 in line with World Bank guidelines under the umbrella of Environmental Management Framework (EMF) and Social Management Framework (SMF) for KWSSIP. The current study covers various impacts of design, construction and operation of Dhabeji Rising Main Project. It is to be noted that this ESMP remains a live document, subject to modifications as the project design and technical specifications are finalized or modified prior to the implementation stage.

1.1 Project Background

From Dhabeji Pumping Station Complex (DPC), around 500 MGD water is pumped to Fore-bay High Point through six pumping stations and ten (10) rising mains. Rising Main No. 05 which is made up of Mild Steel (MS) pipes have leaking joints and events of bursting are common. The bursting of rising mains do not only cause disruption of water supply to the city but also causes huge financial loss on account of emergency repair of the burst lines. Replacement of Rising Main No. 05 is proposed with MS pipes of the same size i.e. 72 inch diameter.

1.2 Karachi Water and Sewerage Services Improvement Project (KWSSIP)

In order to address the water supply and sewerage issues in Karachi, KWSSIP has been initiated as a phased program and agreed on a financing approach through SOPs with four overlapping phases. Following SOPs have been conceived under KWSSIP:

- ◆ SOP-1 (KWSSIP-1): Focuses on reforms, maintenance and rehabilitation
- ◆ SOP-2 (KWSSIP-2): To scale-up work done under the SOP-1
- ◆ SOP-3: Will focus on increasing water production and to ensure the additional wastewater created can be treated
- ◆ SOP-4: Will focus on improving services in informal settlements based on experience gained under the previous projects

1.3 First Series of Project (SOP-1) or KWSSIP-1

The SOP-1 (or KWSSIP-1) involves scaling-up infrastructure rehabilitation and expansion, complemented by capacity building to raise operational performance and improvements to the enabling environment. KWSSIP-1 has the following components:

- ◆ Component 1 is related to the capacity building and reform measures to improve the utility performance, including more reliable and energy efficient services.
- ◆ Component 2 undertakes selected infrastructure, aimed at improving the water and sewerage services in Karachi, while also increasing the city's resilience to water shortages, floods, and saltwater intrusion.
- ◆ Component 3 deals with project management and associated studies.

1.4 Project Design

Selection, design and implementation of infrastructure subprojects identified under Component-2 is based on a set of screening criteria as part of a "Project Risk Reducing Procedure" (PRRP) and ensure compliance with the World Bank (WB) Operational Policies' (OP) requirements.

The project has been included in the Series of Projects (SOP – I) as a part of Emergency Works of KWSSIP. The Joint Venture of ILF Consulting Engineers - Austria and Techno Consult International (Pvt.) Limited have been engaged by the Project Implementation Unit (PIU) – KWSSIP for carrying out feasibility studies and detailed design, whereas the consultancy services for carrying out its Environmental and Social Assessment (ESA) Studies have been assigned to MM Pakistan Pvt. Limited (MMP). Based on the detailed design, project interventions include replacement of 4.5 km long rising mains # 5 with 72" MS pipelines starting from Dhabeji Pumping Complex (DPC) to Fore-bay High point and installation of flow meters and air release valves.

Further description of the project is provided later in the document.

1.5 Requirement to Conduct IEE / ESMP Study

The proposed project is located in Sindh, therefore, the Sindh Environmental Protection Act - 2014 is the core environmental law for the proposed project. Under Section 17 of the Act, it is mandatory for the proponents of the projects to execute the Initial Environmental Examination (IEE) and/ or Environmental Impact Assessment (EIA), where warranted, and get the approval from SEPA prior to commencement of any project works. Hence, for the proposed Dhabeji Rising Mains Rehabilitation Project, SEPA is the concerned authority with respect to environmental approvals.

The Review of IEE/EIA Regulations, 2021 of SEPA provides the necessary details on the preparation, submission, and review of the Environmental Checklist (EC), IEE and the EIA reports. The categorization of the proposed Dhabeji Rising Mains Rehabilitation Project falls under the following category defined by the SEPA:

Schedule II – Projects Requiring an IEE

Category H – Water Supply and Filtration Plants

The IEE prepared for proposed Projects will also be submitted to SEPA by KWSSIP to initiate the process of NOC.

Considering the scope of project's construction activities, prevailing conditions of project area and the Environmental & Social Screening, the proposed project has been classified as Category 'B' based on the WB Operational Policies (OPs), for which preparation of an ESMP is required. Therefore, an ESMP study (equivalent to an IEE for fulfilling SEPA requirements) has been conducted for the proposed Dhabeji Rising Mains Rehabilitation Project. The project may cause site specific and low intensity impacts, whereas the implementation of mitigation measures will further reduce the magnitude of these impacts.

Besides this ESMP, Labour Management Procedures (LMP) attached as **Annexure 1-1** has also been prepared for the project to promote sound worker management relationships and enhance the development benefits of a project by treating workers in the project fairly while also providing them with safe and healthy working conditions.

1.6 Objective of ESMP

The ESMP has been developed in compliance with the mitigation hierarchy as per the World Bank's Operational Policies. Impacts and risks associated with the project's pre-construction, construction, and operational phases have been assessed and the mitigation and control strategies have been devised accordingly to address the potential environmental and social risks associated with the project.

Other associated objectives of the study are to:

- ◆ Facilitate PIU of KWSSIP in ensuring environmental and social sustainability of the project;
- ◆ Establish a baseline of existing social and environmental conditions prior to project initiation by collecting secondary and primary data/information on physical, biological and socio-economic environment of the project area;
- ◆ Identify potentially significant environmental and social impacts (both positive and negative) during all stages of the project;
- ◆ Avoid, minimize, and suggest mitigation and compensation measures for significant adverse impacts;
- ◆ Conduct, record and report public consultation and participation with major stakeholders; and
- ◆ Provide Environmental and Social Management Plan (ESMP) for all stages of the project as a tool for the implementation of the suggested measures, along with monitoring and evaluation mechanism with adequate resources including capacity building of implementing agencies.

1.7 Scope of ESMP

The ESMP identifies the potential impacts of the proposed project and suggest the applicable mitigation measures to avoid, minimize or reduce the magnitude of the impacts. It also indicates the institutional and training requirements to implement mitigation measures during the construction and operation of proposed project. The current ESMP presents a preliminary roadmap for environment and social management for construction and operation of the proposed project.

1.8 Study Area - Area of Influence (Aoi)

As discussed earlier, the proposed project is under the Category B in view of its associated environmental and social impacts, which means that the project impacts are not envisaged to go beyond the project boundaries. The area of influence (Aoi) covers the areas likely to be directly or indirectly impacted by the Project, i.e. Direct Impact Area (DIA) and Indirect Impact Area (IIA). DIA includes the core project construction sites where direct impacts of construction activities are envisaged such as cutting of trees. IIA includes areas / communities adjacent to the core project construction sites that may experience impacts (e.g. nuisance associated with traffic congestion, community safety, dust or noise etc.) during construction or operation phases of the Project.

Table 1-1 defines the Areas of Influence (Aoi) covering both Direct Impact Area (DIA) and Indirect Impact Area (IIA) which have been considered for the assessment of impacts. The extent of the IIA has been determined by the reach of impacts such as noise and air pollution etc. Figure 1-1 **Figure 1-1** describes the Aoi in the form of a map.

Table 1-1: Project Area of Influence

| S. No. | Project Components / Sites | Direct Impact Area (DIA) | Indirect Impact Area (IIA) |
|--------|--|--|--|
| 1- | Rising Mains No. 05 spanning over 4.5 km stretch starting from Dhabeji Pumping Complex (DPC) and terminating at Fore-bay High point. | Main construction / trenching area, space for the movement of machinery / dumper trucks and spaces for temporarily stocking the excavated material along excavated trenches. | 200 m (100 m from the center line on both sides) |
| 2- | Construction Site Location | Main site area | 100 m radius |



Figure 1-1: Area of Influence - Dhabeji Rising Main No. 05 Rehabilitation Project

1.9 ESMP Study Approach and Methodology

The following approach and methodology was employed for the preparation of the ESMP:

1.9.1 Study Approach

The study has been conducted in accordance World Bank operational policies (OP 4.01, OP 4.11, OP 4.12, OP 4.20 & BP 17.50), and Sindh Environmental Protection Agency (SEPA) guidelines. The study is based on both primary and secondary data and information. The primary data includes data collected from field i.e. information about existing conditions; environmental sampling and analyses for air, water and noise; environmental sensitive receptors, ecological survey; social survey including demographic characteristics, income dependency & quality of life, occupation, and social amenities etc. The secondary data includes a review of relevant information from literature and previous reports. Discussions were held with stakeholders including government officials and community representatives. The main purpose of this approach was to obtain an impartial impression of the people's perceptions about the project and its environmental and social impacts.

1.9.2 Review of Project's Design Documents and Desk Research for Secondary Data Analysis

This involved collecting information from the PIU KWSSIP and Technical Consultants regarding the proposed project activities. The design documents and feasibility reports have been reviewed to understand the extent of construction works and their potential outcomes on the existing environment and social conditions. Moreover, literature review has been conducted on the available environmental and social baseline information of the project area. The applicable provincial policies, guidelines, legislations and World Bank guidelines were also studied. Secondary data sources have been used to study the aspects including; climate, rainfall, temperatures, geology, soils; flora and fauna profiles, critical habitats / vegetation, any sites / structures / natural features having archaeological / historical / architectural / religious or cultural significance; and Socio-economic environment including livelihood conditions in the project area.

1.9.3 Reconnaissance Surveys, Delineation of the Area of Influence (Aoi) and Environmental & Social Screening

Reconnaissance surveys were carried out to assess the existing environmental and social conditions in the project area that may potentially be affected by the proposed project. Aoi has been decided by the consultant's team based upon the assessment on possible reach of impacts and consultants past similar field experience. Screening has been performed to determine the significance of impacts, the type of assessment to be carried out and the appropriate ESA instrument required to be prepared for the project.

1.9.4 Review of Legislation and Guidelines

National legislation, international agreements, environmental guidelines both of SEPA and WB, and best industry practices have been reviewed to set environmental standards that PIU KWSSIP as the executing agency will adhere to during implementation of the project.

1.9.5 Primary Data Collection (Baseline Surveys)

Comprehensive field data gathering exercises were carried out for environmental and social baseline data collection in the AoI (defined in Table 1-1). In this regard, the consultants team performed detailed field surveys between December 2021 and April 2022.

The environment survey focused on collecting site-specific baseline information of the project area related to water quality, air quality, noise, traffic situation, land-use, sensitive receptors that could get affected by dust or noise and presence of any historical / cultural / archaeological sites etc.

The ecology survey focused on collecting baseline information on floral and faunal species. Inventory for the trees growing within the main construction areas and shall require to be cut has been prepared . Other vegetation growing in the AoI that shall not be affected by the construction activities has also been recorded. The un-identified plants were photographed and identified later on using "PLANTNET" software. The data on the fauna was gathered through random sampling and observations along the alignments, visual encounters, incidental observations and indirect methods such as recording pug marks in the AoI.

Socio-economic baseline information has been obtained mainly through focus group discussions with male and female groups of the communities in the AoI. Social surveys were focused on the specific aspects of socio-economic profile of the project area related to households, education, health situation, diseases, income, gender related problems, businesses, presence of social organizations and political patterns etc.

1.9.6 Stakeholder Consultations

Stakeholder consultations were carried out with all key stakeholders, particularly local communities residing in the project's AoI, local businesses and government / local government bodies in line with the WB OPs. Scoping sessions were undertaken with the local communities / residents, representatives from Education Department, NGOs active in the area, Wildlife Department, Public Health Engineering Department and KWSB Dhabeji Pumping Complex. The stakeholder consultation process involved information disclosure regarding the project development with stakeholders to brief them about project and to seek their response/recommendation. A stakeholder engagement workshop has also been organized to disseminate the project information and getting feedbacks from the key institutional stakeholders.

1.9.7 Impacts Identification and Assessment

Potential impacts arising from each phase of the proposed project have been identified and assessed on the basis of field data, secondary data, expert opinions and examining previous similar projects in Pakistan. These include effects on physical, biological and socio-economic environment.

1.9.8 Recommendations for Mitigation Measures

Mitigation measures to minimize, eliminate or compensate the potential environmental and social impacts have been recommended. The mitigation measures have been recommended on the basis of past experiences, best industry practices, legislative requirements and professional judgment.

1.9.9 Preparation of Environmental and Social Management Plan (ESMP)

An Environmental and Social Management Plan (ESMP) has been prepared for effective implementation of the recommended mitigation measures. The ESMP includes controls to minimize the identified impacts and a monitoring program to monitor effects of mitigation measures implemented and residual impacts, if any, during implementation. The ESMP has identified roles and responsibilities of all concerned parties during the implementation of the project.

Methodology for the ESMP comprises a series of integrated tasks including fieldwork (e.g., surveys, consultations etc.) and desk reviews as deemed necessary to meet the needs of the ESMP.

1.10 Document Structure

Chapter 2: Policy, Legal and Institutional Framework - The legal provisions related to environmental protection relevant to the planning stage and operational activities of the Project are identified and discussed under the scope of the ESMP study. World Bank's Environmental, Health, and Safety Guidelines (EHSG) are introduced along with the comparison of WBG and National Guidelines.

Chapter 3: Project Description - The details of the technical features of the Project have been presented in this chapter based on the Feasibility Report of the technical consultant. The details include the project overview, locations and description of the sites, resources required and waste to be generated, implementation schedule of the project etc.

Chapter 4: Environmental & Social Baseline Conditions – Baseline environmental conditions covering the climatic conditions, physical environment including land, air, water, noise, waste, and traffic conditions in the Aol. From ecological point of view, biodiversity of the project area covering description of flora and fauna, trees inventory etc. are discussed in this chapter. From social perspective, the chapter assesses the Aol against a number of social economic indicators, such as economic status, health care, education, infrastructure, gender aspects etc.

Chapter 5: Assessment of Potential E&S Impacts & Risks and Mitigation Measures - This chapter assessed potential risks and impacts of the project on physical, biological and socioeconomic environment using the WB mitigation hierarchy. The chapter also lists out various measures that will be adopted to mitigate the identified impacts.

Chapter 6: Analysis of Alternatives- The alternatives considered during project design phase have been discussed in this chapter. It also includes a comparison between the project and without project alternatives.

Chapter 7: Environmental and Social Management Plan- This chapter presents the environmental and social management plan (ESMP) of the project that directs effective and responsible implementation and management of environmental and social impacts mitigation and enhancement measures during the pre-construction, construction and operational phases of the project. The basic objective of the ESMP is to manage adverse impacts and risks of proposed project interventions in a way that minimizes the impact and risk on the environment, workers, and communities. The chapter also presents the implementation mechanism of the ESMP. An Environmental Monitoring Plan is also an integral part of the ESMP providing the methodology, frequency and duration of various monitoring activities. This chapter also includes the present institutional arrangements at the PIU, required institutional

strengthening, description of arrangements of PIU and with Consultants (CSC, M&E) and Contractor as well as the levels of qualifications and experience required by the consultants and contractor teams to work on the project.

Chapter 8: Grievance Redressal Mechanism - Provides description of the Grievance Redress Mechanism that will be adopted at the Project for addressing grievances of the workers, communities and stakeholders.

Chapter 9: Information Disclosure and Stakeholders Consultations - This chapter describes the process of information disclosure and outcome of the consultations carried out involving various types of stakeholders for determining the environmental and social impacts and risks associated with project implementation, along with the feedbacks/concerns/views on the Project.

Chapter 10: Conclusion - Provides conclusion of the ESMP Study.

2 Legal and Institutional Framework

2.1 General

This Chapter summarizes the national, provincial, the World Bank and international environmental and social legislations, regulations, standards, and treaties relevant to this ESA Study. The footprint of the Project is located in the administrative boundaries of Sindh, therefore the rules, regulations and standards applicable in Sindh are applicable to this project. World Bank's Operational Policies (OPs) relevant to this project are duly described in this section. World Bank's EHS Guidelines (EHSGs) will also be followed to make the project implementation in compliance with these guidelines.

2.2 Applicable National and Provincial Policies

Pakistan has in place a comprehensive constitutional, policy framework for the protection of the environment and people. This section is structured around the constitutional foundation and legislative hierarchy. An overview of relevant national policies is presented here. The full list of relevant policies is provided in **Table 2-1**.

Table 2-1: Applicable National and Provincial Policies and Guidelines

| National Policies (Year of implementation) | Relevance / Applicability |
|--|--|
| National Conservation Strategy (NCS), 1992 | The NCS outlines the country's primary approach towards encouraging sustainable development, conserving natural resources, and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment. The core area relevant in the context of the proposed project development is the conservation of water. |
| National Climate Change Policy, 2012 | The policy commits for responding appropriately for mitigation and adaptation to climate change through tools of environmental assessment, environmental management and environmental enhancement. The present ESMP has been prepared in consistence with this policy. |
| 1 st Sindh Labour Policy, 2018 | This policy aims at decent working conditions following the international Labor standards and asks for improvement in health and safety of workers and timely payment of wages. This policy requires the stakeholders in developing strategies, plans and programs for the protection and promotion of the rights and benefits of working community without jeopardizing the genuine concerns of the employers, through any project /activity in the Sindh province and as such adherence will be required |

| National Policies (Year of implementation) | Relevance / Applicability |
|--|---|
| Sindh Drinking Water Policy, 2017 | The policy is aimed to provide safely managed drinking water whose supply is adequate, well maintained and sustainable. The proposed project will also be a contribution towards fulfilment of this policy. |
| National Water Policy, 2002 | Objectives of this policy include, efficient management and conservation of existing water resources, optimal development of potential water resources and improved flood control and protective measures. The policy requires municipal entities to treat effluents and hazardous discharge before disposal into water bodies. This project has considered the goals of this policy in terms of water conservation and restricting its loss. |
| Guidelines for Public Consultation, 1997 | Public involvement can lead to a better and more acceptable decision for project implementation; hence, the project has considered these guidelines for completing this ESMP. |

2.3 Relevant Applicable Sections of Provincial Environmental Law

Table 2-2 enlists the key sections of the Sindh Environment Protection Act that have a direct bearing on the project area:

Table 2-2: Key Sections of Sindh Environment Protection Act for Project

| Environmental Legislation | SEPA 2014 | Relevance with Project |
|---|-------------------|--|
| <p>Prohibition of Certain Discharges or Emissions: No person shall discharge or emit, or allow the discharge or emission of, any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess to that specified in Sindh Environmental Quality Standards.</p> | Section 11 of Act | <p>Applicable</p> <p>The project is required to show the compliance of provincial standards related with pollutants emission during construction stage.</p> |
| <p>Handling of Hazardous Substances: No person shall import, generate, collect, consign, transport, treat, dispose of, store, handle or otherwise use or deal with any hazardous substance except (a) under a license issued by the EPA or (b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement, or other Instrument to which Government is a party.”</p> | Section 13 of Act | <p>Applicable</p> <p>The project is required to show the compliance of provincial and international standards related with Handling of Hazardous Substances during construction stage.</p> |
| <p>Regulation of motor vehicles: No person shall operate or manufacture a motor vehicle or class of vehicles from which air</p> | Section 15 of Act | Applicable |

| Environmental Legislation | SEPA 2014 | Relevance with Project |
|---|--------------------------|--|
| <p>pollutants or noise are being emitted in an amount, concentration or level which is in excess of the Sindh Environmental Quality Standards or, where applicable, the standards established under sub-clause (i) of subsection (g) of sub-section (1) of section 6.</p> | | <p>The project is required to show the compliance of provincial standards related with Motor Vehicles.</p> |
| <p>IEE and EIA: No proponent of a project shall commence construction or operation unless he has filed with the EPA an Initial Environmental Examination (IEE) or an Environmental Impact Assessment (EIA), and has obtained from the Agency approval in respect thereof.</p> | <p>Section 17 of Act</p> | <p>Applicable The project is required to obtain environmental approval before commencement of work from Sindh EPA under these sections of the acts.</p> |
| <p>Environmental Monitoring: For purposes of sub-section (1), the Agency may require the person in charge of a project to furnish such information as it may specify pertaining to the environmental impact of the project, including quantitative and qualitative analysis of - (a) discharge of effluents, wastes, emissions of air pollutants, noise and any other matter or action that may be found offensive under section 14 from the project on daily, weekly, monthly or annual basis; (b) ambient quality of the air, water, noise and soil before, during and after construction and during operation of the project. (3) On review of the data collected by it and information provided, the Agency may issue such directions to the person in charge as it may consider necessary to ensure compliance with the conditions of the approval.</p> | <p>Section 19 of Act</p> | <p>Applicable The project proponent (KWSSIP / KWSB) shall submit various environmental monitoring reports as per SEPA directives.</p> |
| <p>Penalties: Whoever contravenes or fails to comply with the provisions of sections 11, 17, 18 and 21 or any order issued there under shall be punishable with a fine which may extend to five million rupees, to the damage caused to environment and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues: Penalties. Provided that if the contravention of the provisions of section 11 also constitutes a</p> | <p>Section 22 of Act</p> | <p>Applicable The project proponent (KWSSIP / KWSB) shall ensure compliance of all regulatory requirements in relation to the project.</p> |

| Environmental Legislation | SEPA 2014 | Relevance with Project |
|--|-----------|------------------------|
| contravention of the provisions of section 15, such contravention shall be punishable under sub-section (2). | | |

2.4 Review of the National and Provincial Environmental Requirements

The applicable Environmental and Social (E&S) legislations and regulations are briefly described in **Table 2-3**.

Table 2-3: Applicable National and Provincial Acts

| National / Provincial Acts (Year of implementation) | Relevance / Applicability |
|--|---|
| Sindh Environmental Protection Agency (Environmental Assessment) Regulations, 2021 | Sindh EPA has notified Environmental Assessment Regulations, 2021, which are applicable to the proposed intervention for Review of IEE / EIA and General Environment Approval, as project falls under Schedule II – Projects Requiring an IEE, (H) – Water Supply and Filtration Plants. |
| Sindh Environmental Quality Standards 2016 | Standards set out in SEQs and relevant to the Project include: <ul style="list-style-type: none"> ◆ Municipal and liquid industrial effluents (32 parameters) ◆ Industrial gaseous emissions (16 parameters) ◆ Motor vehicle exhaust and noise (used and new vehicles) ◆ Ambient air quality (9 parameters) ◆ Drinking water quality (32 parameters) ◆ Noise (four zones during day and night). These standards shall be applicable for the construction phase of the project. |
| Forest Act (1927) and the Forest Act (Sindh amendment) Act, 2012 | The Forest Act of 1927 and its Sindh Amendment 2012 establishes the right of GoP and GoS to designate areas of reserved forest, village forest and protected forest. The act also restrict cutting of any trees that are the property of forest department. It has been confirmed through the site surveys that no protected forests are present within the Project Aol, however the act shall be applicable as the project shall require cutting of trees in DIA and the Contractor shall be required to take prior permissions and approvals from the forest department for cutting of trees. |
| Antiquity Act (1975) and the Sindh Cultural Heritage (Preservation) Act, 1994 | The act is applicable to the project and the Office of the Director General – Antiquities & Archaeology – GoS shall be informed in case of any resource found. As for now, there are no known antiquities in the project area, however in case of chance find this act may relevant. |
| Sindh Wildlife Protection, Preservation, Conservation and Management Act, 2020 | This Act requires measures for direct protection to the wildlife resources in Sindh province and indirect protection to other natural resources and allows the project to work on the principles of no |

| National / Provincial Acts (Year of implementation) | Relevance / Applicability |
|--|---|
| | harm. This act is relevant to the project as the faunal species detailed under Section 4.2.4 could be encountered during construction activities, hence implementation of this law shall be mandatory during the construction phase of the project. |
| Pakistan Labor laws | Labor rights in Pakistan specified under Article 11 and 17 of the constitution of Pakistan, shall be applicable to the proposed project. More specific laws are described separately. The laws are relevant to the project. |
| Factories Act, 1934 and The Sindh Factories (Second Amendment) Act, 2021 | This is an act related to Labor rights, safety, basic welfare facilities including living, food, occupational health including infectious diseases ; it also covers work-related hazards , shelters facilities during rest time, restriction of working hours and holidays rules etc. The Sindh amended law is for the rights of Labor works in the province of Sindh and applicable to the proposed works. |
| The Sindh Occupational Safety and Health Act, 2017 | This is a consolidated law for the OHS of the persons at workplace and to protect them against risks arising out of the occupational hazards; to promote safe and healthy working environment catering to the physiological and psychological needs of the employees at workplace and is relevant to the project. |
| The Sindh Bonded Labor System (Abolition) Act, 2015 | The Bonded Labor System (Abolition) Act defines the `Bonded Labor System' as a system of forced, or partly forced, Labor under which a debtor enters, or is presumed to have entered into an agreement with the creditor. Adherence to the act is mandatory. |
| Sindh Minimum Wages Act, 2015 (Sindh Act No. VIII of 2016) | The Act provides for the regulation of minimum rates of wages and various allowances for different categories of workers employed in industrial and commercial undertakings and establishments in Sindh province. Adherence to the act is mandatory. |
| Sindh Workers Compensation Act, 2015 | This act is expedient to provide for the payment by certain classes of employers to their workers or their legal heirs of compensation for injury or death by accident. Adherence to the act is mandatory. |
| Fatal Accidents Act 1855 | This is an Act to provide compensation to families for loss occasioned by the death of a person caused by actionable wrong. For community related accidents, this law shall be applicable. |
| The Sindh Prohibition of Employment of Children Act, 2017 | The Act prohibit and regulate employment of children less than 14 years and is applicable to the project and the Contractors and sub-contractors will have to comply with this Act. |
| The Protection Against Harassment of Women at the Workplace Act, 2010 | The Protection Against Harassment of Women at the Workplace Act, 2010 seeks to protect women from sexual harassment at their place of work, and equally applicable to this project. |

| National / Provincial Acts (Year of implementation) | Relevance / Applicability |
|--|--|
| The Sindh Local Government (Amendment) Act, 2021 | <p>The LGA empowers the provincial governments to enforce laws for:</p> <ul style="list-style-type: none"> ◆ Land use ◆ Conservation of natural vegetation ◆ Air, water, and land pollution ◆ Disposal of solid waste and wastewater effluents ◆ Public health and safety, including some provisions for environmental protection. <p>Under the act, the local councils are authorized to restrict activities causing pollution. The Project will be required to follow the provisions of the LGA with regards to pollution of air, water and land during construction.</p> |

2.5 Applicability of Stringent Environmental Quality Standards

According to the WB guidelines, when host country requirements differ from the levels and measures presented in the EHSs, the Bank will require the proponent to achieve or implement whichever is more stringent. In this regard, the comparison and applicability of relevant local and international environmental quality standards is discussed as follows:

2.6.1. Comparison and Applicability of SEQs vs WHO / WBG Standards on Drinking Water Quality

Comparison of local and international water quality standards is provided as **Table 2-4**. The more stringent of the two should be followed during the construction stage (drinking water quality for labor and workers) and during the operational stage while assessing the quality of treated water from the pump houses equipped with intermittent chlorination system under the project. The stringent of the two are highlighted with green, while the similar values are highlighted with yellow and these highlighted values are applicable at the project.

Table 2-4: Comparison of Local and International Drinking Water Quality Standards

| Parameter | Unit | SEPA | WHO / WBG |
|------------------|-------------------------------|---|---|
| Bacterial | | | |
| E-Coli | numbers/ml | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml sample |
| Total Coliform | numbers/ml | Must not be detectable in any 100 ml sample | Must not be detectable in any 100 ml sample |
| Physical | | | |
| Color | TCU | ≤ 15 TCU | ≤ 15 TCU |
| Taste | No objectionable / Acceptable | None | None |
| Odor | No objectionable / Acceptable | None | None |
| Turbidity | NTU | < 5 NTU | < 5 NTU |
| Total Hardness | mg/l | < 500 mg/l | - |
| TDS | mg/l | < 1000 | < 1000 |
| pH | | 6.5-8.5 | - |
| Chemical | | | |
| Aluminum | mg/l | ≤0.2 | 0.2 |

| Parameter | Unit | SEPA | WHO / WBG |
|-------------------|------|-------------------------|-----------|
| Antimony | mg/l | ≤0.005 | 0.02 |
| Arsenic | mg/l | ≤0.05 | 0.01 |
| Barium | mg/l | 0.7 | 0.7 |
| Boron | mg/l | 0.3 | 0.3 |
| Cadmium | mg/l | 0.01 | 0.003 |
| Chloride | mg/l | <250 | 250 |
| Chromium | mg/l | ≤0.05 | 0.05 |
| Copper | mg/l | 2 | 2 |
| Cyanide | mg/l | ≤0.05 | 0.07 |
| Fluoride | mg/l | <1.5 | 1.5 |
| Lead | mg/l | ≤0.05 | 0.01 |
| Manganese | mg/l | ≤0.5 | 0.5 |
| Mercury | mg/l | ≤0.001 | 0.001 |
| Nickel | mg/l | ≤0.02 | 0.02 |
| Nitrate | mg/l | ≤0.50 | 50 |
| Nitrite | mg/l | ≤3 | 3 |
| Selenium | mg/l | 0.01 | 0.01 |
| Residual Chlorine | mg/l | 0.2-0.5 at consumer end | - |
| Zinc | mg/l | 5.0 | 3 |

2.6.2. Comparison and Applicability of SEQs vs WHO / WBG Standards on Air Quality

Comparison of local and international air quality standards is provided as **Table 2-5**. The more stringent of the two shall be followed during the project construction and implementation. The stringent of the two are highlighted with green, which are applicable at the project.

Table 2-5: Comparison of Local and International Air Quality Standards

| Pollutants | SEPA | | WHO / WBG | |
|-------------------|---------------|---|-----------------|---|
| | Avg. Time | Standard | Avg. Time | Standard |
| SO ₂ | 24 hrs | 120 ug/m ³ | 24 hr 10 min | 40 ug/m ³ 500 ug/m ³ |
| CO | 8 hrs 1 hr | 5 mg/m ³ 10 mg/m ³ | 8 hrs | 4 ug/m ³ |
| NO ₂ | 24 hrs | 80 ug/m ³ | 24 hr | 25 ug/m ³ |
| O ₃ | 1 hr | 130 ug/m ³ | - | - |
| SPM | 24 hrs | 120 ug/m ³ | - | - |
| PM ₁₀ | 24 hrs | 150 ug/m ³ | 24 hr | 45 ug/m ³ |
| PM _{2.5} | 24 hrs | 75 ug/m ³ | 24 hr | 15 ug/m ³ |

2.6.3. Comparison and Applicability of SEQs vs WHO / WBG Standards on Noise

Comparison of local and international noise standards is provided as **Table 2-6**. The more stringent of the two shall be followed during the project construction and implementation. The stringent of the two are highlighted with green, while the similar values are highlighted with yellow and these highlighted values are applicable at the project.

Table 2-6: Comparison of Local and International Noise Standards

| Category of Area/Zone | Limit in dB(A) Leq | | | |
|-----------------------|--------------------|------------|----------|------------|
| | SEPA | | WHO/WBG | |
| | Day Time | Night Time | Day Time | Night Time |
| Residential area (A) | 55 | 45 | 55 | 45 |
| Commercial area (B) | 65 | 55 | 70 | 70 |
| Industrial area (C) | 75 | 65 | 70 | 70 |
| Silence zone (D) | 50 | 45 | 55 | 45 |

2.6 International Treaties and Conventions

The relevant international treaties and conventions to the project to which Pakistan is a party are as follows:

2.7.1. ILO's Fundamental Conventions – Ratified by Pakistan

The following ILO's fundamental convention shall be applicable.

- ◆ Forced Labour Convention, 1930 (Convention No. 29)
- ◆ Freedom of Association and Protection of the Right to Organize Convention, 1948 (Convention No. 87)
- ◆ Right to Organize and Collective Bargaining Convention, 1949 (Convention No. 98)
- ◆ Equal Remuneration Convention, 1951 (Convention No. 100)
- ◆ Abolition of Forced Labour Convention, 1957 (Convention No. 105)
- ◆ Discrimination (Employment and Occupation) Convention, 1958 (Convention No. 111)
- ◆ Minimum Age Convention, 1973 (Convention No. 138) Minimum age specified: 14 years
- ◆ Worst Forms of Child Labour Convention, 1999 (Convention No. 182)

2.7 Applicable World Bank Policies

2.9.1. World Bank Operational Policies

The World Bank operational policies applicable to the project and its compliance mechanism, are summarized in the description below in **Table 2-7**.

Table 2-7: Relevant World Bank Operational Policies

| S. No. | World Bank Operational Policies | Brief Coverage | Relevance to project |
|--------|------------------------------------|---|---|
| 1. | Environmental Assessment (OP 4.01) | Under this OP, the World Bank requires environmental assessment (EA) of projects proposed for Bank's financing to help ensure that they are environmentally sound and sustainable | The current ESMP has been prepared in the light of OP 4.01. |

| S. No. | World Bank Operational Policies | Brief Coverage | Relevance to project |
|--------|---------------------------------------|--|---|
| | | and thus to improve decision making through appropriate analysis of actions and of their likely environmental impacts. | |
| 2. | Physical Cultural Resources (OP 4.11) | <p>This policy seeks to assist in the preservation of cultural property. The Bank normally will assist only those projects that are sited or designed so as to prevent any damage to physical cultural resources.</p> <p>There is very little chance that during the construction of proposed project, sites of cultural, archaeological, historical, or religious significance might be encountered. However, in case of discovery of any such sites or artefacts during the project implementation, the site will not be selected if significant cultural sites are going to be affected or alternate options for the design of the proposed projects will be developed. However, in every situation, the provisions of this Policy will be applied.</p> | This operational policy is applicable to avoid any damage to the cultural heritage present in the project area. |
| 3. | Involuntary Resettlement (OP 4.12) | <p>This Policy seeks to avoid involuntary resettlement where feasible, or to minimize, exploring all viable alternative project designs. Where resettlement avoidance is not feasible, resettlement should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable displaced persons to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs. Projects should assist displaced persons to improve or, at least, restore livelihoods to pre-displacement levels or to levels prevailing prior to the beginning of project implementation or whichever is higher.</p> | If the proposed activities cause economic displacement due to restricted access during execution of the project. The Project Affected Persons (PAPs) shall be compensated under OP 4.12. However no PAPs have been reported in the Aol of the project |
| 4. | Gender policy (OP 4.20) | <p>The objective of the Bank's gender and development policy is to assist associate countries to curtail poverty and improve economic growth, human well-being, and development effectiveness by addressing the gender disparities and inequalities that are barriers to development, and by assisting member countries in formulating and implementing their gender and development</p> | Following this operational policy, gender discrimination will be avoided at the project and suitable opportunities to both male and female will be |

| S. No. | World Bank Operational Policies | Brief Coverage | Relevance to project |
|--------|----------------------------------|---|---|
| | | goals, and the Bank occasionally assesses the gender dimensions of development. | provided where applicable. |
| 5. | Access to information (BP 17.50) | The World Bank's Policy on Disclosure of Information is to be open about its activities and to welcome and seek out opportunities to explain its work to the widest possible audience. The Bank has broadened the scope of information about its activities that it makes publicly available. The Bank has established the Info-Shop at headquarters, plus regional Public Information Centres (PICs), to serve individuals seeking to obtain Bank information. In addition, Country Offices are encouraged to establish modest PIC services for their country clientele. This policy is triggered for proposed projects categorized as A and B. The developer consults project affected groups and local NGOs: a) during scoping and before TORs are prepared; b) when the draft EA is available; and c) throughout project implementation as necessary. The developer provides relevant information in a timely manner prior to consultation and in a form and language accessible to the groups being consulted. | This operational policy is applicable as to disclose all the relevant information about the project to the local community to avoid any unnecessary conflicts at construction site. |

2.9.2. Managing the Risks of Adverse Impacts on Communities from Temporary Project Induced Labor Influx

This guidance note provides guidance on identifying, assessing and managing the risks of adverse social and environmental impacts associated with the temporary influx of labor resulting from Bank supported projects. The guidance note contains guiding principles and recommendations to be considered as part of the design and implementation of projects with civil works that require labor from outside the project's area of influence.

2.9.3. Environmental, Health & Safety (EHS) Guidelines

In addition to operational policies (OP), the WBG has also established its EHS guidelines for all the interventions that are financed by the group. These EHS Guidelines are technical reference documents with general and sector-specific examples of Good International Industry Practice (GIIP). Following EHS guidelines are relevant to the proposed project during the construction and operation phase:

General EHS Guidelines: Issues associated with the construction and operation of maintenance facilities are addressed in the General EHS Guidelines with other key element like environment and occupational health and safety (OHS) at workplace as well as for community.

EHS Guidelines for Construction Materials Extraction: Issues associated with sourcing of construction materials are presented in the EHS Guidelines for Construction Materials Extraction.

EHS Guidelines for Water and Sanitation (2007): These guidelines provide guidance on managing various EHS issues which may occur during the construction and operational phases of water and sanitation projects.

2.8 Project Categorization

The environmental impacts identified during the screening process are envisaged to be moderate, low adverse, and reversible in nature. The quantum of work and the related activities will not create significant changes. However, in view of the anticipated temporary impacts during the construction phase of the project, the project is categorized as Category B.

The social impacts identified for the proposed project during the screening process show that the sub project will pose no/ negligible social impacts and no resettlement impacts. Therefore, the project is categorized as Category C.

In the light of environmental and social screening, an ESMP is prepared to address impacts related to environmental and social issues.

Major E&S impacts associated with different phases of the project are as follows:

Pre-Construction Phase

- i. Lack of appropriate E&S personnel with Construction Supervision Consultant (CSC), and Contractors
- ii. Traffic related impacts due to inadequate planning

Construction Phase

- i. Lacking SSESMP, OHSMP, CHSMP / Other Plans Implementation by Contractor
- ii. Nuisance to public due to the generation of noise and dust
- iii. Generation of excavated material
- iv. Solid waste and waste water generation from campsite
- v. Soil contamination due to construction activities
- vi. Occupational and Community health and safety risks associated with construction works
- vii. Construction Traffic Management and Safety
- viii. Vegetation Loss and Disturbance to Fauna
- ix. Labour Influx / SEA – SH – GBV Incidents

Operational Phase

- i. OHS Risks Associated with Maintenance & Repair

All the identified E&S impacts are; reversible in nature and manageable through the implementation of mitigation measures discussed in the subsequent sections of the report. With the implementation of the

mitigations, the residual impacts of the project shall be short-term and site-specific without likelihood of going beyond the actual footprint of the project.

2.9 Responsible Institutions for Planning, Policies and Regulations

2.9.1 Overview

The project will be implemented and operated by KWSSIP / KWSB with the involvement of relevant government departments and agencies, where these hold responsibilities relevant to the Project and / or represent key stakeholder interests.

2.9.2 Statutory Organizations

A summary of the key E&S regulatory institutions and their relationship with the project is provided in **Table 2-8**.

Table 2-8: Roles of Statutory Organizations

| Organization | Functions / Role |
|--|--|
| Sindh Environmental Protection Agency (SEPA) | <ul style="list-style-type: none"> ◆ Regulating the environmental issues. ◆ Reviewing and checking environmental assessment report prepared as per the legal requirements. ◆ Environmental approvals of the Project. ◆ Ensuring the implementation of government policies, during the project implementation. ◆ Ensuring compliance and reviewing the performance of environmental management plans implementation. |
| Labour & Human Resources Department, Sindh | <ul style="list-style-type: none"> ◆ Guaranteeing the rights of the workers including the right to organize, collective bargaining, participation in the affairs of the implementing agency, health & safety, minimum wages, compensation etc. |
| Employees' Old Age Benefit Institute | <ul style="list-style-type: none"> ◆ Making sure that workers are benefitted after retirement from the collected / raised funds and ensuring that all project workers are properly registered with the EOBI by their employers. |

3 Project Description

3.1 Need and Purpose of the Project

Major quantity / volume of bulk water is supplied to Karachi through a complex transmission system comprising of canals, conduits, syphons and large diameter pipes ranging from 48” to 84” and a gigantic pumping complex at Dhabeji; comprising of 06 pumping stations, lifting around 500 Million Gallon Per Day (MGD) water to a high point (Fore-bay) for its onward transmission to the city through gravitational flow. Most of the bulk water lines are decades old and are facing massive leakages. Resultantly a large quantity of water is wasted through these leaked points.

Due to non-availability of adequate financial resources, KWSB has not been able to spend much on the maintenance of this huge water supply infrastructure which results in frequent breakdowns, reduced performance and efficiency of delivering quality water services. Current rainfalls has worsen the situation. To address these issues, replacement of rising main no. 5 originating from Dhabeji Pumping Complex has been included in SOP 1, Component 2 under Emergency Works with an aim to improve the performance and reliability of the bulk transmission network.

The information provided in this chapter is based upon the feasibility reports and other related information provided by the Technical Consultants.

3.2 Project Components

The Project comprises of laying and installation of a new 72” diameter MS Rising Main alongside the existing rising main starting from the Dhabeji Pump Station up to the Forebay High-point (about 4.5 km) as well as the installation of full bore Electro-Mechanical (EM) flow meters and Air Release Valves

3.2.1 Location and Right of Way (RoW)

Dhabeji pumping complex is located in Dhabeji Union Council – Mirpur Sakro Tehsil, District Thatta, whereas the Forebay (High point) is located in the jurisdictions of Union Council Ghagar - Bin Qasim Town, District Malir. The total stretch of the rising main is about 4.5 km, out of which, 3 km is located under the jurisdiction of Dhabeji Union Council – Mirpur Sakro Tehsil, District Thatta and the rest 1.5 km in Union Council Ghagar - Bin Qasim Town, District Malir. KWSB owns a 1000 ft wide Right of Way (RoW) from DPC to Forebay, in which sufficient space is available for replacing the old and laying of new proposed MS line. The project DIA remains well within the available RoW.

3.2.2 Crossing the National Highway (N-5) and the Main Railway Track (ML-1)

According to the design report, National Highway (N5) and main railway line (ML-1) track shall be crossed by utilizing existing pipeline sleeves (1800 mm diameter) as casing and new pipe of 1600 mm diameter will be used as a carrier pipe to cross through these sleeves. Hence, it will not disturb the current traffic.

3.2.3 Construction Camp Location

Suitable spaces are available for the establishment of Campsite between National Highway and National Railway Track within the 1000 ft. wide RoW. Location map of the project with associated details such as KWSB's RoW, Project's AoI, proposed location for Campsite, Environmental Monitoring and Public Consultation locations are shown in **Figure 3-1**.



Figure 3-1: Project Location Map and Associated Details

3.2.4 Construction Equipment Requirement

1. Excavators -2 Nos.
2. Crane - 2 Nos.
3. Generator for Camp and Site for Welding purpose- 2+1 Nos.
4. Welding plants - 2 Nos.
5. Submersible Pumps with Generators - 5 Nos.
6. Dumpers - 2 Nos.
7. Loaders - 2 Nos.
8. Internal CC lining equipment - 1 No.

3.2.5 Source and Quantities of Construction Material

MS Pipes shall be procured from the two pipe factories located near Nooriabad and Kotri. Bedding material and aggregates required for concreting of chambers will be brought from the quarries along M-9 Motorway.

3.2.6 Implementation Timeline

Construction period shall be 12 months.

3.2.7 Manpower Requirement for Construction Phase

1. Project Manager / Engineer In-charge
2. E&S Team Leader
3. Environmental Specialist
4. Social Safeguard Specialist
5. OHS Specialist
6. Medical Representative
7. Site Engineers - 2 Nos.
8. Supervisors - 3 Nos.
9. Submersible Pumps Operators & Generator Operators - 5 Nos.
10. Excavator Operators - 2 Nos.
11. Excavator Operators - Helpers - 2 Nos.
12. Crane Operators - 2 Nos.
13. Crane Operators Helpers - 2 Nos.
14. Generator Operators for the Welding Plants - 2 Nos.
15. Dumper & Loader Operators - 4 Nos.
16. Dumper & Loader Helpers - 4 Nos.
17. Mechanics - 2 Nos.
18. Helpers with Mechanic - 2 Nos.
19. Site Labour - 20 Nos.
20. Total = 58

3.3 Overall Resources and Waste Estimation

Water and electricity will be the key resources to be consumed by the workforce. The key waste streams are solid waste from the camp and wastewater. Excavated material will be the major waste material that shall be generated from the excavation and trenching activities. Water for drinking purpose and concrete work of chambers shall be arranged by the Contractor through bowsers. Electricity shall be required mainly for welding works and workers residing at the campsite. For electricity, the Contractor shall use generators. For construction camp too, electricity shall be managed by using small generators.

Table 3-1 provide an estimate of the quantities of resources which are likely to be consumed and waste which is likely to be produced.

Table 3-1: Estimate of Resources Consumption and Waste Production in Construction Phase

| Resource | Unit | Per capita daily use / generation | Project daily use | Construction Period |
|----------------------|----------------|-----------------------------------|-------------------|---------------------|
| Water (Workers Use) | liters | 50 | 2,900 | 1,058,500 |
| Water (Construction) | liters | - | 5,600 | 2,044,000 |
| Electricity | kWh | 5 | 290 | 105,850 |
| Domestic Solid Waste | kg | 1 | 58 | 21,170 |
| Wastewater | liters | 45 | 2,610 | 952,650 |
| Excavated Material | m ³ | N/A | N/A | 2,427,200 |

After backfilling and other related works, 2,011,340 m³ of surplus material shall be the leftover which will be spread at depression areas within the already allocated KWSB's RoW, as agreed with SEPA.

4 Description of Environment

This section provides baseline data (physical, biological and socio-economic parameters) related to the project area. ESMP team conducted the reconnaissance and detailed field surveys of the project study area (already defined under **Section 1.7: Study Area - Area of Influence - AoI**) for baseline data collection from 22 December 2021 to 24 February 2022. The prime objective of the field surveys was to collect the baseline data on physical, eco-biological and environmental, social & gender aspects along with identification, assessment and categorization of the significant environmental and social impacts of the proposed Project. The secondary data was collected from published sources/reports and relevant departments, which were also verified through visual observations during reconnaissance and detailed surveys.

4.1 Physical Environment

4.1.1 Climate

The total stretch of the rising main is about 4.5 km, out of which, 3 km is located under the jurisdiction of Dhabeji Union Council – Mirpur Sakro Tehsil, District Thatta and the rest 1.5 km in Union Council Ghagar - Bin Qasim Town, District Malir. According to the Koppen Climate Classification, the project area lies in Subtropical - Arid Climate Zone, with mild winters and hot summers. Due to the proximity to the Arabian Sea, the climate of the project area is influenced by sea breezes, which results in less warm evenings throughout the year. Humidity however, generally remains high. As shown in the wind rose diagram **Figure 4-1** below, winds for more than half the year, including the monsoons, blow from south-west to west. The wind direction changes in winter to east and north-east. The hottest months are April to June whereas, December and January are relatively colder months. During the rainy season in July and August, it remains cloudy with generally light to heavy rainfalls influenced by monsoon weather system.

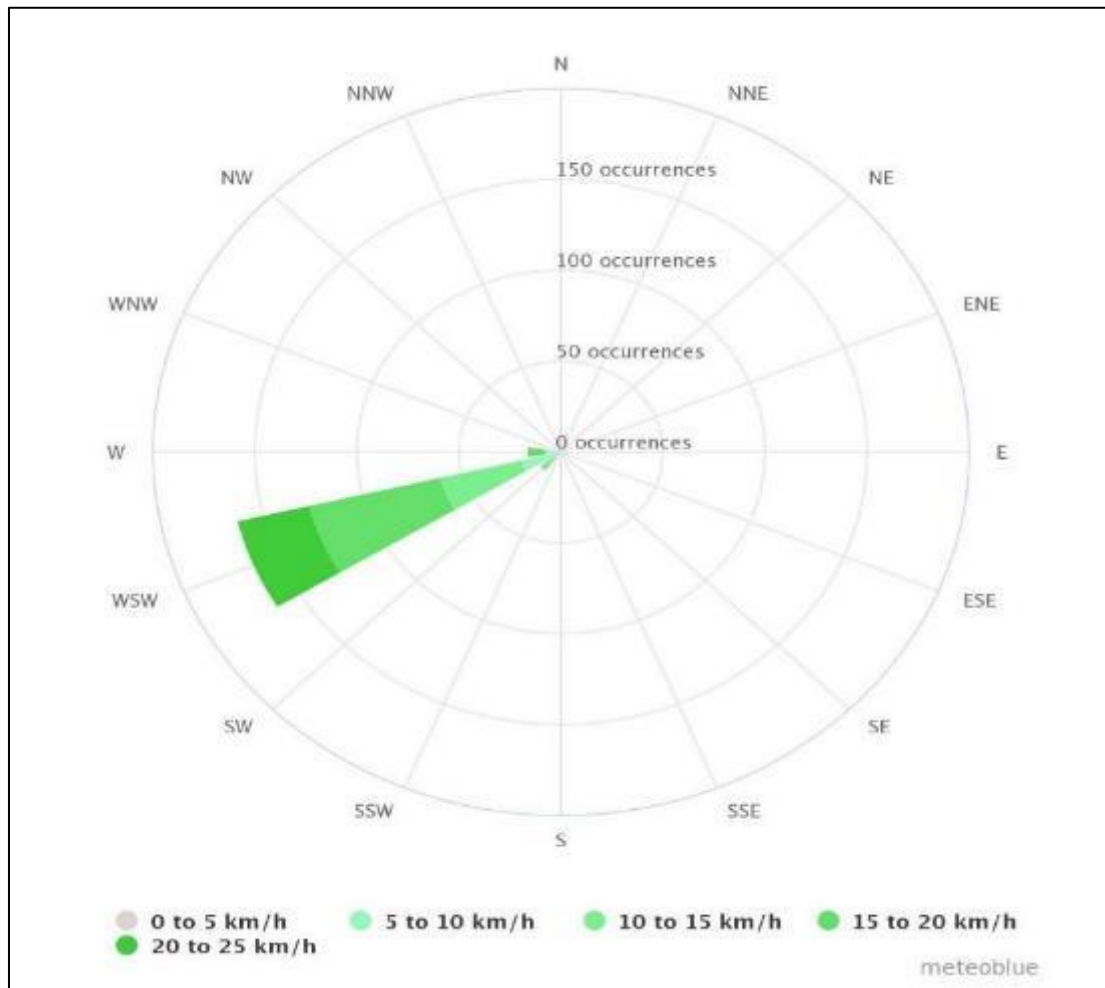


Figure 4-1: Wind Direction in the Project Area

4.1.2 High Temperatures and Heat Waves

The average maximum and minimum temperatures of the project area based upon the historic data are given in **Table 4-1**.

Table 4-1: Monthly Average Temperatures in the Project Area

| Month | Maximum Average Temperatures (°C) | Minimum Average Temperatures (°C) |
|-----------|-----------------------------------|-----------------------------------|
| January | 28.5 | 8.2 |
| February | 32.3 | 11.5 |
| March | 37.8 | 14.5 |
| April | 41.1 | 20.6 |
| May | 41.3 | 25.5 |
| June | 40.5 | 26.4 |
| July | 37.1 | 25.8 |
| | 36.5 | 25.1 |
| September | 38.6 | 23.8 |
| October | 38.7 | 17.1 |
| November | 35.3 | 12.6 |

| Month | Maximum Average Temperatures (°C) | Minimum Average Temperatures (°C) |
|----------|-----------------------------------|-----------------------------------|
| December | 31.5 | 7.2 |

Last few years have witnessed a sharp rise in the heat waves occurrences in the region during May to September. During a heat wave, unusual period of hot, humid or dry conditions may prevail from three to five consecutive days during summer season. Most deadly heatwave occurred in Karachi between June 17-24, 2015, which took more than 1200 human lives. Pakistan Meteorological Department (PMD) issues an early warning in case a heat wave is expected to occur.

Since heatwave keeps the potential to directly impact the health and performance of the site workers and makes the workers susceptible to heat stroke, necessary mitigation measures shall be implemented during project implementation . Details of these mitigations are provided in **Chapter 4** of the report.

4.1.3 Rainfall

Based on the rainfall data recorded between January 2012 to December 2021, it is evident that July and August are the wettest months in the project area. Monsoon persists in the project area from July to September. Since the project requires excavation related activities, due consideration will be given for the adoption of control measures at the excavation areas to restrict damage to the trenches and safeguarding community and workers safety during rainfalls. Details of relevant mitigation measures are provided in **Chapter 4** of the report.

4.1.4 Soil

According to the geotechnical investigations, the soils of the project area generally consist of consolidated to unconsolidated gravels embedded in matrix of silt, sand and clay. The consistency and depth vary according to the topographical features. The drilling logs and classification test results show that the sub-surface geology is not much variable both in the lateral and vertical direction. Water table and seepage of water was observed in few boreholes. Various test results show that the existing sub-surface material is suitable for filling purpose and for the preparation of the embankment. Gravels are mostly embedded in the subsurface soils. Generally, the particle size distribution curves show that the site is underlain by sandy and clayey soils.

4.1.5 Land use

The predominant land use in the vicinity is cultivation, whereas some farmhouses are also operating close to Dhabeji Pumping Complex . Towards Forebay area, most of the surrounding lands are barren with sparse vegetation composed of small trees and shrubs. Nearest settlements to the project area include KWSB Colony and few small villages. Physical conditions of the project alignment are shown in the form of pictures under **Annexure 4-1**.

4.1.6 Potential Sensitive Receptors

No sensitive receptors are located in the project's Aol.

4.1.7 Air, Noise, Water Quality Monitoring

Air, Noise and Water Quality monitoring were carried out in the project area on 25 February 2022. Monitoring point was selected considering its proximity to the project intervention area as well as to the nearby residential settlements. Monitoring has been carried out at KWSB Colony, Dhabeji with monitoring point located at 24.7813° N, 67.5081° E. Detailed monitoring results are attached as **Annexure 4-2**.

4.1.8 Air Quality

Sampling was performed for a 24 hour period following the SEQs for ambient air. The monitoring results show that NO concentration exceeds the SEQs whereas PM_{2.5} exceeds the WHO/WBG limits. The higher NO and PM_{2.5} levels could be attributed to the excessive emissions made by earthmoving machinery that remained engaged in excavation activities in proximity to the sampling location for at least 10 hours. **Annexure 4-2 (Table 4-1)** shows the observed average concentrations for ambient air quality parameters and their comparison with the SEQs and WHO / WB EHS Guidelines Standards.

4.1.9 Noise

Baseline noise monitoring has been carried out for a 24 hour period. Observed results have been found meeting the SEQs as well as WHO/WBG limits for day and night time noise standards. **Annexure 4-2 (Table 4-2)** shows the observed day and night time results.

4.1.10 Water Quality

The water sample has been collected from tap, with overhead tank of KWSB Colony – Dhabeji as source of water. The testing was performed as per APHA methods. Results of the monitoring are given in **Annexure 4-2 (Table 4-3)**. The results showed presence of bacterial contamination in the water sample, whereas all other parameters were found within the SEQs / WHO limits. It is anticipated that the overhead tank may not be cleaned and disinfected since long, which could be the major cause for the presence of bacterial contaminations in the sampled water.

4.2 Ecological Environment

The status of the flora and fauna of the study area was determined through detailed field assessments carried out at the following dates:

1. 22 to 23 December 2021
2. 23 to 24 February 2022

4.2.1 Flora

24 species of trees, 20 species of shrubs and 08 species of grasses were found in the AOI during the field assessment. All of these are common flora species and none of them are near threatened, endangered, or critically-endangered. The list of natural vegetation within AOI is given in **Annexure 4-3** as **Table 4-1**.

a) Trees to be Cut

35 trees growing in the Direct Impact Area (DIA) will have to be cut for the execution of construction activities. All these tree species are common and none of them are of critical nature. As environmental compensation, the contractor shall be required to plant 10 trees for every cut / uprooted tree. Details of the trees that will require to be cut are provided under **Table 4-2**. Suitable spaces for compensatory tree plantation will be identified by the PIU KWSSIP before execution of construction activities in consultation with Forest Department and District Municipal Corporations (DMCs). A Compensatory Tree Plantation Plan providing details on different aspects of compensatory plantation and to be followed by the contractor is attached as **Annexure 4-4**. The plan also includes an indicative cost calculated for compensatory tree plantation plan for the project which has also been included in the Project's ESMP implementation Cost (**Table 7-6**).

Table 4-2: Trees in DIA to be Cut for Construction Activities

| S. No. | Name Of Species | Common Names | IUCN Status | No. of Trees |
|--------|-------------------------------|-----------------------------|--------------|--------------|
| 1. | <i>Acacia nilotica</i> | Babur | LC | 1 |
| 2. | <i>Azadirachta indica</i> | Neem | LC | 8 |
| 3. | <i>Conocarpus leucifolius</i> | Cono | NT | 16 |
| 4. | <i>Ficus palmata</i> | Phagwara, Anjir, Patguleri | NE | 1 |
| 5. | <i>Ficus religiosa</i> | peepal | NE | 2 |
| 6. | <i>Leucaena leucocephala</i> | White lead tree | NE | 1 |
| 7. | <i>Mangifera indica</i> | Mango/ Aam | DD | 1 |
| 8. | <i>Phoenix dactylifera</i> | Date palm | NE | 2 |
| 9. | <i>Pithecellobium dulce</i> | Jungle jalebi/ Madras Thorn | LC | 1 |
| 10. | <i>Prosopis glandulosa</i> | Vilayati keekar | LC | 2 |
| | | | Total | 35 |

4.2.2 Fauna

The data on the fauna were gathered through random sampling and observations along the alignments, visual encounters, incidental observations and indirect methods such as recording pug marks in the ADI. For birds, surveys were conducted using call recognition, line transect as well as point count method for recording bird's species. Birds were identified in the field and confirmed through consulting the hand book for bird identification (Grimmett *et al.*, 2008). The conservation status of faunal species was assessed as per IUCN Red List of Endangered species. Species being recorded includes the following:

b) Terrestrial Mammals

A total of 07 species of mammals have been recorded during the field visits. All recorded mammalian species are common in nature. These may be encountered during clearance of vegetation and earth excavation, and may get disturbed due to construction activities. No significant impacts are expected on recorded faunal species as these can be naturally dispersed easily from one habitat to the other during construction activities. A complete list of the mammalian species observed / reported in the project area is given in **Annexure 4-3** as **Table 4-2**.

c) Reptiles

A total of 06 reptile species have been recorded in the project area. All of the species are common in nature. The project activities may disturb them for some time, however, these species are capable of adapting to changes in their habitat. Out of these, Indian Cobra is listed in Convention on International Trade in Endangered Species (CITES) Appendix II and is regarded as one of the most commonly traded venomous species. The Contractor will protect all faunal species including Indian Cobras if encountered during construction works and will ensure that none of the worker get involved in catching or illegal poaching of any faunal species. List of reptiles observed / reported in the project area is provided in **Annexure 4-3 as Table 4-3**.

d) Avifauna / Birds

A total of 23 bird species have been recorded in the broader project area. Out of the total 23 recorded species, none is on IUCN Red List. However, one species is listed on CMS appendix II and three are listed on CITES appendices i.e. Black Kite, Blue Rock Pigeon and Rose-ringed Parakeet. List of birds observed / reported in the project area during field surveys is provided in **Annexure 4-3 as Table 4-4**. Due to the distance of their habitat from the project area, no bird species are expected to be disturbed by the project's construction activities.

4.2.3 Critical Habitats

No critical habitats have been found within the Aol of the proposed project interventions. Nearest wetlands / RAMSAR sites to the project area include Haleji Lake which is about 25 km and Keenjhar Lake about 50 km from the project's Aol on the eastern – north-eastern side. The project impacts will not expand to these places.

4.3 Socioeconomic Environment

This section presents the overview of socioeconomic conditions of the project's Aol, collected through public consultations, random household socioeconomic surveys and secondary data review. Consultations were conducted at two settlements located in the project Aol with male and female community members to get their opinion and comments about the project. These localities include KWSB Colony - Dhabeji located around 120 meters and Yaqoobabad Locality (near N5 National Highway) – Dhabeji located around 150 meters from the RoW, both on the western side of the rising mains. Detail of consulted communities is provided in **Table 4-3**, whereas consultation photographs are provided under **Annexure 9-2**.

Table 4-3: Survey Locations

| S. No | Community | District | No. of Participants | |
|--------------|---------------------|----------|---------------------|-----------|
| | | | Male | Female |
| 1 | Dhabeji KWSB Colony | Thatta | 11 | 13 |
| 2 | Yaqoobabad | Thatta | 9 | 10 |
| Total | | | 20 | 23 |

Socioeconomic data was collected through questionnaire (**Annexure 4-5**). Location of these localities are show in the following figure.



The data collected is briefly presented as under:

4.3.1 Administrative Setup

The project area is located in the jurisdictions of Thatta District.

4.3.2 Population

At KWSB Colony – Dhabeji, majority of the residents are the families of KWSB employees employed at Dhabeji Pumping Complex and associated components. At Yaqoobabad, most of the population lives in joint families.

The detail pertaining to total household and population of these localities is provided in **Table 4-4**.

Table 4-4: Population and Households

| S. No | Community | District | Population | Households |
|-------|---------------------|----------|------------|------------|
| 1 | Dhabeji KWSB Colony | Thatta | 1500 | 250 |
| 2 | Yaqoobabad | Thatta | 960 | 160 |

4.3.3 Source of Income

The people in Yaqoobabad and other nearby villages are mostly employed in the surrounding industries of Dhabeji. Average monthly income of household is Rs. 12,000 to 15,000. The major source of income is labor work in industry while few people depend on agriculture.

4.3.4 Language and Religion

Sindhi and Urdu are the dominant languages in the project area. Majority population in the project area is Muslim, with Hindus and Christians as minorities.

4.3.5 Education Facilities

It is observed that there are no education facilities are located in proximity to the project Aol. The children go to schools available in Dhabeji to acquire education and some children get religious education by the Imams of the local Masjids in Yaqoobabad and other nearby villages.

4.3.6 Health Facilities

There are no health facilities in the project Aol. People of these areas suffer significant problems when someone gets sick. The people go to Gharo / Makli hospital in Thatta for treatment of minor to major disease. Major health problems of the area reported by people are fever, cough and flu. People prefer going to private hospitals/clinics to get better treatment instead of government facilities. No proper public transportation facilities are available for are people in the project area, which forces them to use private transportation such as hired cars and rickshaws to reach health facilities. Yaqoobabad is a low income community, therefore managing private transportation expenses is difficult for them.

4.3.7 Gender Aspects

In general, the project area reflects a male dominated society. Women face difficulties in getting education and are not consulted for most of the decision-making processes. Females are generally more vulnerable than male members of the society. Consulted women requested the following:

- ◆ Improvement and upgradation of educational and health facilities in the project area.
- ◆ Numerous women are doing the embroidery work for domestic use; their skill should be enhanced through providing training and setting up of the skill development centres in the project area under the project.

4.3.8 Utilities

KWSB Colony – Dhabeji is supplied water from Dhabeji Pumping Complex through overhead tanks. The main source of drinking water for Yaqoobabad and nearby villages is underground water drawn through hand pumps and diesel / solar powered pumps. Yaqoobabad do not have proper sewerage system for the disposal of domestic wastewater. The toilets systems in this and other villages of Dhabeji are pit-hole latrine type. Proper mechanism of solid waste disposal is not in place and people throw waste in the open lands. Electricity is available in Yaqoobabad however, gas is not available and people use wood for cooking purpose.

4.3.9 Awareness Regarding the Proposed Project

Many respondents (85%) were those, who had prior knowledge of the project.

4.3.10 Acceptability of the Proposed Project

During the survey, majority (98%) of respondents favoured the proposed project based on the expectations that the project will provided work opportunities for the local communities.

4.3.11 Gender Aspects

In general, the project area reflects a male dominated society. Women face difficulties in getting education and are not consulted for most of the decision–making processes.

4.3.12 Women Participation

Women have a vital role in maintaining domestic functions. During the field survey, the role of the respondents about their participation in different activities of daily life were inquired. The information on gender was also collected through individual interviews and group discussions with female respondents by the gender enumerators. The findings of the survey revealed that participation of women in various household activities is very good in the consulted settlements. Female are also supporting household expenses by doing teaching, sewing cloths, private jobs, health workers, house cleaner, and social workers

5 Assessment of Potential Environmental and Social Impacts and Risks

Potential impacts arising from design, construction and operation phase of Dhabeji Rising Mains Rehabilitation Project have been identified and assessed on the basis of field data, secondary data, experts' opinion and examining previous similar projects in Pakistan. These impacts include effects on physical, biological and socio-economic environments. Impacts associated with design, construction, operational phases have been detailed in this Chapter.

5.1 Methodology for Screening of Impacts

The methodology for assessing the risk level associated with each potential impact is presented below. Risk is assessed as the likelihood that the activity will have an effect on the environment as well as the consequence of the effect occurring. It is often described like this:

$$\text{Risk} = \text{Likelihood} \times \text{Consequence}$$

Likelihood Scale

| Likelihood | Definition | Scale |
|------------|--|-------|
| Certain | Will certainly occur during the activity at a frequency greater than every week if preventative measures are not applied | 5 |
| Likely | Will occur more than once or twice during the activity but less than weekly if preventive measures are not applied | 3 |
| Unlikely | May occur once or twice during the activity if preventive measures are not applied | 2 |
| Rare | Unlikely to occur during the project | 1 |

(Adapted from: EPA Victoria, 2004. Site EMP Kit- Guidance Notes)

Consequence Scale

| Consequence | Definition | Score |
|--------------|--|-------|
| Catastrophic | The action will cause unprecedented damage or impacts on the environment or surrounding communities . Occurrence will almost certainly result in the work being halted and a significant fine. | 5 |
| Major | The action will cause major adverse damage on the environment or surrounding communities . Occurrence may result in work being halted and a fine. | 3 |
| Moderate | The action will cause limited adverse impacts on the environment or surrounding communities , work is unlikely to be halted, fines unlikely. | 2 |
| Minor | No or minimal adverse environmental or social impacts no likelihood of being fined. | 1 |

(Adapted from: Environmental Management for Construction Handbook-Safeguards Unit Central & West Asia Department-Asian Development Bank - ADB)

Risk Score Table

| | | Consequence | | | |
|-------------|--------------------|--------------|-------|----------|-------|
| | | Catastrophic | Major | Moderate | Minor |
| Likelihood | Certain | 25 | 15 | 10 | 5 |
| | Likely | 15 | 9 | 6 | 3 |
| | Unlikely | 10 | 6 | 4 | 2 |
| | Rare | 5 | 3 | 2 | 1 |
| Risk | Significant | 15-25 | | | |
| | Medium | 6-10 | | | |
| | Low | 1-5 | | | |

5.2 Pre-Construction Phase

Screening of potential impacts during the pre-construction phase is provided in **Table 5-1** below:

Table 5-1: Screening of Possible Impacts during Pre- Construction Phase

| S. No. | Potential Issue | Likelihood(Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|---|---|--|---------------------------------------|---|
| 1. | Permits, NOCs, Clearances | Likely | Moderate | Medium | Short Term |
| 2. | Lack of appropriate E&S personnel with CSC, and Contractors | Likely | Moderate | Medium | Short Term |
| 3. | Inappropriate Planning for Traffic Management | Likely | Major | Medium | Short Term |
| 4. | Improper location of worker camp leading to environmental and social issues | Likely | Major | Medium | Short Term |
| 5. | Lack of Community Awareness | Likely | Moderate | Medium | Short Term |
| 6. | Lack of ESMP Implementation Training | Likely | Moderate | Medium | Short Term |
| 7. | Land acquisition and resettlement impacts | Unlikely | Moderate | Low | Long Term |

- Critical Risk Level
- Significant Risk Level
- Medium Risk Level
- Low Risk Level

5.2.1 Permits, NOCs, Clearances Impacts

a) Impacts

Without necessary permissions from relevant Government Agencies, the project cannot be implemented. Failure to obtain necessary consents, permits, and other appropriate regulatory clearances may result work stoppage. Permissions and clearances are required mainly from the government agencies including; Sindh Environmental Protection Agency (SEPA), National Highway Authority (NHA) and District Administration – Thatta.

b) Mitigation Measures

Necessary consents, permits and clearances shall be obtained before the start of civil works.

5.2.2 Lack of Appropriate Environment and Social Personnel with PIU, CSC and Contractors

a) Impacts

Lack of E&S personnel's environmental safeguard capacity or selection of environment non-responsive contractors may result in failure of ESMP implementation and may be a source of non-compliances. Inadequate resources will lead to major impacts and risk in the physical, biological and social environment and eventual harms to environment and non-compliances with ESMP requirements.

b) Mitigation Measures

Mitigation measures include:

1. PIU shall recruit qualified CSC and Contractors who are able to implement the Project's Environmental, Social, Health and Safety requirements as per the desired standards.
2. Education, qualification and experience requirements of personnel (**Section 7.8.2**) shall be included in the bidding documents .
3. Contractors with poor environmental, health, and safety management shall not be hired.
4. Contractor's qualifications as stated in this ESMP to be included as the pre-qualification criteria in the short-listing process.
5. the conditions of the ESMP will be correctly reflected in the contractor's bidding documents and the supervision consultant's TOR.
6. Necessary funds to be allocated in the Contract documents for ESMP implementation and monitoring. Indicative costs of ESMP Implementation are provided in **Section 7.13** of this report.
7. Guidelines for Contractor's selection are provided in **Section 7.1 to 7.3**.
8. Guidelines for the preparation of above mentioned plans are provided in **Annexure 7-2**: .

5.2.3 Inappropriate Planning for Traffic Management

a) Impacts

The construction traffic will need to utilize N5 National Highway near the point where Dhabeji Pumping Complex and Dhabeji Fore-bay access roads initiate. This may cause nuisance to the general traffic and could result in traffic congestions.

b) Mitigation Measures

1. PIU / CSC / Contractors in collaboration with National Highways and Motorway Police – Dhabeji Section will devise a Traffic Management Plan (TMP) to minimize the expected disruption at the identified sections. Guidelines for the preparation of traffic management plan are provided in **Annexure 7-2**: .
2. Works shall not commence until the PIU obtains necessary permissions from relevant authorities such as National Highway Authority (NHA) and District Administration – Thatta.
3. PIU shall accord approval of TMP before initiation of construction activities and no temporary or permanent works shall be initiated before the plan is approved by the PIU.

5.2.4 Improper Location of Worker Camp leading to Environmental and Social Issues

a) Impacts

The duration of the construction activity for the project is expected to be 12 months and approximately 58 skilled / unskilled workers will be engaged. Influx of these workers could affect project areas negatively in terms of:

1. Disturbance to privacy of nearby communities.
2. Community exposure to Labour Influx; Gender Based Violence, Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH)
3. Improper Sewage and Waste Disposal
4. The influx of workers may bring communicable diseases to the project area.

b) Mitigation Measures

1. Campsite location is proposed in this ESMP (**See Section 3.5.1**) after consulting with the Technical Consultants and keeping in view the suitable distance from the nearby settlements. Worker camp shall be developed at the identified campsite location and ancillary facilities shall be provided such as electricity, washrooms for labor with suitable effluent and sewage disposal facilities as well as water for their everyday use for drinking and bathing etc.
2. The Contractor in collaboration with the PIU / CSC will establish strict protocols for interaction with local communities .
3. Contractors have to follow whereas PIU shall ensure the adherence to the labor standards including Provincial Labor Laws and ILO Standards for work hours, worker's payments & compensations.
4. Contractor shall prepare a Workers Camp Management Plan (CMP) and ensure its effective implementation. Guidelines for the preparation of such plans are provided in **Annexure 7-2**: .
5. Labour Management Procedures (LMP) attached as **Annexure 1-1** will be implemented by the Contractor in letter and spirit.
6. Other necessary measures shall include:
 - ◆ Contractor shall develop a Code of Conduct (COC) for all site personnel. All site personnel shall sign this COC and abide by it.
 - ◆ Contractor shall ensure that project staff will receive training on the prevention of Sexual Exploitation, GBV / SH.

- ◆ Construction crew will avoid entering settlements.
 - ◆ Provision related to SEA/SH/GBV will be incorporated in the bidding document,
 - ◆ The Contractor shall raise awareness of the risks among community members and local health authorities and inform them about available grievance mechanisms.
 - ◆ The routes / places used by the women will be avoided as far as possible. If unavoidable, alternate routes will be identified for the communities.
 - ◆ Contractor shall conduct induction training or workshops to introduce the basics of health and hygiene and the necessary preventive measures against diseases.
 - ◆ Necessary medical screening of all workers & staff and submission of proof of vaccination (COVID-19) prior to any employment shall be ensured.
7. Workers shall be provided with trainings on the Worker's GRM so that they know their rights and responsibilities.
8. Availability of complaint box shall be ensured at all work sites .

5.2.5 Lack of Community Awareness

a) Impacts

Lack of community awareness means less accurate perceptions of people which could result in more frequent and distracting conflicts.

b) Mitigation Measures

Before the start of project implementation, awareness shall be provided to the local population through FGDs, pamphlets etc. regarding the proposed project. Regular interaction shall be kept with the local population by the PIU, CSC and Contractor's Social Safeguard Teams throughout the construction period to keep them aware about the status of project activities. Important information needed to be disseminated to the people includes the following:

- ◆ Overview and objectives of the proposed project;
- ◆ Preliminary and/or final detailed design of proposed project components;
- ◆ Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation measures for the perceived negative impacts; and
- ◆ Grievance redress mechanism and contact details of the project.

5.2.6 Lack of ESMP Implementation Training

a) Impacts

Often lack of proper training to implement the ESMP stipulated in the bid document leads to mismanaged environmental and social safeguards.

b) Mitigation Measures

ESMP training shall be arranged before construction starts with all involved parties: Contractor, Workers and Management Staff from PIU and CSC. The training shall cover topics including spoils management, waste management, driving safety, standard operating procedures (SOPs) for construction works; community and occupational health and safety, core labor standards, code of conduct, avoidance of interaction with communities, outcomes of GBVH / SEA / SH conducts, applicable environmental and social laws, etc. Training shall be organized by the CSC.

5.2.7 Land Acquisition and Resettlement

1. Keeping in view the existing project design, no resettlement, land acquisition or livelihood disturbance is envisaged due to project activities. The Dhabeji Rising Mains are located within the 1000 ft. wide – KWSB owned Right of Way (RoW) and, no land acquisition and resettlement is involved in this component. Construction Phase.

5.3 Construction Phase

Screening of potential impacts during the construction phase of the project are provided in **Table 5-2** below:

Table 5-2: Screening of Possible Impacts during Construction Phase

| S. No. | Potential Issue | Likelihood(Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|--|---|--|---------------------------------------|---|
| 1. | Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans. | Likely | Major | Significant | Short Term |
| 2. | Occupational Health & Safety and Emergency Preparedness & Response | Likely | Major | Significant | Short term |
| 3. | Communicable Diseases - COVID- 19 and Camp Management | Likely | Major | Medium | Short term |
| 4. | Employment of Child Labor | Unlikely | Major | Moderate | Long Term |
| 5. | Employment Generation | Overall Positive | | | |
| 6. | Dust Emissions | Likely | Moderate | Medium | Short term |
| 7. | High Noise Levels from Construction Activities | Likely | Moderate | Medium | Short term |
| 8. | Solid Waste Management -Generation of Excavated Material, Kitchen Waste, Hazardous Waste | Likely | Major | Significant | Short term |
| 9. | Untreated Disposal of Effluent from Worker Camp | Likely | Moderate | Medium | Short term |
| 10. | Soil Contamination | Likely | Moderate | Medium | Short term |
| 11. | Improper Site Restoration | Likely | Major | Medium | Short term |
| 12. | Community Health & Safety | Likely | Major | Significant | Short term |
| 13. | Labor Influx / SEA – SH – GBV Incidents | Likely | Moderate | Medium | Short term |
| 14. | Construction Traffic Management and Safety | Likely | Moderate | Medium | Short term |
| 15. | Vegetation Loss and Disturbance to Fauna | Likely | Moderate | Medium | Short term |

| S. No. | Potential Issue | Likelihood(Certain, Likely, Unlikely, Rare) | Consequence (Catastrophic, Major, Moderate, Minor) | Risk Level (Significant, Medium, Low) | Residual Impact (Short term, Long term) |
|--------|--------------------------------------|---|--|---------------------------------------|---|
| 16. | Cultural Heritage Sites | Unlikely | Moderate | Low | No residual Impact |
| 17. | Stakeholders Concerns and Engagement | Unlikely | Moderate | Low | No residual Impact |

- Critical Risk Level
- Significant Risk Level
- Medium Risk Level |
- Low Risk Level

5.3.1 Inadequate implementation of ESMP, OHSMP, CHSMP and Other Plans

a) Impacts

Inadequate implementation of ESMP and associated plans will result in major concerns in the form of community grievances, environmental / social impacts and risking the health and safety of the workforce.

b) Mitigation Measures

1. The CSC and Contractor will recruit qualified and experienced Environment, Health, Safety and Social Staff in line with the requirements mentioned in **Section 7.8.2**, .
2. Contractor to define Environmental, Social, Occupational & Community Health and Safety procedures for all works in method statements, and shall prepare and implement Site Specific Environmental Social Management Plan (SSESMP), OHS Plan, CHS Plan and other required plans based on the ESMP guideline. These procedures and plans shall be approved by the PIU and CSC before the Contractor commences any physical works on ground.
3. PIU - KWSSIP shall review the Contractor's capacity with respect to safeguard management . Contractors not possessing the required capacity for E&S safeguards management will not be pre-qualified .

5.3.2 Occupational Health & Safety and Emergency Preparedness & Response

a) Impacts

1. Occupational Health and Safety risks related to the project shall mainly be associated with the project's construction phase as the workers will be exposed to a number of physical hazards such as accidents related to the use of heavy equipment and cranes, falling of objects, trip and fall accidents near deep excavations, heat stress / heat stroke occurrences during extreme hot weather, fires at construction sites, increased levels of dust and noise at sites, confined spaces inside MS pipes and hazards related to welding works such as; Electrical hazards, Heat related risks, Fire related risks, Asphyxiation risks, Fumes / respiratory risks and Gas use and storage risks etc.
2. In case, if the working hours are not regulated properly, the risk of accidents could increase due to the higher probability of fatigue.
3. Communicable diseases such as COVID-19 may be introduced due to the migration of workers associated with the project.

b) Mitigation Measures

1. Before initiating construction activities, the Contractors shall prepare Occupational Health and Safety (OHS) Management Plan in accordance with national / local regulatory frameworks . The OHS plan would include OHS Policy Statement, OHS Organization, SOPs for all works, Hazard Identification and Risk Management, requirement of conducting Job Hazard Analysis and preparing Method Statements containing OHS aspects, OHS training requirements, incident recording and reporting protocols, and the OHS plan needs to be approved by the supervision consultant before start of construction.

2. The Health & Safety Framework (**Attached as Annexure 5-1**) by the World Bank will be followed by the PIU-KWSSIP and the Contractors, and reflected in OHS plan.
3. Specific mitigation guidelines for dealing with various hazards associated with the proposed construction activities as well as guidelines for the preparation of OHS Plan are provided under **Annexure 7-2**.
4. Established occupational health and safety protocols on COVID19 i.e. Health & Safety of Building and Construction Workers¹ - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April, 2020 will be followed.
5. Contractor shall prepare an Emergency Preparedness and Response Plan (EPRP) as part of the OHS Plan to contain larger emergencies.
6. PIU will work with the national / provincial emergency response services to ensure any external emergency response arrangements (Fire, Ambulance, Epidemic Control etc.), if the resources available with the Contractor are not sufficient to contain any such emergencies.
7. At every workplace, a readily available first aid unit, including an adequate supply of sterilized dressing material and appliances, will be provided. Suitable transport will be provided to facilitate the transfer of injured or ill persons to the nearest hospital.
8. At every workplace and construction camp, proper equipment and paramedical staff will be provided.
9. The Contractor will maintain site safety and install hard barricading, flexible green net, signboards, temporary safety and traffic diversions throughout the construction period and provide personal protective equipment (PPE) to all the workers working at the construction sites.
10. Zero tolerance to loss of life policy shall be developed and implemented by the Contractor.
11. Contractor will ensure organization of Health and Safety trainings for all site personnel throughout the construction period.
12. In case accident in the form of injury or fatality affects any workers, they or their legal heirs will be compensated by following Sindh Workers Compensation Act, 2015.
13. Specific mitigation guidelines for dealing with various hazards associated with the proposed construction activities are provided in **Annexure 7-2**.

5.3.3 Communicable Diseases - COVID- 19 and Camp Management

a) Impacts

0. Communicable diseases such as COVID-19 may be introduced due to the immigration of workers associated with the project.
1. Inappropriate camp management may lead to discomfort among workers.

b) Mitigation Measures

The Contractor shall ensure the following measures:

1

https://storage.covid.gov.pk/new_guidelines/01June2020_20200411_Guidelines_for_the_health_&_safety_of_building_&_construction_workers_1101.pdf

1. Implementation of health and safety protocols on COVID19 i.e. Health & Safety of Building and Construction Workers - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April, 2020.
2. Awareness among workers will be created on proper sanitation and hygiene practices;
3. Good housekeeping practices will be maintained at camp and project sites;
4. Adequate personal hygiene facilities will be provided in good condition with adequate supply of clean water;
5. Arrangements will be made to treat the affected workers on time to control the movement of vectors diseases;
6. Implementation of Camp Management Plan and Labor Management Procedures (LMP).
7. Use of non-wood fuel for cooking;
8. Contractor shall implement ECP 10: Construction Camp Management ,
9. Cleaning staff shall be appointed for maintaining cleanliness at Campsites.

5.3.4 Employment of Child Labor

a) Impacts

Major impacts of child labor include psychological, physical damage to the child being employed, deprivation of educations and chances of sexual exploitation.

b) Mitigation Measures

1. The Contractor shall have its employment policy in accordance with relevant acts, guidelines and labor policies i.e. The Sindh Prohibition of Employment of Children Act, 2017 ;
2. No child having age below 18 shall be allowed to be employed in any construction work by the – construction contractors, sub-contractors and any service providers.
3. Contractor will ensure that all persons at site are adults and have their government issued identity card with them.

5.3.5 Employment Generation

Primarily a positive impact, the project will create significant temporary employment for construction workers, maintenance, support, administrative, security and project management staff. Majority of project staff are expected to be recruited locally from within the native / local workforce. It is expected that around 144 employment opportunities shall be created during the construction period.

5.3.6 Dust Emissions

a) Impacts

1. Local air quality shall be affected by dust and vehicular emissions due to the movement of construction vehicles.
2. The impacts of dust emissions shall mostly be limited to the work areas.

b) Mitigation Measures

1. Immediate removal of excavated material will be ensured to avoid its emission and runoff.

2. Water sprinkling at the unpaved sections of access road..
3. Limiting speeds of construction vehicles in the project area.
4. Regular trainings of the drivers to ensure implementation of speed limits.
5. Fuel-efficient / well-maintained construction machinery shall be employed to minimize exhaust emissions.
6. Vehicles transporting soil, sand and other construction materials shall be covered with tarpaulin.
7. Earliest resolution of any dust related public complaints registered through Project's Grievance Redress Mechanism.

5.3.7 High Noise Levels from Construction Activities

a) Impacts

1. Construction activities will involve use of construction equipment and machinery i.e. excavators, cranes, power generators, loaders and dumper trucks etc. which may generate high noise levels at the project sites and can have effects on the people nearby the project sites. However, these increased noise levels will prevail only for a short duration during the construction phase.

b) Mitigation Measures

1. Blowing of horns by construction machinery and vehicles shall be strictly prohibited.
2. The operation of heavy equipment shall be restricted to daylight hours as far as possible and noisy works shall be avoided / minimized during the night time.
3. Noise from vehicles and power generators will be minimized by use of proper silencers and mufflers.
4. All the equipment and machinery used during construction phase shall be well maintained and in compliance with SEQS.
5. Earliest resolution of any noise related public complaints registered through Project's Grievance Redress Mechanism.

5.3.8 Solid Waste Management - Generation of Excavated Material, Domestic Waste, Hazardous Waste

a) Impacts

1. During construction phase the major waste streams will include Excavated Material from trenching / excavation and Domestic Waste from construction camp, Hazardous Waste including used oil filters, used oils from workshop and small quantities of Medical Waste resulting from first aid treatments. The project will not require dismantling of existing pipeline. New rising main will be laid side by side to the older one. Estimated quantities of major waste stream to be generated during the construction phase includes the following;
 - ◆ 2,427,200 cubic meter of Excavated Material
 - ◆ 21,170 kg of Domestic Waste from Construction Camp

b) Mitigation Measures

1. A waste management plan will be developed by the Contractor prior to the start of construction. This plan will cater to sorting of hazardous and non-hazardous materials prior to disposal, placing of waste bins at the project sites for waste disposal and an onsite hazardous waste storage facility i.e. designated area with secondary containment.
2. Fuel storage areas, hazardous material storage areas, and generators will have secondary containment in the form of concrete or brick masonry bunds. The volume of the containment area shall be equal to 120% of the total volume of fuel stored.
3. Licensed and SEPA approved waste contractors will be engaged to dispose-off all hazardous and non-hazardous waste materials that cannot be recycled or reused.
4. After backfilling and other related works, 2,011,340 m³ of surplus material shall be the leftover which will be spread at depression areas within the already allocated KWSB's RoW.
5. The leftover backfill material will be disposed off in depression areas along with soil erosion control measures such as proper compaction, vegetative cover and land leveling
6. Domestic waste from the camp will be disposed to the nearest SSWMB waste disposal bin.

5.3.9 Untreated Disposal of Effluent from Worker Camp

a) Impacts

1. The project's construction camp will be a source for the generation of domestic effluent from the toilets, washrooms and the kitchen area.

b) Mitigation Measures

1. The Contractor will ensure that no untreated effluent is released. A closed sewage treatment scheme including soak pits and septic tanks will be constructed to treat the effluent from the construction/labor camp.
2. Soak pits will be built in absorbent soil and shall be located 300 m away from any nearby water well, boring or hand pump.
3. It shall be ensured that the soak pits remain covered all the time and measures are taken to prevent entry of rainwater into them.
4. In case the septic tank gets filled with sludge, it shall be emptied through vacuum truck and after getting approval from KWSB, the removed effluent shall be transferred to the approved municipal drain.

5.3.10 Soil Contamination

a) Impacts

During the construction phase, spills of fuel, lubricants and chemicals can take place while transferring from one container to another or during refueling. Spills could also occur during maintenance of equipment and vehicles or through leakages from static equipment, vehicles and power generators. Depending on the quantity of spill, the soil can get contaminated.

b) Mitigation Measures

1. The Contractor will ensure that all the construction vehicles, equipment and power generators are properly maintained and there are no leakages from their engines and mechanical / moving parts.
2. It shall be ensured that trays are provided and used during refueling, maintenance of construction vehicles / equipment and under the parked vehicles and equipment if there are any leakages.
3. Fuels, lubricants and chemicals shall be stored in covered bounded areas, underlain with impervious lining. Static Power Generators shall also be placed at impervious floors bunded with parapet walls.

5.3.11 Improper Site Restoration

a) Impacts

In case the temporary sites such as Campsites are not restored in appropriate manner, the area shall not regain its value and function and the sites could lead to nuisance to the public and users due to damaged site conditions, debris, dismantled material, spoils, excess construction materials, oil spills etc.

b) Mitigation Measures

The Contractor will have a full and rigorous program for closing up and removing temporary facilities as well as for cleaning up and/or restoring the sites occupied on temporary basis. The facilities to be used in the construction stage that will be dismantled are the camp and workshops. Site restoration will involve the following:

1. Dismantling and full removal of worksite facilities and camp, including contractor offices, staff and workers' accommodation, machinery yard, warehouses, store rooms, maintenance shops, drinking water utilities, vehicle parking areas, temporary materials stockpiling enclosures, sewage network and toilets etc.
2. Ground cleaning will be done by removing all the affected topsoil and handing it over to authorized waste handlers.
3. Addition of topsoil where necessary.

5.3.12 Community Health & Safety

a) Impacts

General public may become susceptible to following health and safety risks during construction activities:

- ◆ Unprotected trenches and excavations could pose a significant hazard to the communities residing at KWSB Colony – Dhabeji and Yaqoobabad.
- ◆ Other nuisance that the communities could face include emissions of dust and higher noise levels due to the movement of construction vehicles along rising mains.

b) Mitigation Measures

1. Contractor shall prepare Community Health and Safety Plan based on construction methods, site specific hazards and framework presented in **Annexure 5-1**.
2. All the trenches and excavations will be protected with barriers especially at locations nearby KWSB Colony – Dhabeji and Yaqoobabad locality.
3. Excavated material shall not be piled next to the trenches and excavations and removed from the site on frequent basis.
4. Adequate lighting shall be installed at excavated areas and trenches to keep them well-lit and prominent during night.
5. Contractor shall ensure setting up of its machinery on the roads for construction works in such way that it will not hinder the public traffic to the maximum possible extent and will not compromise the public safety.
6. Contractor shall ensure that all the vehicle drivers and equipment operators have valid licenses and proven competency to safely operate vehicles and equipment in public areas.
7. Excavators and dumper trucks will be provided with trained banksmen / marshaller to supervise safe movement during excavation activities.
8. Vehicular speeds shall be kept at minimum during movement.
9. Following measures shall be adopted for minimizing the nuisance caused by dust and noise to the public:
 - ◆ Use of noise suppression on equipment;
 - ◆ Water sprinkling for dust suppression;
 - ◆ Carrying out major work activities having potential of higher noise generation in day time only.

5.3.13 Labor Influx / SEA – SH – GBV Incidents

a) Impacts

1. Influx of workers at project sites may pose a threat of communicable diseases, most common are HIV/AIDs (Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (AIDS), COVID- 19, tuberculosis, pulmonary infections, typhoid, cholera and dysentery, malaria, rabies and other skin disease, hepatitis A, B and C, in case of not complying with adequate control measures.
2. The influx of labor, seeking construction jobs can be associated with a series of social challenges such as crime, illegal drug abuse etc.
3. Many of the skilled labor employed from outside the project area may cause some antipathy among the local people and outsiders.

b) Mitigation Measures

1. The contractor shall employ more locals in skilled, semi-skilled, and unskilled work. ;
2. The contractor will proactively manage the potential impacts from labor influx and potential cultural conflicts between local communities and workers, which include following:
 - ◆ Construction camp will be built at the designated areas;

- ◆ Inclusion of COC obligations and the applicable legislation in the contracts of all employees and workers with the provision of sanctions and penalties in case of violations;
- 3. Contractor shall ensure that project staff will receive training on the prevention of Sexual Exploitation, Gender Based Violence and Abuse (SEA) / Sexual Harassment (SH).
- 4. Construction crew will avoid entering settlements.
- 5. The Contractor shall raise awareness of the risks among community members and local health authorities and inform them about available grievance mechanisms.
- 6. The routes/places used by the women will be avoided as far as possible. If unavoidable, alternate routes will be identified for the communities.
- 7. Any violation of the COC will lead to strict punishment including termination of employment;
- 8. The use of drugs and alcohol will not be allowed at the work/construction site;
- 9. Carrying weapons into the workplace premises will be prohibited;
- 10. Site security arrangements will be ensured in line with Security Management Guidelines for Contractors are attached as **Annexure 5-3**: .
- 11. Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to record entry and exit of workers, staff and visitors;
- 12. The Contractor will ensure that good relations are maintained with local communities.

5.3.14 Construction Traffic Management and Safety

a) Impacts

Movement of construction traffic could cause temporary nuisance to public in the vicinity of project construction area.

b) Mitigation Measures

The Contractor shall implement the following measures for effectively managing the construction traffic and public safety:

- ◆ Traffic Management Plan shall be prepared as per the guidance provided under **Annexure 7-2** before taking up any construction work and shall be implemented after getting approved from the PIU / CSC.
- ◆ Barricades, signs, markings, flags, lights and flagmen shall be deployed at key spots.
- ◆ The flagmen shall be trained for traffic management and equipped with red and green flags and lights.
- ◆ Emergency response plan shall be prepared for any traffic accident during construction.
- ◆ In case of community related accident, compensation shall be paid in accordance with Fatal Accidents Act 1855.

5.3.15 Vegetation Loss and Disturbance to Fauna

a) Impacts

1. 35 trees growing in the Direct Impact Area (DIA) under the Aol, will require to be cut for the execution of construction activities. Details of the trees to be cut are provided in **Table 5-3** below.
2. Faunal species as detailed under **Section 4.2.1 / Annexure 4-3** may be encountered during clearance of vegetation and earth excavation, and may get disturbed due to construction activities, however, no significant impacts are expected on recorded faunal species as these can be naturally dispersed easily from one habitat to the other during construction activities.

Table 5-3: Trees in DIA to be Cut for Construction Activities

| S. No. | Name Of Species | Common Names | IUCN Status | No. of Trees |
|--------|-------------------------------|-----------------------------|--------------|--------------|
| 1. | <i>Acacia nilotica</i> | Babur | LC | 1 |
| 2. | <i>Azadirachta indica</i> | Neem | LC | 8 |
| 3. | <i>Conocarpus lencifolius</i> | Cono | NT | 16 |
| 4. | <i>Ficus palmata</i> | Phagwara, Anjir, Patguleri | NE | 1 |
| 5. | <i>Ficus religiosa</i> | peepal | NE | 2 |
| 6. | <i>Leucaena leucocephala</i> | White lead tree | NE | 1 |
| 7. | <i>Mangifera indica</i> | Mango/ Aam | DD | 1 |
| 8. | <i>Phoenix dactylifera</i> | Date palm | NE | 2 |
| 9. | <i>Pithecellobium dulce</i> | Jungle jalebi/ Madras Thorn | LC | 1 |
| 10. | <i>Prosopis glandulosa</i> | Vilayati keekar | LC | 2 |
| | | | Total | 35 |

b) Mitigation Measures

1. A project specific Compensatory Tree Plantation Plan shall be prepared by the Contractor based upon the Tree Plantation Plan attached as **Annexure 4-4**.
2. According to the Tree Plantation Plan;
 - ◆ The Contractor shall make inventory of the trees that shall require to be cut before initiation of construction activities based on finalized work plan and requirements.
 - ◆ Suitable space for tree plantation shall be identified by the PIU and KWSB in consultation with Forest Department, District Administration etc. before clearance of trees.
 - ◆ Seed supply, nursery, watering and any other necessary arrangements should be in place for maintaining the trees planted under compensatory plantation, at least for five years. Contractor shall be responsible for maintaining the trees during the Contract Period and Defect Liability Period, whereas after that, the trees shall be handed over to the relevant departments which have the ownership of the land for compensatory plantation sites.
3. Compensatory plantation of the trees shall be undertaken by the Contractor at the replacement ratio of ten trees for every tree that is cut (i.e. 10:1 ratio);
4. For trees not proposed to be cut, all precautions shall be taken to protect them from any damage from construction activities.

5. The contractor shall also be required to compensate the cutting of shrubs in the project's DIA through plantation of ornamental shrubs at the areas to be specified by the PIU at the time of project execution.
6. While clearing vegetation and excavation it shall be ensured that no wildlife get injured or killed.
7. Construction work that may generate high noise levels shall be avoided during night time as far as possible to prevent local birds and fauna from disturbance;
8. Workers shall be provided with adequate knowledge regarding protection of flora and fauna, and relevant government regulations.

5.3.16 Cultural Heritage Sites

a) Impacts

1. There are no cultural heritage, archeological sites or buildings located along the entire project alignment which are listed in 'Cultural, Tourism, Antiquities and Archives Department – Government of Sindh (GoS) – List of Heritage Buildings' or 'UNESCO World Heritage list'.
2. During construction activities, these establishments may be impacted by noise and dust pollution. Accessibility to these establishments may also be hampered during construction phase.

b) Mitigation Measures

1. Contractor shall train the workers on chance find procedures and in the event of a chance finds, the following measures shall be strictly adopted by the Contractor:
 - ◆ Strictly follow the protocol by coordinating immediately with PIU and Directorate General of Antiquities and Archaeology – Cultural, Tourism, Antiquities and Archives Department (GoS) for any suspicion of chance finds during excavation works;
 - ◆ Stop work immediately to allow further investigation if any finds are suspected; and
 - ◆ Request authorized person from the Archaeology Department to observe when excavation resumes for the identification of the potential chance find, and comply with further instructions.

5.3.17 Stakeholders Concerns and Engagement

a) Impacts

The identified stakeholders may have different types of stakes associated with various aspects of the project depending on their professions, affiliations and involvements.

b) Mitigation Measures

1. PIU, CSC and Contractor to ensure public consultations and participation of stakeholders throughout the project lifecycle. This would ensure that concerns about the impacts of the project are addressed at the right time.
2. Stakeholder engagement to be carried out in a meaningful and inclusive way, providing access to remedy.

5.4 Operational Phase Impacts

5.4.1 OHS Risks Associated with Maintenance & Repair

a) Impacts

Deterioration wear & tear would be caused with the passage of time that requires regular maintenance. Workers dealing with the maintenance activities during the operational phase may face health and safety risks if proper safety measures are not followed.

b) Mitigation Measures

Workers will be provided with PPEs during routine maintenance activities. Trainings will be conducted for the work practices and use of equipment.

6 Analysis of Alternatives

6.1 Overview

The main project interventions include the rehabilitation of existing “Bulk Mains” therefore scope of alternative studies is very limited.

6.2 No Project Alternatives

If ‘no project’ option is triggered, it will result in loss of all positive impacts that project will pose on Karachi city; such as metering of flows, restriction of non-revenue losses, leakage free bulk water supply, improved water pumping infrastructure and improved treated potable water availability to citizens of Karachi. Project will also help in reducing water borne disease, ultimately reducing the pressure on health care system of the city.

Furthermore, project implementation will also create job opportunities during construction and operational phases, thereby improving the socioeconomic condition of the local people and help in improving their quality of life. Thus, the ‘no project’ option is not a viable option.

6.3 Alternatives Types

The availability of alternatives ensures to a degree that a comparative analysis will lead to a well informed decision regarding the selection of the most optimal option among all that are brought into consideration. The analysis for the proposed rehabilitation and extension of priority water networks lays a primary emphasis on factors influencing economic viability, environmental sustainability and social acceptability that may arise from the execution of the project, during both construction and operational phases. Two key components of this particular analysis are:

- ◆ Site / Location alternatives
- ◆ Environmental Friendly Technology Selection

These are described below.

6.4 Site / Location Alternatives

No site / location alternatives have been proposed by the Technical Consultants as the project mainly involves rehabilitation of existing bulk water supply components with major focus on bulk water supply lines aligned within the RoW of existing lines.

6.5 Comparison of Technological Alternatives in terms of Environmental Benefits

6.5.1 Selection of Channel Flow Meters

Flow meters are proposed for intake channels at Dhabeji Pumping Complex and Rising Mains. Following types of flow meters have been assessed for selection:

c) Traditional Methods of Flow Metering

There are several types of open channel flow meters, the traditional methods using primary devices such as flumes or weirs. These consist of a primary device, transducer, and flow transmitter. The wetted primary device restricts the liquid flow stream. Under flowing conditions, this restriction causes a rise in liquid level at a location either upstream or within the flowmeter. When the flow increases, the level rises higher. A transducer is mounted on or near the primary device to sense the level. The electronic flow transmitter uses the signal from the transducer to measure the level and determine liquid flow. Since these methods use a primary device, sedimentation, dirt, and other debris often times accumulate on the bottom of these devices, making level measurement highly inaccurate and thereby jeopardizing overall flow measurement accuracy. Moreover, the original shape of these primary devices is subject to wear and tear over time which further introduces inaccuracies in the overall flow measurement system. For these reasons, these devices are becoming obsolete.

d) Ultrasonic Flow Meters

Ultrasonic open channel flow meters emit and receive a signal directed at the surface of the liquid being measured. The sensor then calculates the level and/or velocity by processing the time between the original and returning signal. When this information is combined with the known physical characteristics of the channel (incorporating a primary device or otherwise) it is possible to calculate flow rate using the appropriate formula, usually done within specialized instrumentation manufactured for this task.

e) Radar Flow Meters

Radar sensors are conversion devices that transform microwave echo signals into electrical signals. They use wireless sensing technology to detect motion by figuring out the object's position, shape, motion characteristics, and motion trajectory. Radar sensors aren't affected by light and darkness and with the ability to detect obstructions like glass, it can "see" through walls. When compared to ultrasound, radar can sense longer distances and is safe for people and animals. One of the biggest advantages radar sensors have over other sensors is its detection of motion and velocity. The proper functioning of a RADAR does not require any medium.

f) Final Section

Keeping in view the pros and cons, the Technical Consultants have selected Radar based flow meters.

7 Environmental and Social Management Plan

This chapter describes how the identified impacts and risks (refer to **Chapters 4**) will be managed, with mitigation and enhancement measures as well as monitoring. Mitigation and enhancement measures are collated and expanded upon in the Environmental and Social Management Plan (ESMP). The ESMP is organized by management plans, institutional setup, capacity building and training, and presents key monitoring and performance indicators.

The following sections present management measures and monitoring requirements for the impacts and risks.

7.1 Contractors Qualification

It will be ensured that all contractors procured under the Project be compliant with International Standards Organization (ISO) 9001 Quality Management, ISO 14001 Environmental Management and ISO45001 Occupational Health and Safety Management. These will be done by PIU-KWSSIP imposing the requirements of ISO certifications during prequalification or technical evaluation of contractors. In addition, all subcontractors under the major contractors will also be subject to ISO 14001 and ISO45001 audit provisions by the main Contractor during the course of the project.

The ESMP of the Project along with the ECPs and occupational hazards and risks will be included in the contractors' bid documents. The technical specifications of the bid documents will clearly state that contractor will need to comply with the mitigation and control measures provided in the ESMP, ECPs, OHS Plan, World Bank Group EHS General Guidelines, WBG/WHO Air, Water, Noise Standards and SEQS.

7.2 Inclusion of ESHS Conditions in the Bidding Documents

In order to make Contractors fully aware and responsible for ensuring ESHS compliance, following conditions in particular and all other relevant conditions in line with 'WB – Procurement of Works & User's Guide – Updated January 2017, shall be made part of the bidding documents:

1. The Contractor shall obtain (at its cost) an Environmental, Social, Safety and Health (ESHS) Performance Security for compliance with the Contractor's ESHS obligations.
2. The Contractor shall be required to declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social, or health or safety requirements or safeguard or related to sexual exploitation and abuse and gender-based violence in the past five years.
3. The Contractor shall submit comprehensive and concise Environmental, Social, Health and Safety Management Strategies and Implementation Plans (ESHS-MSIP) which includes but not limited to; Mobilization strategy, Strategy for obtaining consents/permits, Traffic management plan, Water resource protection plan, Bio-diversity protection plan and a Strategy for marking and respecting work site boundaries etc.

4. The Contractor shall be required to ensure compliance of 'Code of Conduct' that should be signed by each Contractor's employee / workers. The issues to be addressed in the Code of Conduct shall include the following:
 - ◆ Compliance with applicable laws, rules, and regulations of the jurisdiction
 - ◆ Compliance with applicable health and safety requirements (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment)
 - ◆ The use of illegal substances
 - ◆ Non-Discrimination (for example on the basis of family status, ethnicity, race, gender, religion, language, marital status, birth, age, disability, or political conviction)
 - ◆ Interactions with community members (for example to convey an attitude of respect and non-discrimination)
 - ◆ Sexual harassment (for example to prohibit use of language or behaviour, in particular towards women or children, that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate)
 - ◆ Violence or exploitation (for example the prohibition of the exchange of money, employment, goods, or services for sex, including sexual favours or other forms of humiliating, degrading or exploitative behaviour)
 - ◆ Protection of children (including prohibitions against abuse, defilement, or otherwise unacceptable behaviour with children, limiting interactions with children, and ensuring their safety in project areas)
 - ◆ Sanitation requirements (for example, to ensure workers use specified sanitary facilities provided by their employer and not open areas)
 - ◆ Avoidance of conflicts of interest (such that benefits, contracts, or employment, or any sort of preferential treatment or favours, are not provided to any person with whom there is a financial, family, or personal connection)
 - ◆ Respecting reasonable work instructions (including regarding environmental and social norms)
 - ◆ Protection and proper use of property (for example, to prohibit theft, carelessness or waste)
 - ◆ Duty to report violations of this Code
 - ◆ Non retaliation against workers who report violations of the Code, if that report is made in good faith.
5. Payments to contractors will be linked to environmental, health and safety performance, measured by completion of the prescribed environmental and social mitigation measures in the SSESMP and control measures described in the OHS and CHS plans.
6. In addition, for any non-compliance causing damages or material harm to the natural environment, workers, public or private property or resources, the Contractor will be required to either remediate / rectify or compensate for any such damages in a timeframe specified by and agreed with the engineer (CSC).

7. For repeated non-compliance the Contractor will be penalized. The penalty of non-compliance of the requirements of the SSESMP and OHS / CHS Plan will be deducted in the Instruction of Payment Certificate (IPC). The penalty will be imposed after all contractual instruments are applied and a Non-compliance Report (NCR) is issued by the Engineer. PIU shall determine the amount of penalties in consultation with the CSC Contract Management Specialist and shall include the penalties costs in the Bidding and Contract Documents.

7.3 Criteria for the Selection of Sub-Contractors

The Contractor shall ensure that following criteria is followed for the selection of any sub-contractor, to make sure their ability of implementing ESHS requirements:

- ◆ All WB OPs Requirements applicable on the main Contractor will also be applicable to the hired Sub-contractors.
- ◆ Sub-contractor should have proven experience in providing services for a minimum of 5 years with successful ESHS management.
- ◆ The sub-contractor shall provide the following:
 - ◆ Details of company information with organization structure, list of manpower with the Curriculum Vitae (CVs) of key personnel, plant and machinery list mentioning year of manufacturing, support agencies, other facilities and resources.
 - ◆ Details of completion of similar type of projects within last five years indicating their brief scope of work, value of work, contractual duration, actual completion of project, client's name, contact details of that client, safety appreciation or compliance certification or inspection of plant and machineries, EHS statistics, Loss Time Injuries (LTI) graph etc.
 - ◆ Details of typical project planning and execution methodology.
 - ◆ Details of current commitments – List of all the jobs under execution with the value of the job and percentage completion with particular emphasis on project of similar magnitude carried out.
 - ◆ Details of experience of working in similar kind of project.
 - ◆ Details of EHS policy, safety manual, safety plan and implementation procedures in-line with internationally accepted practices along with the statistics for last four years.
 - ◆ Details of quality assurance and quality control practices currently in place for the execution of similar work.
 - ◆ Details of contractor's financial performance documents (audited balance sheets with profit and loss statements) and audit reports for last 5 preceding years.
 - ◆ Details of documents in support of Health, Safety, Environment and Quality [HSEQ] performance.
 - ◆ Details of insurance of employee policy, medical evaluation including drug testing policy.
 - ◆ Details of managing and monitoring sub-contractor performance.
 - ◆ Details of safety and security evaluation policy.
- ◆ Copies of ISO 9001, 14001, OHSAS 18001 or any other accreditation and certification as applicable.

7.4 Various Mitigation and Control Measures

The ESMP includes different types of mitigation and control measures and guidelines for managing environmental, health, safety and social impacts and risks in the form of:

- (i) General and non-site-specific measures in the form of Environmental and Social Codes of Practices (ECPs) presented in **Annexure 7-1** to address general construction matters identified in **Chapter 5**.
- (ii) Specific mitigation measures as presented in **Chapter 5**;
- (iii) Guidelines for making project and site-specific plans as **Annexure 7-2**.

7.5 Environmental and Social Code of Practices for Construction

The environmental and social codes of practice (ECPs) are generic, non-site-specific guidelines for the construction phase. The ECPs consist of environmental and social management guidelines and OHS practices to be followed by the contractors for sustainable management of all environmental, social, health and safety issues. The ECPs are listed below and details are presented in **Annexure 7-1**.

- ◆ ECP 1: Waste Management
- ◆ ECP 2: Fuels and Hazardous Goods Management
- ◆ ECP 3: Water Resources Management
- ◆ ECP 4: Drainage Management
- ◆ ECP 5: Air Quality Management
- ◆ ECP 6: Noise and Vibration Management
- ◆ ECP 7: Protection of Flora
- ◆ ECP 8: Protection of Fauna
- ◆ ECP 9: Road Transport and Road Traffic Management
- ◆ ECP 10: Construction Camp Management
- ◆ ECP 11: Worker Health and Safety

7.6 Construction Environmental and Social Action Plan

The Contractor will prepare a 'Construction Environmental and Social Action Plan' (SSESMP) demonstrating the manner in which they will comply with the requirements of Site-Specific Management Plans, ECPs and the mitigation measures proposed in this ESMP Report. The SSESMP will be submitted before the start of any construction activities and be approved by the Engineer. The SSESMP will form the part of the contract documents and will be used as monitoring tool for compliance. Violation of the compliance requirements will be treated as non-compliance leading to the corrections or otherwise imposing penalty on the contractor.

7.7 Occupational Health and Safety Plan

The Contractor will also prepare an occupational health and safety plan for managing the identified hazards and control measures. The OHS shall comply with World Bank General Environmental Health and Safety Guidelines, WB Health & Safety Framework South Asia Region (SAR); Sindh Occupational Safety and Health Act, 2017, Sindh Labour Acts, ILO Code of Practices 1992 and Good International Industry Practices (GIIP) . Review and update of the OHS plan will be done;

- ◆ When there is a change in the scope of construction methodology/technique based on site condition,
- ◆ Following significant OHS hazard or a major accident, and
- ◆ At the end of the Project (to allow for improvements in subsequent projects).

7.7.1 Job Hazard Analysis

Job hazard analysis (JHA) will be conducted by Contractor for each construction component focusing on job tasks as a way to identify hazards before they occur. It will focus on the relationship between the worker, the task, the tools, and the work environment. Ideally, after identifying uncontrolled hazards, steps should be taken to utilize hierarchy of control: elimination, substitution, engineering controls, administrative controls and personal protective equipment, to minimize them to an acceptable risk level. Many workers are injured and killed at the worksite every day. The JHA should be one of the major components of the larger commitment of the Contractor's health and safety management system. The JHA should be conducted on many jobs in the worksite. Priority should be given to the following types of jobs:

- ◆ Jobs with the highest injury or illness rates;
- ◆ Jobs with the potential to cause severe or disabling injuries or illness, even if there is no history of previous accidents;
- ◆ Jobs in which one simple human error could lead to a severe accident or injury;
- ◆ Jobs that are new or complex to the construction or have undergone changes in construction processes and procedures; and
- ◆ Jobs complex enough to require written instructions.

7.7.2 EHS in Method Statement

The Contractor will include an EHS Chapter in each Method Statement. This EHS section will be based on the JHA and other provisions of OHS Plan and environmental issues of the site and specific to construction methods to be followed by the Contractor. This section will be reviewed by the EHS Specialists of the Engineer/Construction Supervision Consultant (CSC) and confer approval along with other technical parameters to be reviewed by the engineering team of the CSC. Each revision of the method statement shall also be reviewed by the EHS Specialists and their concurrence will be required to get the method statements approved.

7.7.3 Site Engineer's EHS Oversight

EHS shall be made also a key responsibility of site engineers.

Training program will be devised by CSC on engineers' oversight in EHS and will be offered by EHS specialists of CSC to address EHS immediately when identified and raise it to EHS specialists if further action is required. The training on engineers' oversight shall convey the following messages:

- ◆ Engineers would assume greater responsibility for overseeing the EHS as part of their daily routine work,
- ◆ Engineers would review and approve each site's readiness to commence the work as per the design specifications, certifying whether Contractors are meeting the requirements of the Method Statements, and withholding funds from them that are not complied with.
- ◆ Engineers would impose financial penalties on the Contractor with non-existent or non-compliant EHS matters; and
- ◆ Engineers will assist workers in recognizing environment friendly and safe work measures and procedures necessary to protect the natural environment and occupational health and safety of workers and prevent illnesses, injuries and fatalities during construction.

7.8 Institutional Arrangements

The institutional requirements for the Construction and O&M phases of the proposed project are provided in below sections:

7.8.1 Institutional Arrangements for Implementation of ESMP during Construction Phase

The institutional arrangement for the implementation of ESMP for the subproject is presented in **Figure 7-1**. The PIU-KWSSIP will be responsible for the compliance of environmental and social safeguard requirements of the KWSSIP.

The project activities will be monitored and managed by the PIU-KWSSIP. The Environmental and Social Cell (ESC) staffed by qualified environmental, social and gender specialists have already been established under PIU-KWSSIP. The Environmental & Social Cell (ESC) will be the custodian of the ESMP. ESC will submit progress reports for the implementation of the ESMP to WB and Sindh Environmental Protection Agency (SEPA) as per environmental approval/NOC conditions and requirements mentioned under **Section 7.12** for the KWSSIP.

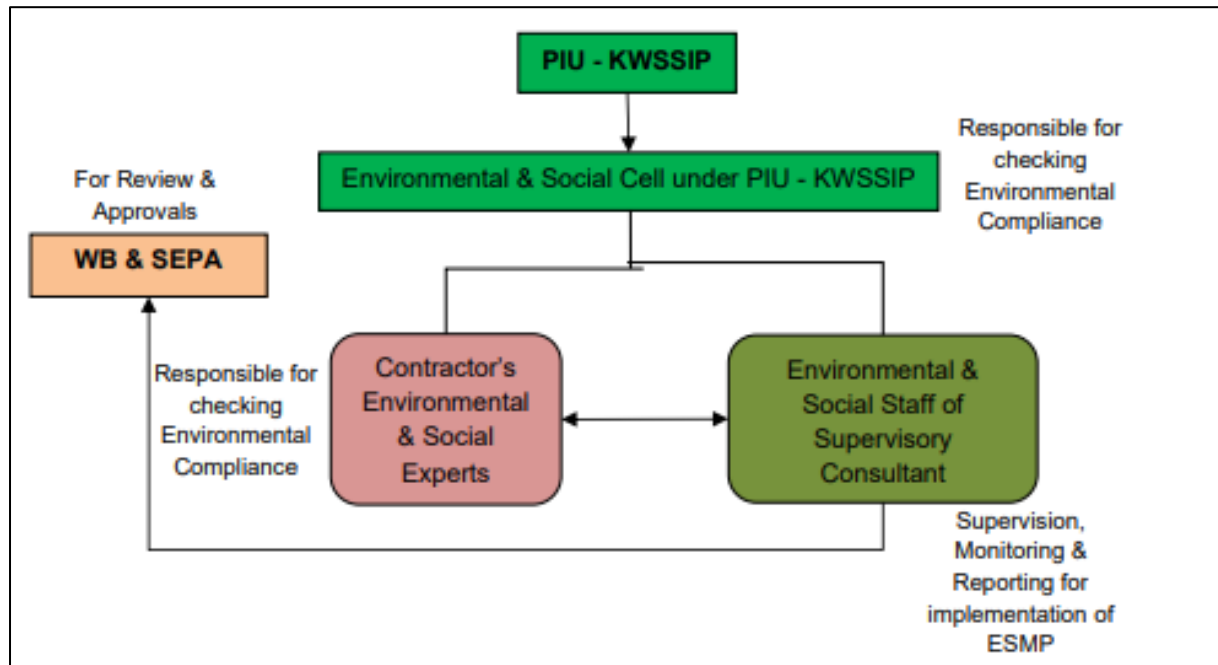


Figure 7-1: Organizational Setup for Implementation of ESMP at Construction Phase

7.8.2 Roles and Responsibilities

a) SEPA

As per Sindh Environmental Protection Act, 2014, SEPA is responsible for the approval of the Environmental Assessment reports.

b) PIU-KWSSIP

The Project Director of PIU-KWSSIP is in-charge for the financial and technical matters related to KWSSIP project. The PIU responsibilities for monitoring the ESMP will consist of:

- ◆ Ensuring that all environmental requirements and mitigation measures as identified in this ESMP are incorporated in the bidding and contract documents.
- ◆ Ensuring the overall E&S management of the project in compliance with the local as well as WB requirements. Ensuring that the measures given in this ESMP are effectively implemented
- ◆ Ensuring that all environmental requirements and mitigation measures as identified in this ESMP are; properly supervised and monitored by the CSC and implemented by the Contractors.
- ◆ Ensuring that the required environmental, social and gender trainings are provided to the concerned PIU staff;
- ◆ Carrying out random visits to the construction sites to review the environmental and social performance of the CSC and Contractor;
- ◆ Reviewing regular monitoring reports for the progress of environment and social management of the Project;

- ◆ Making sure that the Contractor is implementing the additional measures suggested by the Supervision Consultant (CSC) in environmental and social monitoring reports;
- ◆ Assisting Contractor for obtaining necessary approvals from the concerned departments;
- ◆ Maintaining interface with the other line departments/ stakeholders; and
- ◆ Reporting to the SEPA on status of ESMP implementation.
- ◆ Make sure that all the contractual obligations related to the environmental and social compliance are met;
- ◆ Monitor the progress regarding implementation of environmental and social safeguards as provided in the ESMP;
- ◆ Oversee the compliance of all the monitoring programs as given in ESMP;
- ◆ Check randomly whether monitoring of the environmental aspects of the Project during construction and operational phases is being properly carried out;
- ◆ Document and disclose monitoring results and identify necessary corrective and preventive actions in the periodic monitoring reports, and make follow-up on these actions to ensure progress toward the desired outcomes;
- ◆ Make sure that the Contractor implements the additional measures suggested by the Monitoring and Evaluation Consultants (M&E), Contractor; and
- ◆ Report the status of ESMP compliance to Project Director, PIU-KWSSIP.

c) Environment and Social Cell (ESC)

- d) An ESC has already been established in PIU, which consists of three specialists – one environment specialist, one social safeguard specialist and a gender specialist. ESC will be responsible for overall implementation of ESMP and other related tasks. They will be responsible for ensuring the ESMPs are included in the contract documents as well as supervision of ESMPs implementation. The ESC under PIU will take care of environmental and social aspects of the project activities. ESC will arrange environmental and social monitoring and prepare compliance reports and submit to PD-PIU for further submitting to the WB, AIB and SEPA, to fulfil their monitoring, reporting and compliance requirements of environmental and social aspects of the project. The ESC will be responsible to ensure compliance of ESMP during construction phase. The compliance will require measurements of environmental and social parameters and observations at the construction sites to evaluate compliance. The PIU will hire the services of independent environmental and social consultancy firm for Third Party Validation (TPV). **Construction Supervision Consultants (CSC)**

PIU will engage construction supervision consultants (CSC) for the proposed project. The CSC will conduct day to day monitoring of ESMP implementation and prepare monthly monitoring reports for each site and submit to ESC. The ESC will review the report, discuss with the CSC and finalize the findings. In case of noncompliance from the contractors, the CSC will have the authority to halt the construction activities or impose penalties as per the contract conditions. The CSC will submit the final version of monitoring and evaluation reports to PIU as per periodic reporting mechanism (defined later in the document). PIU will submit these reports to WB for their review and further action. Also, these reports will be submitted to SEPA as per the frequency to be mentioned in the construction phase 'Environmental Approval' requirements. Roles and responsibilities of CSC will be:

- ◆ Review and approve the contractor's management plans;
- ◆ To oversee and supervise the performance of the Contractor to make sure that the Contractor(s) is complying with ESMP;
- ◆ Ensuring that the day-to-day construction activities are carried out in an environmentally and socially sound and sustainable manner;
- ◆ Maintain close coordination with the Contractor and ESC;
- ◆ Preparing training materials and implementing training programs;
- ◆ Ensure the implementation of the mitigation measures suggested in ESMP;
- ◆ To supervise and monitor environmental and social activities being performed at site;
- ◆ To organize periodic environmental and social training programs and workshops for the consultant's and contractor's staff;
- ◆ Periodic reporting as mentioned in ESMP; and
- ◆ Suggest any additional mitigation measures (if required).

E&S team of CSC of the proposed project will consist of the following personnel:

- ◆ E&S Team Leader (one specialist – M.Sc. in Environmental Engineering with more than 20 years of professional experience, worked on at least two implementation projects as SC)
- ◆ Environmental Specialist (one specialist – M.Sc. in Environmental Engineering with 10 years of professional experience, worked on at least one implementation project SC)
- ◆ OHS Specialist (one specialist – M.Sc. in Environmental Engineering with OHS Certification, 10 years of professional experience, worked on at least one implementation project as OHS - SC)
- ◆ Social Safeguard Specialist (one specialist – M.Phil. in Sociology with 10 years of professional experience, worked on at least one implementation project SC)
- ◆ Gender Specialist (one specialist – M.Phil. in Sociology, Gender Study or equivalent with 10 years of professional experience, worked on at least one implementation project SC)

e) Construction Contractor

Contractors will be bound to appoint site based Environmental and Social Experts with relevant educational background and experience. The contractor will be responsible for ensuring implementation of the mitigation measures proposed in the ESMP, which will be part of the contract documents and its implementation will be a contractual binding for the contractors. The provision of the environmental and social mitigation cost will be made in the total cost of project. However, if the contractor fails to comply with the implementation of ESMP and submission of the monthly compliance reports, deductions will be made from the payments to the Contractor claimed under the heads of environmental and social components.

Contractors will be bound to carry out the following activities:

- ◆ Implementation of the mitigation measures as detailed in ESMP at construction site;

- ◆ Contractor will be bound through contract to take actions against all the special and general provisions of the contract document;
- ◆ Contractor will make sure the compliance of ESMP requirements related with construction;
- ◆ Implementation of OCHS control measures including provision of proper Personal Protective Equipment (PPEs) to the workers and train them for their proper use;
- ◆ Compliance with international best SOPs for COVID 19;
- ◆ To conduct the environmental and health and safety training to the workers/labour; and
- ◆ To assess the site-specific issues and implement mitigation measures accordingly
- ◆ Provide harassment free and safe secure environment for the labor and community specially community women and children.

The contractor will prepare a site specific ESMP based on the current ESMP and will get it approved from PIU. This will ensure the implementation of the ESMP based on the site conditions at the time of execution, by the contractor.

The Contractor will be required to have suitably qualified and experienced persons, to function as environmental, social and OHS Specialists, who will be working in close liaison with the ESC and CSC. The following key personnel are required in the contractor's team:

- ◆ E&S Team Leader (one specialist – M.Sc. in Environmental Engineering with more than 10 years of professional experience in project implementation)
- ◆ Environmental Specialist (one specialist) – B.Sc. in Environmental Engineering with 5 years of professional experience in project implementation)
- ◆ OHS Specialist (one specialist) – B.Sc. in Environmental Engineering with OHS Certification and 5 years of professional experience in project implementation)
- ◆ Social Safeguard Specialist (one specialist) – M.Sc. in Sociology with 05 years of professional experience in project implementation)
- ◆ Medical Representative (one specialist) – Valid certificate/degree in first-aid and emergency medical treatment from Pakistan Safety Council approved Institution with 5 years of professional experience in project implementation site)

7.9 Environmental and Social Mitigation Plans

The mitigation, safety inspections, and audit plans are the key element of ESMP to be prepared on the basis of impact and risk assessment described in **Chapter 5**. The Environmental and Social Mitigation Plans describes the potentially negative ESHS impacts and risks that the project could face during pre-construction and construction stages, lists mitigation and prevention measures to address the negative impacts and risks, and assigns responsibilities for implementation, prevention and monitoring and inspection of these measures.

The E&S Mitigation Plans are provided as **Table 7-1**, **Table 7-2** and **Table 7-3**. Contractor will make sure that they present the implementation status of mitigation and preventive measures identified in these Tables in every monthly reports, with quantifiable information. Guidelines for the preparation

of various project specific plans as required by the following tables are separately prepared and attached as **Annexure 7-2**: .

Table 7-1: Environmental and Social Mitigation Plan for Pre-Construction Phase

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|--|--|---|--|
| Permits, NOCs, Clearances | Necessary consents, permits, and clearances shall be obtained before the start of civil works. Permissions and clearances are required mainly from the government agencies including; Sindh Environmental Protection Agency (SEPA), National Highway Authority (NHA) and District Administration – Thatta. | Pre-Construction Phase | <ul style="list-style-type: none"> ◆ Completion of ESMP Approval Process in line with Review of SEPA IEE/EIA Regulations 2021 ◆ Writing formal letters from PD-KWSSIP to the identified departments for taking necessary permits, consents and approvals. | <ul style="list-style-type: none"> ◆ PIU |
| Lack of appropriate E&S personnel with CSC and Contractors | <ol style="list-style-type: none"> 1. PIU shall recruit qualified CSC and Contractors who are able to implement the Project's Environmental, Social, Health and Safety requirements as per the desired standards. 2. Education, qualification and experience requirements of personnel (Section 7.8.2) shall be included in the bidding documents . 3. Contractors with poor environmental, health, and safety management shall not be hired. 4. Contractor's qualifications as stated in this ESMP to be included as the pre-qualification criteria in the short-listing process. 5. the conditions of the ESMP will be correctly reflected in the contractor's bidding | Pre-Construction Phase / Before Start of Construction Activities | <ul style="list-style-type: none"> ◆ Bidding and Contract Documents ◆ ESMP, SSESMP, OHS / CHS and Other Plans | <ul style="list-style-type: none"> ◆ CSC's Selection: PIU ◆ Contractor's Selection: PIU & CSC ◆ Preparation of Plans: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|--|---|--|---|
| | <p>documents and the supervision consultant's TOR.</p> <p>6. Necessary funds to be allocated in the Contract documents for ESMP implementation and monitoring. Indicative costs of ESMP Implementation are provided in Section 7.13 of this report.</p> <p>7. Guidelines for Contractor's selection are provided in Section 7.1 to 7.3.</p> <p>8. Guidelines for the preparation of above mentioned plans are provided in Annexure 7-2.</p> | | | |
| <p>Inappropriate Planning for Traffic Management</p> | <p>1. PIU / CSC / Contractors in collaboration with National Highways and Motorway Police – Dhabeji Section will devise a Traffic Management Plan (TMP) to minimize the expected disruption at the identified sections. Guidelines for the preparation of traffic management plan are provided in Annexure 7-2.</p> <p>2. Works shall not commence until the PIU obtains necessary permissions from relevant authorities such as National Highway</p> | <p>Pre-Construction Phase / Before Start of Construction Activities</p> | <p>Preparation and Implementation of Traffic Management and Diversion Plan (TMDP), ECP 9: Road Transport and Road Traffic Management</p> | <ul style="list-style-type: none"> ◆ Preparation of TMDP: PIU / CSC / Contractor / Sindh Traffic Police ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|--|---|---|--|
| | <p>Authority (NHA) and District Administration – Thatta.</p> <p>3. PIU shall accord approval of TMP before initiation of construction activities and no temporary or permanent works shall be initiated before the plan is approved by the PIU.</p> <p>4. Implementation of ECP 9: Road Transport and Road Traffic Management</p> | | | |
| <p>Improper Location of Worker Camp Leading to Environmental and Social Issues</p> | <p>1. Campsite location is proposed in this ESMP (See Section 3.5.1) after consulting with the Technical Consultants and keeping in view the suitable distance from the nearby settlements. Worker camp shall be developed at the identified campsite location and ancillary facilities shall be provided such as electricity, washrooms for labor with suitable effluent and sewage disposal facilities as well as water for their everyday use for drinking and bathing etc.</p> <p>2. The Contractor in collaboration with the PIU / CSC will establish strict protocols for interaction with local communities .</p> <p>3. Contractors have to follow whereas PIU shall ensure the adherence to the labor standards including Provincial Labor Laws and ILO</p> | <p>Pre-Construction Phase / Before Start of Construction Activities</p> | <p>Establishment of Campsites at proposed locations and implementation of Labor Management Procedures (LMP); ECP 10: Construction Camp Management</p> | <ul style="list-style-type: none"> ◆ Preparation and Implementation of LMP: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-----------------------|----------------|
| | <p>Standards for work hours, worker's payments & compensations.</p> <p>4. Contractor shall prepare a Workers Camp Management Plan (CMP) and ensure its effective implementation. Guidelines for the preparation of these plans are provided in Annexure 7-2: .</p> <p>5. Labour Management Procedures (LMP) attached as Annexure 1-1 will be implemented by the Contractor in letter and spirit.</p> <p>6. Other necessary measures shall include:</p> <ul style="list-style-type: none"> ◆ Contractor shall develop a Code of Conduct (COC) for all site personnel. All site personnel shall sign this COC and abide by it. ◆ Contractor shall ensure that project staff will receive training on the prevention of Sexual Exploitation, GBV / SH. ◆ Construction crew will avoid entering settlements. ◆ Provision related to SEA/SH/GBV will be incorporated in the bidding document, ◆ The Contractor shall raise awareness of the risks among community members and local health authorities and inform | | | |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-----------------------------|--|--|---|--|
| | <p>them about available grievance mechanisms.</p> <ul style="list-style-type: none"> ◆ The routes / places used by the women will be avoided as far as possible. If unavoidable, alternate routes will be identified for the communities. ◆ Contractor shall conduct induction training or workshops to introduce the basics of health and hygiene and the necessary preventive measures against diseases. ◆ Necessary medical screening of all workers & staff and submission of proof of vaccination (COVID-19) prior to any employment shall be ensured. <p>7. Workers shall be provided with trainings on the Worker's GRM so that they know their rights and responsibilities.</p> <p>8. Availability of complaint box shall be ensured at all work sites .</p> <p>9. Implementation of ECP 10: Construction Camp Management</p> | | | |
| Lack of Community Awareness | 10. Before the start of project implementation, awareness shall be provided to the local population through FGDs, pamphlets etc. regarding the proposed project. Regular | Pre-Construction Phase / Before Start of Construction Activities | Community Interactions through FGDs, Pamphlets etc. | ◆ Implementation: PIU, CSC, Contractor |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|---|---|---|-------------------------------------|---|
| | <p>interaction shall be kept with the local population by the PIU, CSC and Contractor's Social Safeguard Teams throughout the construction period to keep them aware about the status of project activities. Important information needed to be disseminated to the people includes the following:</p> <ul style="list-style-type: none"> ◆ Overview and objectives of the proposed project; ◆ Preliminary and/or final detailed design of proposed project components; ◆ Potential environmental and social impacts (positive and negative) of the project, and the proposed mitigation measures for the perceived negative impacts; and ◆ Grievance redress mechanism and contact details of the project. | | | |
| <p>Lack of ESMP Implementation Training</p> | <ol style="list-style-type: none"> 1. ESMP training for the Contractors, its workers and PIU / CSC Management staff shall be organized before construction goes on-board. 2. Training shall be arranged before construction starts with all involved parties: | <p>Pre-Construction Phase / Before Start of Construction Activities</p> | <p>Interactive Training Session</p> | <ul style="list-style-type: none"> ◆ Implementation: CSC |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-----------------------|----------------|
| | <p>Contractor, Workers and Management Staff from PIU and CSC.</p> <p>3. The training shall cover topics including spoils management, waste management, driving safety, standard operating procedures (SOPs) for construction works; community and occupational health and safety, core labor standards, code of conduct, avoidance of interaction with communities, outcomes of GBVH / SEA / SH conducts, applicable environmental and social laws, etc.</p> | | | |

Table 7-2: Environmental and Social Mitigation Plan for Construction Phase

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|---|---|-------------------------------|--|---|
| Inadequate Implementation of ESMP, OHS, CHS and Other Specific Plans. | <ol style="list-style-type: none"> 1. The CSC and Contractor will recruit qualified and experienced Environment, Health, Safety and Social Staff in line with the requirements mentioned in Section 7.8.2, . 2. Contractor to define Environmental, Social, Occupational & Community Health and Safety procedures for all works in method statements, and shall prepare and implement Site Specific Environmental Social Management Plan (SSESMP), OHS Plan, CHS Plan and other required plans based on the ESMP guideline. These procedures and plans shall be approved by the PIU and CSC before the Contractor commences any physical works on ground. 3. PIU - KWSSIP shall review the Contractor's capacity with respect to safeguard management . Contractors not possessing the required capacity for E&S safeguards management will not be pre-qualified. | Throughout Construction Phase | ESMP, OHS, CHS and Other Specific Plans. | <ul style="list-style-type: none"> ◆ Contractor's selection: PIU and CSC ◆ Preparation / Implementation of plans: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |
| Occupational Health & Safety / Emergency Preparedness and Response | <ul style="list-style-type: none"> ◆ Contractor to prepare Occupational Health and Safety (OHS) Management Plan in accordance with national / local regulatory frameworks. | Throughout Construction Phase | Implementation of OHS Management Plan, Emergency Preparedness and Response Plan, ECP | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-------------------------------|--|
| | <ul style="list-style-type: none"> ◆ Contractor shall prepare an emergency preparedness and response plan (EPRP) as part of the OHS Plan to contain larger emergencies. ◆ PIU will work with the national / provincial emergency response services to ensure any external emergency response arrangements (Fire, Ambulance, Epidemic Control etc.), if the resources available with the Contractor are not sufficient to contain any such emergencies. ◆ At every workplace, a readily available first aid unit, including an adequate supply of sterilized dressing material and appliances, will be provided. Suitable transport will be provided to facilitate the transfer of injured or ill persons to the nearest hospital. ◆ At every workplace and construction camp, proper equipment and paramedical staff will be provided. ◆ The Contractor will maintain site safety and install hard barricading, flexible green net, signboards, temporary safety and traffic diversions throughout the construction period and provide personal protective equipment (PPE) to all the workers working at the construction sites. ◆ Zero tolerance to loss of life policy shall be developed and implemented by the Contractor. | | 11: Workers Health and Safety | <ul style="list-style-type: none"> ◆ Coordination with National / Provincial Emergency Response Services: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-----------------------|----------------|
| | <ul style="list-style-type: none"> ◆ Contractor will ensure organization of Health and Safety trainings for all site personnel throughout the construction period. ◆ In case accident in the form of injury or fatality affects any workers, they or their legal heirs will be compensated by following Sindh Workers Compensation Act, 2015. ◆ Implement specific mitigation guidelines provided in Annexure 7-2 for dealing with various hazards associated with the proposed construction activities, such as: <ul style="list-style-type: none"> ◆ Trench Excavation ◆ Use of Excavators ◆ Lifting Operations (Cranes) ◆ Heat Stress / Heat Stroke ◆ Confined Space Working ◆ Welding Safety ◆ Construction Dust ◆ Construction Noise ◆ Fire Safety ◆ Implementation of ECP 11: Workers Health and Safety | | | |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|---|--|-------------------------------|---|---|
| Communicable Diseases - COVID- 19 and Camp Management | <ol style="list-style-type: none"> 1. Implementation of health and safety protocols on COVID19 i.e. Health & Safety of Building and Construction Workers - Issued by Ministry of National Health Services, Regulations and Coordination, GoP - April, 2020. 2. Awareness among workers will be created on proper sanitation and hygiene practices; 3. Good housekeeping practices will be maintained at camp and project sites; 4. Adequate personal hygiene facilities will be provided in good condition with adequate supply of clean water; 5. Arrangements will be made to treat the affected workers on time to control the movement of vectors diseases; 6. Implementation of Camp Management Plan and Labor Management Procedures (LMP). 7. Use of non-wood fuel for cooking; 8. Contractor shall implement ECP 10: Construction Camp Management 9. Cleaning staff shall be appointed for maintaining cleanliness at Campsites. | Throughout Construction Phase | Implementation of COVID19 Guidelines - Health & Safety of Building and Construction Workers, Workers Code of Conduct (CoC), CMP, LMP. | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |
| Employment of Child Labor | <ul style="list-style-type: none"> ◆ Implementation of Sindh Prohibition of Employment of Children Act, 2017; | Throughout Construction Phase | Implementation of Sindh Prohibition of | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-------------------------------|--|---|
| | <ul style="list-style-type: none"> ◆ No child having age below 18 shall be allowed to be employed in any construction work by the – construction contractors, sub-contractors and any service providers. ◆ Contractor will ensure that all persons at site are adults and have their government issued identity card with them. | | Employment of Children Act, 2017 | <ul style="list-style-type: none"> ◆ Monitoring: PIU |
| Dust Emissions | <ol style="list-style-type: none"> 1. Immediate removal of excavated material will be ensured to avoid its emission and runoff. 2. Water sprinkling at the unpaved sections of access road.. 3. Limiting speeds of construction vehicles in the project area. 4. Regular trainings of the drivers to ensure implementation of speed limits. 5. Fuel-efficient / well-maintained construction machinery shall be employed to minimize exhaust emissions. 6. Vehicles transporting soil, sand and other construction materials shall be covered with tarpaulin. 7. Earliest resolution of any dust related public complaints registered through Project's Grievance Redress Mechanism. 8. Implementation of: | Throughout Construction Phase | ESMP, ECP 1: Waste Management, ECP 2: Fuels and Hazardous Goods Management, ECP 5: Air Quality Management, ECP 9: Road Transport and Road Traffic Management | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|--|-------------------------------|---|---|
| | <ul style="list-style-type: none"> ◆ ECP 1: Waste Management ◆ ECP 2: Fuels and Hazardous Goods Management ◆ ECP 5: Air Quality Management ◆ ECP 9: Road Transport and Road Traffic Management | | | |
| High Noise Levels from Construction Activities | <ol style="list-style-type: none"> 1. Blowing of horns by construction machinery and vehicles shall be strictly prohibited. 2. The operation of heavy equipment shall be restricted to daylight hours as far as possible and noisy works shall be avoided / minimized during the night time. 3. Noise from vehicles and power generators will be minimized by use of proper silencers and mufflers. 4. All the equipment and machinery used during construction phase shall be well maintained and in compliance with SEQS. 5. Earliest resolution of any noise related public complaints registered through Project's Grievance Redress Mechanism. 6. Implementation of ECP 6: Noise and Vibration Management | Throughout Construction Phase | ESMP, ECP 6: Noise and Vibration Management | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |
| Solid Waste Management - Generation of | <ol style="list-style-type: none"> 1. A waste management plan will be developed by the Contractor prior to the start of construction. This plan will cater to sorting of hazardous and non- | Throughout Construction Phase | Implementation of Waste Management | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|---|--|-------------------------------|--|--|
| Excavated Material, Domestic Waste, Hazardous Waste | <p>hazardous materials prior to disposal, placing of waste bins at the project sites for waste disposal and an onsite hazardous waste storage facility i.e. designated area with secondary containment.</p> <p>2. Fuel storage areas, hazardous material storage areas, and generators will have secondary containment in the form of concrete or brick masonry bunds. The volume of the containment area shall be equal to 120% of the total volume of fuel stored.</p> <p>3. Licensed and SEPA approved waste contractors will be engaged to dispose-off all hazardous and non-hazardous waste materials that cannot be recycled or reused.</p> <p>4. After backfilling and other related works, 2,011,340 m³ of surplus material shall be the leftover which will be spread at depression areas within the already allocated KWSB's RoW.</p> <p>5. Domestic waste from the camp will be disposed to the nearest SSWMB waste disposal bin.</p> <p>6. Implementation of:</p> <p>7. -ECP 1: Waste Management</p> <p>8. -ECP 2: Fuels and Hazardous Goods Management</p> | | Plan (WMP), ECP 1: Waste Management ECP 2: Fuels and Hazardous Goods Management | ♦ Monitoring: PIU |
| Untreated Disposal of Effluent from Worker Camp | ♦ The Contractor will ensure that no untreated effluent is released. A closed sewage treatment scheme including soak pits and septic tanks will be | Throughout Construction Phase | Implementation of Waste Management | ♦ Implementation: Contractor ♦ Supervision: CSC |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--------------------|--|-------------------------------|---|---|
| | <p>constructed to treat the effluent from the construction/labor camp.</p> <ul style="list-style-type: none"> ◆ Soak pits will be built in absorbent soil and shall be located 300 m away from any nearby water well, boring or hand pump. ◆ It shall be ensured that the soak pits remain covered all the time and measures are taken to prevent entry of rainwater into them. ◆ In case the septic tank gets filled with sludge, it shall be emptied through vacuum truck and after getting approval from KWSB, the removed effluent shall be transferred to the approved municipal drain. ◆ Implementation of: <ul style="list-style-type: none"> -ECP 1: Waste Management -ECP 3: Water Resources Management -ECP 10: Construction Camp Management | | <p>Plan (WMP), ECP 1: Waste Management ECP 3: Water Resources Management ECP 10: Construction Camp Management</p> | <ul style="list-style-type: none"> ◆ Monitoring: PIU |
| Soil Contamination | <ul style="list-style-type: none"> ◆ The Contractor will ensure that all the construction vehicles, equipment and power generators are properly maintained and there are no leakages from their engines and mechanical / moving parts. ◆ It shall be ensured that trays are provided and used during refuelling, maintenance of construction vehicles / equipment and under the parked vehicles and equipment if there are any leakages. | Throughout Construction Phase | Implementation of Spill Prevention Plan, ECP 2: Fuels and Hazardous Goods Management | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-----------------------------|---|-------------------------------|--|---|
| | <ul style="list-style-type: none"> ◆ Fuels, lubricants and chemicals shall be stored in covered bounded areas, underlain with impervious lining. Static Power Generators shall also be placed at impervious floors bunded with parapet walls. ◆ Implementation of; <ul style="list-style-type: none"> ◆ ECP 2: Fuels and Hazardous Goods Management | | | |
| Improper Site Restoration | <ul style="list-style-type: none"> ◆ Dismantling and full removal of worksite facilities and camp, including contractor offices, staff and workers' accommodation, machinery yard, warehouses, store rooms, maintenance shops, drinking water utilities, vehicle parking areas, temporary materials stockpiling enclosures, sewage network and toilets etc. ◆ Ground cleaning will be done by removing all the affected topsoil and handing it over to authorized waste handlers. ◆ Addition of topsoil where necessary. | End of Construction Phase | Implementation of Waste Management Plan (WMP) | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |
| Community Health and Safety | <ol style="list-style-type: none"> 1. Contractor shall prepare Community Health and Safety Plan based on construction methods, site specific hazards and framework presented in Annexure 5-1. 2. All the trenches and excavations will be protected with barriers especially at locations nearby KWSB Colony – Dhabeji and Yaqoobabad locality. | Throughout Construction Phase | Implementation of Community Health and Safety Plan | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-----------------------|----------------|
| | <ol style="list-style-type: none"> 3. Excavated material shall not be piled next to the trenches and excavations and removed from the site on frequent basis. 4. Adequate lighting shall be installed at excavated areas and trenches to keep them well-lit and prominent during night. 5. Contractor shall ensure setting up of its machinery on the roads for construction works in such way that it will not hinder the public traffic to the maximum possible extent and will not compromise the public safety. 6. Contractor shall ensure that all the vehicle drivers and equipment operators have valid licenses and proven competency to safely operate vehicles and equipment in public areas. 7. Excavators and dumper trucks will be provided with trained banksmen / marshaller to supervise safe movement during excavation activities. 8. Vehicular speeds shall be kept at minimum during movement. 9. Following measures shall be adopted for minimizing the nuisance caused by dust and noise to the public: <ul style="list-style-type: none"> ◆ Use of noise suppression on equipment; ◆ Water sprinkling for dust suppression; | | | |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|---|--------------------------------------|--|---|
| | <ul style="list-style-type: none"> ◆ Carrying out major work activities having potential of higher noise generation in day time only. | | | |
| <p>Labor Influx / SEA – SH – GBV Incidents</p> | <ol style="list-style-type: none"> 1. The contractor shall employ more locals in skilled, semi-skilled, and unskilled work. ; 2. The contractor will proactively manage the potential impacts from labor influx and potential cultural conflicts between local communities and workers, which include following: <ul style="list-style-type: none"> ◆ Construction camp will be built at the designated areas; ◆ Inclusion of COC obligations and the applicable legislation in the contracts of all employees and workers with the provision of sanctions and penalties in case of violations; 3. Contractor shall ensure that project staff will receive training on the prevention of Sexual Exploitation, Gender Based Violence and Abuse (SEA) / Sexual Harassment (SH). 4. Construction crew will avoid entering settlements. 5. The Contractor shall raise awareness of the risks among community members and local health authorities and inform them about available grievance mechanisms. | <p>Throughout Construction Phase</p> | <p>Workers Code of Conduct (CoC), Community Health and Safety Plan</p> | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|---|---|--------------------------------------|---|---|
| | <p>6. The routes/places used by the women will be avoided as far as possible. If unavoidable, alternate routes will be identified for the communities.</p> <p>7. Any violation of the COC will lead to strict punishment including termination of employment;</p> <p>8. The use of drugs and alcohol will not be allowed at the work/construction site;</p> <p>9. Carrying weapons into the workplace premises will be prohibited;</p> <p>10. Site security arrangements will be ensured in line with Security Management Guidelines for Contractors are attached as Annexure 5-3: .</p> <p>11. Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to record entry and exit of workers, staff and visitors;</p> <p>12. The Contractor will ensure that good relations are maintained with local communities.</p> | | | |
| <p>Construction Traffic Management and Safety</p> | <ul style="list-style-type: none"> ◆ Traffic Management Plan will be prepared as per the guidance provided under Annexure 7-2 before taking up any construction work and shall be implemented after getting approved from the PIU / CSC. ◆ Barricades, signs, markings, flags, lights and flagmen shall be deployed at key spots. | <p>Throughout Construction Phase</p> | <p>Implementation of TMP, ECP 9: Road Transport and Road Traffic Management</p> | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|--|-------------------------------|--|---|
| | <ul style="list-style-type: none"> ◆ The flagmen shall be trained for traffic management and equipped with red and green flags and lights. ◆ Emergency response plan shall be prepared for any traffic accident during construction. ◆ In case of community related accident, compensation shall be paid in accordance with Fatal Accidents Act 1855. ◆ Implementation of; <ul style="list-style-type: none"> ◆ ECP 9: Road Transport and Road Traffic Management | | | |
| Vegetation Loss and Disturbance to Fauna | <ol style="list-style-type: none"> 1. A project specific Compensatory Tree Plantation Plan shall be prepared by the Contractor based upon the Tree Plantation Plan attached as Annexure 4-4. 2. According to the Tree Plantation Plan; <ul style="list-style-type: none"> ◆ The Contractor shall make inventory of the trees that shall require to be cut before initiation of construction activities based on finalized work plan and requirements. ◆ Suitable space for tree plantation shall be identified by the PIU and KWSB in consultation with Forest Department, District Administration etc. before clearance of trees. | Throughout Construction Phase | Implementation of Tree Plantation Plan, ECP 7: Protection of Flora' ECP 8: Protection of Fauna | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU ◆ Identification of Compensatory Plantation Sites: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------|--|-----------------------|-----------------------|----------------|
| | <ul style="list-style-type: none"> ◆ Seed supply, nursery, watering and any other necessary arrangements should be in place for maintaining the trees planted under compensatory plantation, at least for five years. Contractor shall be responsible for maintaining the trees during the Contract Period and Defect Liability Period, whereas after that, the trees shall be handed over to the relevant departments which have the ownership of the land for compensatory plantation sites. 3. Compensatory plantation of the trees shall be undertaken by the Contractor at the replacement ratio of ten trees for every tree that is cut (i.e. 10:1 ratio); 4. For trees not proposed to be cut, all precautions shall be taken to protect them from any damage from construction activities. 5. The contractor shall also be required to compensate the cutting of shrubs in the project's DIA through plantation of ornamental shrubs at the areas to be specified by the PIU at the time of project execution. 6. While clearing vegetation and excavation it shall be ensured that no wildlife get injured or killed. 7. Construction work that may generate high noise levels shall be avoided during night time as far as | | | |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|-------------------------|--|-------------------------------|------------------------|---|
| | <p>possible to prevent local birds and fauna from disturbance;</p> <p>8. Workers shall be provided with adequate knowledge regarding protection of flora and fauna, and relevant government regulations.</p> <p>9. Implementation of;</p> <ul style="list-style-type: none"> ◆ ECP 7: Protection of Flora ◆ ECP 8: Protection of Fauna | | | |
| Cultural Heritage Sites | <ul style="list-style-type: none"> ◆ Contractor shall train the workers on chance find procedures and in the event of a chance finds. ◆ The following measures shall be strictly adopted by the Contractor: <ul style="list-style-type: none"> ◆ Strictly follow the protocol by coordinating immediately with PIU and Directorate General of Antiquities and Archaeology – Cultural, Tourism, Antiquities and Archives Department (GoS) for any suspicion of chance finds during excavation works; ◆ Stop work immediately to allow further investigation if any finds are suspected; and ◆ Request authorized person from the Archaeology Department to observe when excavation resumes for the identification of the potential chance find, and comply with further instructions. | Throughout Construction Phase | Chance Find Procedures | <ul style="list-style-type: none"> ◆ Implementation: Contractor ◆ Supervision: CSC ◆ Monitoring: PIU |

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--------------------------------------|--|-------------------------------|--|---|
| Stakeholders Concerns and Engagement | <ol style="list-style-type: none"> Chapter 9 provides detailed account of Stakeholders Engagement and Information Disclosure. PIU, CSC and Contractor to ensure public consultations and participation of stakeholders throughout the project lifecycle. This would ensure that concerns about the impacts of the project are addressed at the right time. Stakeholder engagement to be carried out in a meaningful and inclusive way, providing access to remedy. | Throughout Construction Phase | Preparation and Implementation of Project specific Stakeholder Engagement Plan | <p>Preparation of Plan: CSC and Contractor</p> <p>Implementation: PIU, CSC and Contractor</p> <p>Supervision: CSC Monitoring: PIU</p> |

Table 7-3: Environmental and Social Mitigation Plan for Operational Phase

| Impacts and Risks | Details of mitigation / enhancement measure | Implementation timing | Implementation method | Responsibility |
|--|---|-------------------------------|-------------------------------------|--|
| OHS Risks Associated with Maintenance & Repair | Workers will be provided with PPEs during routine maintenance activities. Trainings will be conducted for the work practices and use of equipment | During Maintenance Activities | WB General EHS Guidelines and GIIPs | KWSB Rising Mains Operations In-charge |

7.10 Monitoring Parameters and Monitoring Plan

The Monitoring Plan proposed for the Project's Pre-Construction and Construction Phases are presented in **Table 7-4** and **Table 7-5**. The monitoring will comprise surveillance to check whether the Contractor is implementing the ESMP requirements and meeting the provisions of the contract during pre-construction and construction phases of the project including the responsible agencies for implementation and supervision. Monitoring time and locations for some parameters may require adjustments by the CSC and PIU during project execution.

Table 7-4: Environmental and Social Monitoring Plan for Pre-Construction Phase

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|---------------------|-----------------|---|-------------------------------------|----------------------|--|---|
| Ambient Air Quality | Contractor, CSC | ◆ 24hr - CO, SO ₂ , NO ₂ , PM ₁₀ , PM _{2.5} | 01 Location – KWSB Colony - Dhabeji | Once | Before Initiation of Construction Activities | <ul style="list-style-type: none"> ◆ To determine the baseline air quality for comparing it with construction phase results to determine the difference ◆ Devising right mitigation strategies |
| Noise Level | Contractor, CSC | ◆ 24hr – Noise Levels | 01 Location – KWSB Colony - Dhabeji | Once | Before Initiation of Construction Activities | <ul style="list-style-type: none"> ◆ To determine the baseline noise levels for comparison with construction phase noise results to determine the difference ◆ Devising right mitigation strategies |

Table 7-5: Environmental and Social Monitoring Plan for Construction Phase

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|--------------------------------|-----------------|---|----------------------|---|-------------------------------|---|
| Occupational Health and Safety | Contractor, CSC | <ul style="list-style-type: none"> ◆ Number of unsafe acts/incidents, near misses, first aid injuries, work- related illness, lost time incidents, fatalities ◆ Number of training sessions, toolbox talks, risk assessments ◆ PPEs use and violations | All Project Sites | Regularly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To prevent workers from accidents ◆ Investigation reports, Corrective action plans, Increased training and Awareness creation. |
| COVID19 | Contractor, CSC | <ul style="list-style-type: none"> ◆ Number of cases in workforce ◆ Number of COVID-19 tests ◆ Number of workers vaccinated ◆ Audit of provisions and equipment | All Project Sites | To be determined by PIU, CSC at the time of execution | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To prevent spread of COVID19 ◆ Investigation report, Corrective action plans, Consultation with health department and /or specialists. |
| Worker Grievances | Contractor, CSC | <ul style="list-style-type: none"> ◆ Number and types of worker grievances ◆ Resolution timeframes ◆ Number and duration of worker protests | All Project Sites | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To protect workers from work stress ◆ Investigation reports, Corrective action plans, Compensation and/or redress. |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|--------------------------------|-----------------|--|---|----------------------|-------------------------------|--|
| Ambient Air Quality Monitoring | Contractor, CSC | <ul style="list-style-type: none"> 24hr - CO, SO₂, NO₂, PM₁₀, PM_{2.5} | 01 Location – KWSB Colony - Dhabeji | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> To determine the effectiveness of dust / air quality control measures at receptor level Investigation for finding the cause and corrective action / application of right mitigation measures |
| Noise Level | Contractor, CSC | <ul style="list-style-type: none"> 24hr – Noise Levels | 01 Location – KWSB Colony - Dhabeji | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> To determine the effectiveness of noise abatement measures at receptor level and workers sound pressure levels Investigation for finding the cause and corrective action / application of right mitigation measures |
| Water Quality | Contractor, CSC | <ul style="list-style-type: none"> WBG / WHO / SEQS Drinking Water Quality Parameters | 02 Samples: Worker Camp, Office Sites and | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> To check quality of water being supplied to workers / staff |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|------------------|-----------------|---|--|----------------------|-------------------------------|--|
| | | | Kitchen / Mess Areas | | | <ul style="list-style-type: none"> ◆ Arrangements for the provision of clean drinking water from alternate source |
| Waste Management | Contractor, CSC | <ul style="list-style-type: none"> ◆ Inspection of solid waste generation, collection, storage, recycling and disposal ◆ Recording volumes of excavation and spoil generated, reused, sold, stockpiled by location ◆ Recording waste volumes by type (kitchen and domestic, medical, batteries, electrical equipment, tires, rags, paper, scrap metal wastes etc.) generated at various construction sites ◆ Recording the final disposal of each waste stream ◆ Calculating rate of waste reuse / recycling | All Project Sites, camp, focusing on areas where waste is stored / located | Fortnightly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To check implementation status and effectiveness of waste management system ◆ Identification of violations against the Waste Management Plan requirements, Corrective actions ◆ Identification of additional waste management measures if required, Revision of waste management plan if required. |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|--|-----------------|--|---|----------------------|-------------------------------|---|
| | | <ul style="list-style-type: none"> Recording storage, transport and disposal costs | | | | |
| Soil Contamination | Contractor, CSC | <ul style="list-style-type: none"> Visual Inspection Recording Incidents of oil, fuel and chemical spills | All work areas, machinery parking areas, generator installation sites and workshops | Weekly | Throughout Construction Phase | <ul style="list-style-type: none"> To check implementation of Spill Prevention Plan Corrective actions, Identification of additional management measures if required |
| Effluent Disposal | Contractor, CSC | <ul style="list-style-type: none"> Visual Inspection for checking any bypasses or leakages in effluent disposal arrangements at camp and office sites | All workers camp / office sites | Weekly | Throughout Construction Phase | <ul style="list-style-type: none"> To check status and effectiveness of effluent disposal arrangements Corrective actions, Identification of additional management measures |
| Community Health and Safety / Construction Traffic | Contractor, CSC | <ul style="list-style-type: none"> Status of Barricading at Trenches and Excavations Status of provision of Pedestrian access | All Project Area | Bi-weekly | Throughout Construction Phase | <ul style="list-style-type: none"> To protect general public from construction nuisance, hazards and accidents |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|---|-----------------|--|---------------------------------|----------------------|-------------------------------|--|
| Management and Safety / Access to Receptors | | <ul style="list-style-type: none"> ◆ Status of piling-up of excavated material and pipes along trenches ◆ Status of posting safety signage ◆ Status of traffic diversions ◆ Road safety incidents records ◆ Lighting arrangements ◆ Provision of safety equipment and materials at sites | | | | <ul style="list-style-type: none"> ◆ Corrective actions, Identification of additional management measures |
| SEA/SH incidents | Contractor, CSC | <ul style="list-style-type: none"> ◆ Status of worker's interaction with public, nearby communities. ◆ Investigation of any SEA/SH incidents reported / communicated by workers or registered by communities in GRM | All Campsites and Project Sites | Weekly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To protect public and communities from SEA/SH incidents. ◆ Penalizing the Culprit and taking strict disciplinary action by involving relevant Government agencies. ◆ Implement strict measures to restrict repetition of such incidents. |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|------------------------|--|--|---|----------------------|-------------------------------|--|
| Tree Cutting | Contractor, CSC, PIU and Sindh Forest Department | <ul style="list-style-type: none"> ◆ Existing vs Planned Tree Cutting ◆ No. of Trees Planted under Compensatory Plantation Scheme ◆ Growth / Maintenance / Care of planted trees | All Project Sites and Compensatory Plantation Sites | Fortnightly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ To ensure compensatory tree plantation as per Tree Management Plan requirements ◆ Root cause analysis, supported by Corrective and additional mitigation measures |
| Stakeholder Engagement | Contractor, CSC, PIU | <ul style="list-style-type: none"> ◆ Number and types of engagements ◆ Topics raised during engagement ◆ Number and types of community grievances ◆ Closure duration of grievances ◆ Claimant satisfaction of process and results grievance mechanism | Stakeholders Identified in Project's SEP | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ Minimizing stakeholders complains ◆ Investigation reports Increased engagement or more appropriate methods of consulting in line with community needs ◆ More engagement resources (staff, materials, etc.) |

| Item | Responsibility | Monitoring Parameters | Monitoring Locations | Monitoring Frequency | Monitoring Timing / Duration | Objective of Monitoring and Potential Response in Case of Exceedance |
|-------------------|----------------------|--|----------------------|----------------------|-------------------------------|--|
| Public Grievances | Contractor, CSC, PIU | <ul style="list-style-type: none"> ◆ Numbers of grievances ◆ Types of grievances ◆ Number of grievances related to dust, noise, traffic, restricted access, any abuses related to project workers. ◆ Appropriate close-out measures and actions to prevent recurrence ◆ Grievances closed out within timeframes | Affected Communities | Monthly | Throughout Construction Phase | <ul style="list-style-type: none"> ◆ Minimizing public complains ◆ Revise grievance management system and capacity |

7.11 ESMP Trainings

Training programs shall be implemented during the Project life cycle to ensure all staff receive the required training in both general and job-specific issues. Trainings shall be provided to all new recruits and continual refresher courses shall be organized for the existing staff. The implementation of the E&S training would help ensure that the requirements of the ESMP are transparent to all project personnel and they are followed accordingly throughout the project lifespan. Moreover, the training programs would also ensure that all site personnel are well aware of their work responsibilities for instance, the environmental and social requirements of the Project and how they will be implemented and monitored on site. They will also be introduced to the potential impacts and risks of the Project, including the mitigation and control measures that have adopted to address those impacts and risks as well as where to implement the appropriate measures. Additionally, the trainings would lead the staffs to be well aware about the roles of PIU, the CSC and the Contractors when it comes to environmental and social issues. Each organization will be responsible to provide training to their own staffs before the start of the Project and also during the execution of the Project. Training will cover all staff levels, including management, supervisory personnel as well as both skilled and unskilled workforces.

Training program will consist of the following:

7.11.1 Pre-construction phase ESMP Implementation Training

Pre-construction phase ESMP Implementation Training shall be organized by CSC for PIU, CSC and Contractor Management & Workers and it shall provide awareness on: waste management, defensive driving, standard operating procedures (SOPs) for construction works; community and occupational health and safety, core labor standards, code of conduct, avoidance of interaction with communities, outcomes of Sexual Exploitation, Gender Based Violence and Abuse (SEA) / Sexual Harassment (SH) (GBVH / SEA / SH) conducts, transmissible diseases, applicable environmental and social laws, sensitivity of the project area and key findings of the ESA / ESMP etc.

7.11.2 Construction Phase Trainings

- ◆ Workers shall be provided with general ESHS awareness sessions on weekly basis, Daily toolbox talks, Induction trainings during workers appointment, covering topics including OHS / CHS protocols, Avoidance / Protocols of community interaction etc.
- ◆ Drivers and operators would be regularly trained prior to and during the field operations regarding road safety, defensive driving, waste disposal and cultural values and social sensitivity.
- ◆ All site personnel would be educated about proper use of personal protective equipment. camp operations and management, waste disposal, resource conservation and housekeeping through regular weekly trainings.
- ◆ Workers shall be provided with training on ESHS management related to site restoration works at the end of construction phase.
- ◆ Construction phase trainings includes the following:
 - ◆ Training of workers before hot outdoor work begins.
 - ◆ Recognition of the signs and symptoms of heat-related illnesses and administration of first aid.

- ◆ Causes of heat-related illnesses and steps to reduce the risk. These include drinking enough water and monitoring the color and amount of urine output.
- ◆ Proper care and use of heat-protective clothing and equipment and the added heat load caused by exertion, clothing, and personal protective equipment.
- ◆ Effects of other factors (drugs, obesity, etc.) on tolerance to occupational heat stress.
- ◆ The importance of acclimatization.
- ◆ The importance of immediately reporting any symptoms or signs of heat-related illness in themselves or in co-workers to the supervisor.
- ◆ Procedures for responding to symptoms of possible heat-related illness and for contacting emergency medical services.
- ◆ Supervisors shall also be trained on the following:
 - ◆ Implementing appropriate acclimatization plan.
 - ◆ Procedures to follow when a worker has symptoms of heat-related illness, including emergency response procedures.
 - ◆ Monitoring weather reports.
 - ◆ Responding to hot weather advisories.
 - ◆ Monitoring and encouraging adequate fluid intake and rest breaks.

7.11.3 Capacity Development Trainings

In addition to regular ESMP and Health & Safety Trainings, the Contractor shall be required to organize Capacity Development Trainings once before construction and on monthly basis throughout the construction period for the key ESHS Management Staff, Site Supervisors and Project Management personnel belonging from Contractor, PIU and CSC for sensitizing them on; effective ESHS management, relevant WB and GoS requirements on ESHS management. Adequate budget has been kept for capacity development trainings in the ESMP Cost. Indicative outline of training capacity building training program is as follows:

| Training Activity | Participants | Content | Scheduling | Cost Estimates |
|---|------------------|--|------------|----------------|
| | | | | PKR |
| Environment code of practices | Contractor Staff | Awareness & applicability of environmental code of practices | Once | 100,000 |
| Awareness workshop regarding Covid 19 and other vector borne diseases | Contractor Staff | Risk, Prevention and available treatment | Once | 100,000 |
| Waste Management | Contractor Staff | Awareness associated with waste Storage, | Once | 100,000 |

| Training Activity | Participants | Content | Scheduling | Cost Estimates |
|---|------------------|--|------------|------------------|
| | | | | PKR |
| | | collection and safe disposal | | |
| Workshop on Emergency Response | Contractor Staff | Potential natural and other hazard/emergencies and dealing with emergency to minimize damage | Once | 300,000 |
| Workshop on Community/ Occupational health and safety | Contractor Staff | Awareness on EHS Guidelines | Once | 350,000 |
| Gender Aspects | Contractor Staff | Awareness on gender inequalities/GBV OP 4.20 | Biannually | 300,000 |
| Total | | | | 1,250,000 |

7.12 Reporting and Documentation

Contractor shall prepare monthly reports detailing the progress and efforts of Contractor on the implementation of Project's Environmental, Social, Health and Safety (ESHS) Safeguards Requirements included in the ESA and ESMP. The PIU - ESU with assistance from CSC and Contractors will also produce quarterly reports.

Contractor's Monthly ESHS Reports: The monthly reports shall provide detailed account of implementation status on the mitigation measures as suggested in the ESMP (**Table 7-1 to Table 7-3**) and updates on the outcome of the field inspections carried out by the Contractor ESHS Teams and status / results of ESHS Monitoring as required under Monitoring Plans (**Table 7-4 to Table 7-6**). Report shall also provide details on all the trainings conducted by the Contractor during the reporting month and details of complaints registered at Project's GRM and actions taken by the Contractor for resolution of complaints. In addition to the monthly reports, the Contractor will also submit weekly onsite monitoring reports based on daily monitoring activities / findings. Template to be followed by the Contractor for Monthly ESHS Report is attached as **Annexure 7-3**.

CSC's Monthly ESHS Reports: Based on the Contractor's Monthly Reports, the CSC in their Monthly Report shall validate the information provided in the Contractor's report, indicate the gaps, their own field observations and evaluation of Contractor's performance on implementing project's ESHS safeguards. CSC Monthly Reports shall also provide details on Corrective Action Plans (CAPs), agreed timelines for resolution of active ESHS issues, status of penalties imposed by the CSC on Contractor for continual non-compliances and way forward suggested by the CSC. The report shall also provide expert analysis on the adequacy of trainings organized by the Contractor, advise for the Contractor regarding realignment of training program and independent analysis on GRM activities.

PIU's Quarterly Progress Reports on Environment, Social, Health and Safety Management: The reports shall be prepared by the PIU with assistance from CSC and Contractors. The report shall

provide detailed account of quarterly ESHS Safeguards implementation status, mitigation measures and preventive actions undertaken, environmental and social monitoring activities conducted, details of monitoring data collected, analysis of monitoring results particularly the non-compliances, recommended mitigation and corrective measures, GRM data, ESHS trainings conducted, and environmental and OHS regulatory violations observed. The monitoring reports will be submitted to the World Bank for review and approval and SEPA as well, if required under ESMP Approval Conditions.

Project's Environmental, Health and Safety Completion Report: At the end of construction, the PIU - ESU shall submit a Project Completion Report on ESHS Aspects which will summarize the overall environmental and social impacts / risks occurred during the project implementation, efforts and measures taken for mitigating or offsetting the impacts, constraints / limitations faced during execution for resolving any particular ESHS issues, overall ESHS performance of Contractor and CSC and lessons learnt.

7.13 ESMP Implementation Costs

Estimated cost estimates for Contractor's staffing, implementation of mitigation measures, preventive actions, and monitoring are presented in **Table 7-6**. Total cost of ESMP implementation is estimated at **PKR 47.9 Million**.

Table 7-6: Estimated ESMP Implementation Cost

| Item No. | Spec. Ref. | Description | Unit | Quantity | Unit Rate (PKR Millions) | Amount (PKR) (In Figures) |
|---|------------|---|----------------------|----------|--------------------------|---------------------------|
| Pre-construction / Construction Phase Cost for ESMP Implementation (For 1+12 Months) | | | | | | |
| Contractor Staffing Costs | | | | | | |
| 1 | A | E&S Team Leader | 01 person per Month | 13 | 500,000 | 6,500,000 |
| 2 | | Environmental Specialist | 01 person per Month | 13 | 300,000 | 3,900,000 |
| 3 | | Social Safeguard Specialist | 01 person per Month | 13 | 300,000 | 3,900,000 |
| 4 | | OHS Specialist | 01 person per Month | 13 | 300,000 | 3,900,000 |
| 5 | | Medical Representative | 01 persons per Month | 13 | 200,000 | 2,600,000 |
| 6 | | Other Support Staffing Requirements | | | | |
| Sub Total A | | | | | | 20,800,025 |
| Implementation Costs - Construction Stage (Mitigation Measures and Monitoring Cost) | | | | | | |
| 1 | B | Ambient Air Quality Monitoring (24 hours specified in SEQs) - Pre | 01 samples per Month | 13 | 80,000 | 1,040,000 |

| Item No. | Spec. Ref. | Description | Unit | Quantity | Unit Rate (PKR Millions) | Amount (PKR) (In Figures) |
|---|------------|--|----------------------|----------|--------------------------|---------------------------|
| | | Construction / Construction | | | | |
| 2 | | Noise Quality (24 hours specified in SEQS) - Pre-Construction | 01 sample per Month | 13 | 50,000 | 650,000 |
| 3 | | Water samples collection and Laboratory analysis(SEQS parameters) - Construction Phase | 02 samples per Month | 12 | 60,000 | 1,440,000 |
| 4 | | Fixed cost at project sites (PPEs, In-house, fire safety equipment, septic tanks, installation of noise / safety barriers) | Month | 12 | 500,000 | 6,000,000 |
| 5 | | Traffic Management Cost | Month | 12 | 500,000 | 6,000,000 |
| 6 | | Capacity Development Trainings: ESHS Management, Occupational & Community Health and Safety, Disease Prevention, Maintaining Community Values (Pre-Construction and Construction Phases) | Days | 7 | 178,500 | 1,250,000 |
| 7 | | Key Mitigation Measures: Water Sprinkling, Solid Waste Management, Spill Control, Site Restoration etc. | Month | 12 | 500,000 | 6,000,000 |
| Sub Total B | | | | | | 22,380,000 |
| 1 | C | Compensatory Tree Plantation Cost | | | | 190,826 |
| Total Amount Carried Forward to Main Summary (A+B+C) | | | | | | 43,561,678 |
| Escalation and Contingencies: 10% | | | | | | 4,356,167 |
| Total Amount Carried Forward to Main Summary (A+B+C) including Contingencies | | | | | | 47,917,845 |

8 Grievance Redressal Mechanism

This Section outlines the policy and procedure for documenting, addressing, responding and employing methods to resolve project grievances and complaints that may be raised by the project affectees or community members arising from environmental and social performance, the engagement process, resettlement and/or unanticipated environmental or social impacts resulting from project activities that are performed and/or undertaken by PIU. The Section describes the scope and procedural steps and specifies roles and responsibilities of the parties involved in addressing the grievances.

8.1 Principles

A GRM is established to address any complaints or grievances arising during the implementation period of the projects. People of the project area may perceive risks to themselves or their property or their legal rights or have concerns about the possible adverse environmental and social impact that a project may have. Any concerns or grievances will be addressed quickly and transparently, and without retribution to the project affectees or community members or complainant.

The primary principle of GRM is that all complaints or grievances are resolved as quickly as possible in a fair and transparent manner.

8.2 Objectives

The objectives of the GRM are to:

- ◆ develop an organizational framework to address and resolve the grievances of individual(s) or community(s), fairly and equitably;
- ◆ provide enhanced level of satisfaction to the aggrieved;
- ◆ provide easy accessibility to the aggrieved/affected individual or community for immediate grievance redress;
- ◆ ensure that the targeted communities and individuals are treated fairly at all times;
- ◆ identify systemic flaws in the operational functions of the project and suggest corrective measures; and
- ◆ ensure sustainability of the project.

8.3 Type of Complaints

The major complaints that may arise during the execution of the proposed project at site include but not limited to:

- ◆ E&S issues (dust, noise, air pollution, social and cultural issues);
- ◆ Damage and blockage of public utilities;
- ◆ Traffic inconvenience;
- ◆ Gender based violence (GBV) and harassment;

- ◆ Resettlement issues including loss of livelihood; and
- ◆ Issues related to compensation of resettlement impacts.

8.4 Disclosure of GRM

The GRM shall be disclosed at PIU-KWSSIP, KWSB head office, and concerned project engineers, KWSSIP website as well as at sub-project sites.

8.5 Structure of Grievance Redress Mechanism

The project will establish a three-tier GRM comprising Community GRC, sub-project GRC; and PIU-GRC. These tiers are described below.

8.5.1 Community GRC (Tier-1)

The community-GRC will provide a platform for project affectees or community members to raise and discuss their concerns, resolve the E&S including resettlement issues at the community level and coordinate with project management to communicate these issues and concerns. Community-GRC will be established to maintain a close rapport and coordination with affected persons and community members throughout the project implementation. The social development specialist (SDS) of PIU with the assistance of SC will facilitate the establishment of community-GRC that is representative of the ethno-cultural and gender diversity within the community. The community-GRC will comprise the following six members with one as the committee convener:

- ◆ Three female members (from the project affectees or community members); and
- ◆ Three male members (from project affectees or community members).

The project E&S and engineering staff will coordinate with community-GRC to review and resolve the issue or concern related to resettlement planning or implementation as well as environmental and social concerns preferably within five (05) working days from receipt of the grievance. Any complaints that cannot be resolved at community-GRC will be forwarded to the next tier.

8.5.2 Sub-Project GRC (Tier-2)

KWSSIP will constitute a GRC headed by concerned Project Manager (PM) at each project site to resolve all grievances and complaints of the project affectees or community members received either directly or through the Tier-1. Sub-project GRC will comprise of the following members:

- ◆ Project Manager (PM), as head/convener of sub-project GRC;
- ◆ Environment, SDS and Gender specialists of PIU;
- ◆ E&S specialists of Supervision Consultant (SC)
- ◆ Resident Engineer of supervision consultant;
- ◆ A representative (E&S specialist) of contractor (if required); and
- ◆ A representative of local community.

Note: Representative from any other district government department may be called as and when required by the sub-project GRC. Environmental Specialists of PIU and SC will join sub-project GRC meeting related to environmental issues only.

Sub-project GRC will meet once a month and when the need arises. The sub-project GRC will review grievances involving all E&S issues including resettlement issues that may arise due to project implementation. Sub-project GRC will perform the following functions:

- ◆ Record, categorize and prioritize the grievances that need to be resolved by the committee and resolve them within ten (10) working days;
- ◆ Invite and hear aggrieved persons/parties to produce evidence of their claims and record their view point;
- ◆ Communicate its decisions and recommendations on all resolved issues to PIU and the aggrieved persons for smooth implementation;
- ◆ Forward the unresolved cases/ complaints to PIU-GRC within an appropriate time frame with reasons recorded and its recommendations;
- ◆ Develop an information dissemination system and acknowledge the aggrieved persons/parties about the development regarding their grievance;
- ◆ Maintain a complaint register accessible to the project affectees or community members with brief information about complaints and sub-project GRC decision with status report; and,
- ◆ Maintain complete record of all complaints received by the sub-project GRC with actions taken.

Any complaint that cannot be resolved by the sub-project GRC, will be forwarded to the next tier – the PIU-GRC.

8.5.3 PIU-GRC (Tier-3)

At the third tier, the PIU has already constituted a GRC (PIU-GRC). The PIU GRC will receive complaints either directly or through the Tier-2 GRC. The committee has the following composition:

- ◆ Project Director KWSSIP, (Chairman of PIU-GRC);
- ◆ SDS, Member
- ◆ Gender Specialist, Member;
- ◆ Concerned Project Manager – PIU, Member;
- ◆ SDS of SC, Member; and
- ◆ Representative of Civil Society.

Note: Representative from any other district government department may be called as and when required by the PIU-GRC. Environmental Specialists of PIU and SC will join PIU-GRC meeting related to environmental issues only.

The PIU-GRC through authorized representative, will acknowledge the complainant about his/her complaint, scrutinize the record, investigate the remedies available and request the complainant to

produce any record in favor of his/her claim. After thorough review and scrutiny of the available record on the complaint, field visit will be conducted to collect additional information, if required. Once the investigations are completed, the PIU-GRC will give decision within twenty (20) working days of receipt of the complaint. If the complainant is still dissatisfied with the decision, he/she can go to the court of law, if he/she wishes so.

Organization of the GRC is shown in **Figure 8.1**.

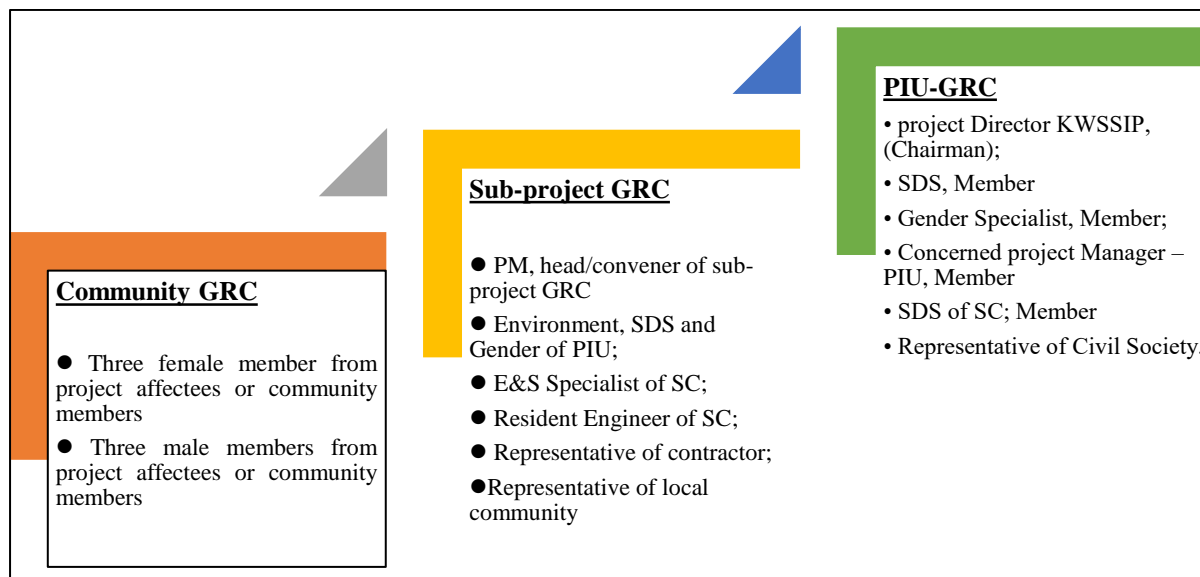


Figure 8.1: Organogram of GRC

Gender representation will be ensured by inducting a female member in all GRCs. The mechanism will ensure the access of project affectees or community members to a GRM that openly and transparently deals with the grievances and makes decision in consultation with all concerned that are consistent with the WB OPs requirements.

8.5.4 Gender Based Violence (GBV) Committee

Besides PIU-GRC, a GBV committee has also been established and notified within PIU consisting of the following members:

- ◆ Concerned Project Manager, Head/ Convener of GBV Committee;
- ◆ Gender Expert, KWSSIP, Secretary; and
- ◆ SDS KWSSIP, Member.

GBV Committee will address the gender related issues caused by the project activities during RP and project implementation.

8.6 Grievance Redress Procedure/ Mechanism

The intention of GRM is to resolve a complaint as quickly and at as low a level as possible to avoid a minor issue becoming a significant grievance. Irrespective of the stage of the process, a complainant has the option to pursue the grievance through the court as is his/her legal right in accordance with law.

The GRCs will work at site, sub-project and PIU levels. The E&S and engineering staff of PIU, in coordination with site staff will inform the project affectees and community members about the GRCs and its mechanism through consultations and by posting at prominent places. The complaints received through any media will be screened by type and category. These complaints will be registered in Community Complaints Register (CCR), where the name and address of complainant, date, description of complaint and action taken will be recorded. The following procedure will be used to redress the grievances:

- ◆ First, complaint resolution will be attempted to be addressed at community-GRC through the involvement of the field E&S/engineering staff. The community-GRC shall give decision within five working days of receipt of the complaint. If unsettled, grievance can be lodged to the sub-project GRC by the complainant or by the GRC;
- ◆ Sub-project GRC will acknowledge the receipt within two working days of lodging of complaint. Initial review and consultation with the sub-project GRC will be conducted within five working days of receipt of complaint. If required, sub-project GRC will advise the E&S/engineering specialists to conduct field visits in consultation with the aggrieved persons/parties and local community and submit a fact-finding report. Preferably, the fact finding will be completed within eight working days from receipt of complaints. sub-project GRC shall give decision within 10 working days of receipt of the complaint. If unresolved, a grievance will be lodged to the (PIU-GRC) by the complainant or by the GRC; and
- ◆ The PIU-GRC shall give decision within 20 working days of receipt of the complaint. If the complainant is still not satisfied, he/she can pursue further by submitting the case to the appropriate court of law.

All E&S issues will be dealt according to the above GRM procedures. The GRCs will hear and clarify with the complainant (if required so) about the E&S issue and shall conclude and communicate their recommendations for further implementation in due course of time. Complainant will be kept informed during the process and the GRC decision will be communicated to him/her accordingly. In case of any delay, the complainant will be informed on the progress and process about his/her grievance. The GRC proceedings will be documented step by step and all records will be maintained and summarized in the project progress and internal monitoring reports.

8.6.1 Lodging of Complaint

The complainant(s) can lodge their grievances through a number of ways/channels including online, mail, phone, WhatsApp, e-mail and complaint box. Moreover, PIU has established an e-Portal for filing and tracking progress of the application online; the details are provided below.

- ◆ It is an electronic complaint lodging system (application) that will be accessible through a link on the PIU KWSSIP website;
- ◆ The focus of the e-portal is the quick complaint lodging for all types of primary stakeholders;
- ◆ Any project affectee or community member with internet access can lodge a complaint with option for anonymous complaints. Uploading of photos for better understanding of the problem will also be an option;
- ◆ Each complainant will get a unique Grievance Number to track their complaints through the e-portal;

- ◆ Each complaint will go through a quick resolution mechanism being managed by a dedicated team at the PIU. Each complainant will be contacted to ensure that his/her issue is resolved;
- ◆ The portal will differentiate between types of complaints for targeted decision-making and action on behalf of PIU; and
- ◆ The portal will allow a quick and easy method for monitoring of the entire complaint lodging and resolution mechanism

9 Information Disclosure and Stakeholders Consultations

9.1 Overview

Public consultation and information disclosure is an essential component of the EA process, recognized by development agencies and national governments alike. It is an inclusive process conducted throughout the project life cycle and most effective when initiated at an early stage of the project development process.

The stakeholder engagement and consultations have been carried out for the proposed project by following the methodological steps, guidelines and procedures for environmental and social screening defined in the Environmental Management Framework (EMF) and Social Management Framework (SMF).

In order to meet the criteria of meaningful stakeholder consultation process, the consultation was started in December 2021. The consultations were conducted with various potential stakeholders to assess their views and recommendations. The overall objective of the consultation was that stakeholders are kept informed about the project related activities and to identify any contextual issues by obtaining their views and inputs about any Project related issue. Henceforth, the feedback obtained and PIU responses to the issues raised, are directly included as part of the Project planning and decision-making process.

9.2 Identification of Stakeholders

All stakeholders have different types of stakes according to their occupations and involvements in various aspects of the Project. The study team contacted with all the stakeholders at different stages of the Project and shared their views and concerns with respect to implementation of the Project. Following categories of stakeholders were identified:

- ◆ Institutional Stakeholders;
- ◆ Local community;

9.3 Objectives of the Public Consultation

The objectives of the public consultation are as follows;

- ◆ To share full information with the stakeholders about the Project;
- ◆ To obtain feedback/responses about the proposed project;
- ◆ To identify the urgency and severity of issues and problems in project; and
- ◆ To acquire responses about the needs, preferences/priorities of the stakeholders.

9.4 Information Disseminated

Following issues were discussed with the affected during the consultation meetings:

- ◆ Introduction of the project;
- ◆ Description of project components;
- ◆ Information on perceived benefits from the proposed project;
- ◆ Information regarding Grievance Redress Mechanism (GRM) and lodging of complaints during construction activities; and
- ◆ Needs, priorities and reactions of the communities and institutions regarding the proposed project.

9.5 Community Consultations

Consultations mainly in form of “Focus Group Discussions” (FGD) with Primary Stakeholders have been carried out with the communities located nearest to the project’s Aol. Discussions with the communities have been made in an open and transparent manner in order to solicit their comments and suggestions in the studies. Besides male members, consultations with female members of the communities were also carried out in the project area. Women’s main concerns were generally related to the existing hardships they are facing.

List of participants is provided under **Annexure 9-1**, whereas consultation photographs are provided in **Annexure 9-2**.

Table 9-1: Consulted Communities

| S. No | Community | District | No. of Participants | |
|--------------|---------------------|----------|---------------------|-----------|
| | | | Male | Female |
| 1 | Dhabeji KWSB Colony | Thatta | 11 | 13 |
| 2 | Yaqoobabad | Thatta | 9 | 10 |
| Total | | | 20 | 23 |

9.5.1 Feedback and Concerns from the Communities

Participants were first briefed about the project objectives and major interventions associated with the project implementation. Afterward, people were asked to express their views regarding various activities of the proposed project. In general participants appreciated the project and offered comments & suggestions to enhance the expected environmental and social benefits and to mitigate the adverse impacts. The community perception about the project was found reasonably good. Majority of respondents favoured the proposed project based on the expectations that the project will provided work opportunities for the local communities. The digest of major issues raised by communities during meetings are given **Table 9-2**. Feedback of women consultations is provided in the subsequent section.

Table 9-2: Summary of Consultation Meetings

| Communities | Concerns / Feedback | Responses / Action |
|---|--|---|
| 1- Dhabeji KWSB Colony 2- Yaqoobabad | Workers camp and their possible conflicts with local communities | Worker’s camp site location has been selected far away from the communities. As per the ESMP directives, the Contractor shall be bound to develop campsite at the |

| Communities | Concerns / Feedback | Responses / Action |
|-------------|---|---|
| | | identified location only and equip it with proper facilities in order to restrict access of workers to the outside shops etc. so that their interaction with nearby communities shall be avoided. |
| | Male family members should be employed in the project related jobs so that they could get the jobs in their hometown. Hiring process should be transparent and hiring of local workers should be ensured. | As per the ESMP directives, the Contractor will be bound to hire local unskilled and semi-skilled workers at the most. |
| | Nuisance related to construction traffic, dust and noise. | Suitable mitigation measures have been made part of the ESMP that shall be followed by the Contractor to protect communities from the impacts of construction traffic, dust and noise. These include, preparation and implementation of Traffic Management Plan, water sprinkling, avoidance of noisy work at night, ensuring low speed driving, immediate collection of excavated material, installation of safety barriers etc. |

9.5.2 Outcomes of Women Consultations

Consulted women pointed out towards the issues they face and provided some recommendations which as follows:

- ◆ The educated women are jobless. Jobs may be provided to these educated women at KWSB if possible;
- ◆ Women in the area have a lot of potential in relation to embroidery and related fields. Numerous women are doing the embroidery work for domestic use; their skill should be enhanced through providing training and setting up of the skill development centres in the project area The Contractor as part of his CSR may construct a vocational training centre in the area where women can take up vocational training that includes teaching women and girls embroidery.
- ◆ Local women mobility is an issue of concern and it may further be restricted due to construction activities. The Contractor must ensure safe passage for women;
- ◆ Women demanded for the improvement in available health facilities in the area under CSR activities. Similarly, upgradation of educational facilities such as local schools was also requested.

9.5.3 Consultation with Institutional Stakeholders

Various departments, organizations and offices related to the proposed project have been consulted. They were briefed on the ESMP process, the proposed project, proposed interventions and the potential negative and positive impacts of the project. The contacted representatives expressed their interest in the project as it will contribute in solving the acute water supply / shortage problems of Karachi and offered their complete support in all respects.

List of offices visited and officials consulted is provided **Table 9-3** below, whereas, the digest of discussions held with these departments / officials are given in **Table 9-4**.

Table 9-3: Consultation with Institutional Stakeholders

| S. No. | Department/ Organization | Designation |
|--------|---|----------------------|
| 1. | Education Department, Thatta | D.E.O |
| | | A.D.E.O |
| 2. | Sahil Welfare Association (NGO), Thatta | Press Secretary |
| 3. | Wildlife Department | P.S |
| 4. | Public Health Engineering Department | Research Officer |
| 5. | KWSB Dhabeji Pumping Complex | Residential Engineer |

Table 9-4: Feedback and Concerns of Institutional Stakeholders

| Department/ Organization | Concerns / Feedback | Responses / Action |
|--|--|---|
| Education Department, Thatta | Since KWSB shall be building the KWSIIP sub-projects including Dhabeji component through WB funding, it is needed that already deprived education sector of District Thatta should also get some benefits of this funding. KWSB may think about building some schools in the area under the CSR activities for local children. | It has been considered a reasonable suggestion and PIU – KWSSIP / KWSB shall take up the matter with higher officials. |
| Sahil Welfare Association (NGO), Thatta | Local people should be hired at the maximum possible extent for construction works. It has also been suggested that an employment quota in KWSB may be kept for the local communities of Dhabeji. | It has been responded that as per the ESMP directives, the Contractor will be bound to hire local unskilled and semi-skilled workers at the most. Decision on allocating the employment quota rests with the KWSB management. |
| Wildlife Department | Although the project area has no wildlife of sensitive nature, but still | Suitable mitigation measures are already incorporated in the ESMP and the Contractor shall be bound |

| Department/ Organization | Concerns / Feedback | Responses / Action |
|---|--|--|
| | efforts should be made for minimizing impacts on existing wildlife. | to implement them during the construction stage of the project for minimizing the disturbance to wildlife. |
| Public Health Engineering Department | The effluent from the Contractor's camp should be properly dealt with. | Adequate measures have already been made part of the ESMP, which shall be followed by the Contractor for right campsite effluent disposal. |
| KWSB Dhabeji Pumping Complex | The project will have far reaching positive impacts on the financial health of the KWSB as it will totally eliminate the nuisance of frequent bursting of rising mains which consumes huge amounts of money for repairs. | It has been agreed that definitely the project interventions shall considerably improve the KWSB's water supply infrastructure in which the Dhabeji Pumping Complex and Rising Mains are considered as the backbone. |

9.5.4 Consultation Planned throughout the Lifetime of the Project

The project will require public consultation and disclosure activities to continue beyond the ESMP process throughout the lifecycle of the Project as the effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The key activities of future consultation are summarised in **Table 9-5** below:

Table 9-5: Stakeholder Engagement Implementation Timescales and Responsibilities

| Activity | Time | Responsibility |
|---|---|---|
| Construction Phase Engagement | | |
| Ongoing Community liaison and grievance logging | <ul style="list-style-type: none"> ◆ Day to day interactions ◆ Visiting local communities for informal consultation once a week at minimum ◆ Weekly grievance reporting ◆ Discussing progress of implementation of project action plans and issues that involve on-going risks or impacts (as needed, but at least annually). | KWSSIP / Contractor's Social Development Specialist |
| Community consultation events | <ul style="list-style-type: none"> ◆ Prior to the start of construction ◆ Prior to the completion of construction ◆ Project website to be regularly updated | KWSSIP / Contractor's Social Development Specialist |

| Activity | Time | Responsibility |
|---|--|--|
| | <ul style="list-style-type: none"> ◆ Following each of the community consultation events | |
| Media notifications of project progress | <ul style="list-style-type: none"> ◆ At least two weeks prior to the community consultation meetings. ◆ Regularly updated on website | KWSSIP's Social Development Specialist |

Stakeholder engagement activities will be documented and reported as part of sustainability reporting requirements. To the extent possible, profiles of the stakeholders being consulted will be established and as appropriate, disaggregated gender and other socially relevant data will be presented. Any special measures to include disadvantaged groups, for instance physically challenged persons from affected communities will also be documented.

9.5.5 Stakeholder Consultation Workshop

PIU - KWSSIP with the support of ESA Consultants, have organized a Stakeholder Consultation Workshop on 28th July 2022 at Regent Plaza in relation to information disclosure and stakeholder engagement in relation to the project. The main objective of the workshop was to get their feedback of stakeholders at a broader level. The stakeholders being invited include relevant Government Departments, NGOs, Academia, World Bank, Sindh Environmental Protection Agency (SEPA) and Local Community representatives. The stakeholders actively participated and provided precious comments, suggestions and shared their views based on their practical experience at different projects. The session has been completed with the conclusion that the project is the pressing need of time and it should be built within the record time-frame. The stakeholder consultation list of the participants is given as **Annexure 9-4**.

10 Conclusion

The Environmental and Social Management Plan (ESMP) study reveals that overall the impacts of Dhabeji Rising Main No. 05 Rehabilitation Project shall be positive. The project shall improve city's overall water supply scenario. Contrary to the present situation, loss of water through leakage points in the main will be restricted. Leakage reduction will reduce the energy footprint of water supplied to consumers. There will be no negative impacts on livelihood during project construction and the project shall not require acquisition of any land as adequate RoW is available within which the construction activities will be performed.

Construction phase impacts include generation of construction related noise and dust, cutting of trees and clearance of vegetation, workers health & safety issues, generation of excavated material and solid waste etc. All these and other associated negative impacts shall however be temporary in nature and will be conveniently mitigated by implementing the ESMP providing a detailed account of mitigation measures to control all the identified potential negative impacts of the project. The main monitoring parameters include monitoring of excavation works with disposal, environmental quality monitoring (air, noise and drinking water), occupational and community health and safety etc. PIU-KWSSIP shall ensure that the Contractor prepare site specific SSESMP, OHS / CHS Plans and other site-specific plans as identified and carry out regular and effective monitoring of environmental quality parameters as indicated in this ESMP.

To ensure that the mitigation, enhancement and compensation measures as defined in the ESMP are implemented solely and correctly, the ESMP along with adequate budget (Indicative cost of ESMP already provided) is to be included in the contract documents of the Project with a separate line items on environmental, social, health and safety management in the BOQ. For effective implementation of the ESMP, inclusion of specific conditions in bidding document such as inclusion of ESMP, Contractor's qualification, submitting ESHS performance security, submission of ESHS-MSIP, Recruitment policy for locals and Workers Code of Conduct especially related to SEA/SH/GBV shall be of vital importance. The timely implementation of ESMP will reduce negative impacts. The ESMP is a living document and will need to be updated by PIU-KWSSIP prior to starting of the intervention in case any significant changes in the project scope of work are anticipated.

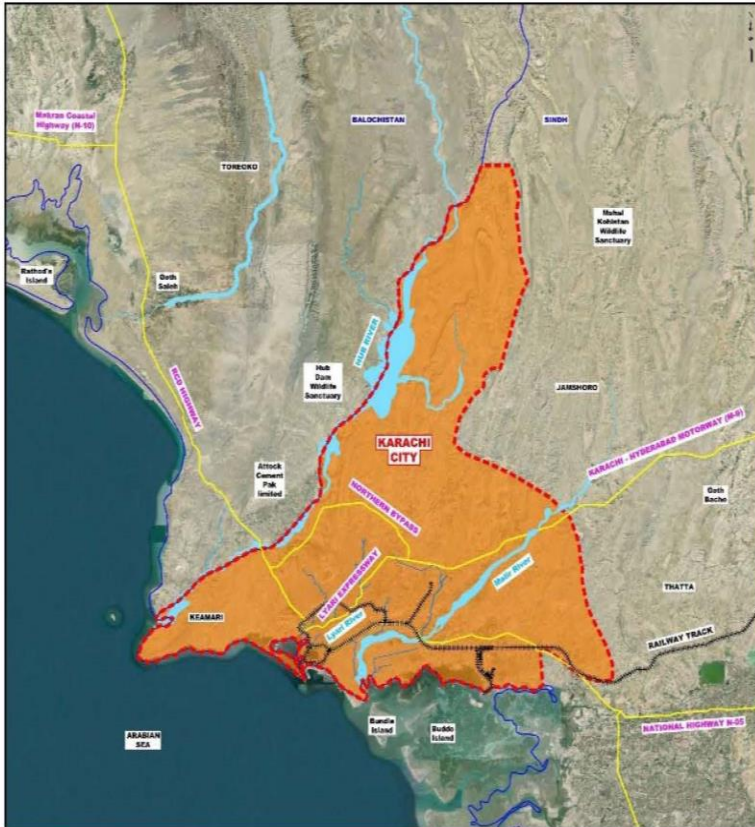
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Annexure 1-1: Labour Management Procedures (LMP)



Labor Management Procedures



**Karachi Water & Sewerage Services
Improvement Project**

Series of Project-1 (SOP-1)

December 2022



LIST OF ABBREVIATIONS

| | |
|------------|--|
| AIIB | Asian Infrastructure Investment Bank |
| BMP | Best Management Practice |
| CBA | Collective Bargaining Agent |
| CNIC | Computerized National Identity Card |
| CoC | Code of Conduct |
| COVID-19 | Corona Virus Disease 2019 |
| DSC | Design and Supervision Consultants |
| E&S | Environment and social |
| ECA | Employment of Child Act |
| EHS | Environmental Health & Safety |
| EOAB | Employees Old-Age Benefits |
| ESF | Environmental and Social Framework |
| ESHS | Environmental, Social, Health and Safety |
| ESMF | Environmental and Social Management Framework |
| ESMP | Environmental and Social Management Plan |
| ESMS | Environmental and Social Management System |
| ESS | Environmental and Social Standard |
| GBV | Gender-based violence |
| GoS | Government of Sindh |
| GRC | Grievance Redress Committee |
| GRM | Grievance Redress Mechanism |
| HR | Human Resource |
| IA | Implementing Agency |
| ILO | International Labour Organization |
| IRO | Industrial Relations Ordinance |
| KMC | Karachi Metropolitan Corporation |
| KW&SB | Karachi Water and Sewerage Board |
| KWSSIP | Karachi Water and Sewerage Services Improvement Project |
| LMP | Labor Management Procedures |
| NEBOSH | National Examination Board in Occupational Safety and Health |
| NFPA | National Fire Protection Association |
| O&M | Operation and maintenance |
| OHS | Occupational Health and Safety |
| OHSMP | OHS Management Plan |
| PD | Project Director |
| PIU | Project Implementation Unit |
| PPE | Personal Protective Equipment |
| SARS-CoV-2 | Severe Acute Respiratory Syndrome Coronavirus 2 |
| SEA | Sexual Exploitation and Abuse |
| SEPA | Sindh Environmental Protection Agency |
| SH | Sexual Harassment |
| SOP | Standard Operating Procedure |
| SOP | Series of Projects |
| UN | United Nations |

VPP Voluntary Protection Program
WB World Bank
WBG World Bank Group

EXECUTIVE SUMMARY

The Government of Sindh (GoS) through the Karachi Water and Sewerage Board (KW&SB) is implementing the Karachi Water and Sewerage Services Improvement Project (KWSSIP) (the project) with financial assistance from the World Bank (WB) and Asian Infrastructure Investment Bank (AIIB) for the implementation of the First Phase of Karachi Water and Sewerage Services Project (KWSSIP-1) (the proposed project). The KW&SB has prepared these Labor Management Procedures (LMP) to describe the requirements regarding labor and working conditions which will be applicable to the proposed project in line with the international best practice and broadly following the World Bank Environmental and Social Standards (ESSs).

The document aims to guide the management and control of activities that may pose labor-related risks during the project implementation. The LMP is a mandatory requirement applicable to all types of workers that will be employed by KW&SB including its consultants, contractors, sub-contractors, and labor supply contracting agencies, third parties, and all personnel related to the execution of the project.

1. Project Overview

KW&SB was established in 1981 by promulgating the Sindh Local Government (amendment) Ordinance of February 1983 leading to creation of KW&SB within Karachi Metropolitan Corporation (KMC). It is a service-based and consumer-oriented organization responsible for production, transmission and distribution, cost recovery of potable water to the citizen of Karachi, managing sewerage system within the city to ensure hygienic environment, development of scheme to cover short falls in services and collection of revenues for sustained economic viability.

There are four prominent, officially declared, and legal water sources for the city of Karachi. Out of which three sources are surface water sources which include; Lake Haleji, Lake Keenjhar and Hub Dam. Fourth water resource is categorized as groundwater source; the Dumlottee wells. City of Karachi has an allocated quota of 650 Million Gallons per Day (MGD) water from Keenjhar Lake and Hub Dam against a demand of 1,200 MGD. Water is collected and treated by the conventional water treatment plants and distributed by a system which is at least 40-45 years old with some new distribution facilities in the city. Approximately 210 MGD of water is supplied without treatment¹. River Indus feeds water to the Lake Keenjhar. From Keenjhar, water through conduits goes to Haleji, Gharo, Port Qasim, Steel Mills and to Dhabeji Pumping Station. From Dhabeji Pumping Station, water is pumped to different pumping stations to supply water among all districts of the city by using electrical pumping motors.

There is a huge unmet demand for water (550 MGD current capacity versus an estimated demand of 1200 MGD); a high non-revenue water percentage (50-60 percent); very large financial losses (estimated at Pak Rupees (PKR) 569 million/ United States Dollar (US\$) 5.4 million per month); and significant outstanding arrears (estimated at PRK 32 billion/US\$305 million). Most of KW&SB's 1.1 million customers get water through the piped network on an irregular basis, and some just 2-4 hours every other day.

There is currently no sewage treatment, as the city's treatment facilities are dilapidated and not working, resulting in an estimated 475 MGD of sewage being discharged into the Arabian Sea via the storm water network.

In order to address the above-described water supply and sewerage issues in Karachi, following Series of Projects (SOPs) have been conceived under KWSSIP:

- SOP-1 (KWSSIP-1): Focuses on reforms, maintenance and rehabilitation
- SOP-2 (KWSSIP-2): To scale-up investments
- SOP-3: Will focus on increasing water production and financing investments to ensure the additional wastewater created can be treated
- SOP-4: Will focus on improving services in informal settlements based on experience gained under the previous projects

Currently the SOP-1 is under implementation while the SOP-2 is under preparation stage. The SOP1 of KWSSIP has the following three components:

- Component 1- Operational and enabling environment reforms in KW&SB
- Component 2- Infrastructure investments
- Component 3 - Project Management and Studies.

The Component-2 of the project consists of three (03) investments as listed in Table ES-1:

Table ES-1: Component-2 of SOP-1, KWSSIP

| Sr. No. | | Activity |
|---------|----------------|---|
| 1 | Assignment - A | Rehabilitation of water supply and sewerage in three low-income communities (the Proposed Project) |
| 2 | Assignment - B | Priority Water Network Rehabilitation including operation and maintenance (O&M) Equipment, Meters to Reduce NRW |
| 3 | Assignment - C | Priority Sewer Network Rehabilitation |

The Environmental and Social Assessments for all these projects have been completed, whereas the specific impacts and mechanisms regarding labor commissioned for the project will be discussed in the labour management procedures.

Recent rain events have severely damaged the water and sewerage infrastructure of the city. It has been assessed that the present water supply network including both water trunk mains and the distribution mains have developed leakages while the sewerage system has also developed crown failure of its joints in the sewerage pipes at different locations in almost all districts of Karachi. As emergency work, several roads of different districts have been taken up by CLICK for repair and rehabilitation of road patches. In the meantime, Project Implementation Unit (PIU) of KWSSIP has been entrusted the task to identify and carry out the repair of water supply and/or sewerage lines under the selected patches of these roads of different districts after conducting a comprehensive survey to identify the locations of the damaged sections of water supply and sewerage networks and the extent of the damages to carry out their repairs/replacement. After completion of the repair /replacement of water and sewerage network by KWSSIP-1, repair and rehabilitation of

roads will be carried out on the damaged road sections under the project “CLICK”. This activity of emergency works carried out under three different packages described below.

Package 1: The proposed subproject sites are located in all the seven districts of Karachi including East, Korangi, Malir, Central, West, Keamari and South.

Package 2: The proposed subproject sites are located in districts Central, East, Malir & Korangi of Karachi.

Package 3: The proposed subproject sites are located in districts (South, West & Keamari) of Karachi.

2. Overview of Labor Use in the Project

The implementation of the Project will involve different categories of workers for different activities associated with the project. Project workers are divided into the following four categories under the WB Environment and Social Standard 2 (ESS2)²: (i) direct workers; (ii) contractual workers; (iii) primary supply workers; and (iv) community workers. The first three worker categories - contracted workers, primary supplier workers, and direct workers - apply to this project based on this classification and the labor requirements of the project; however, the type and number of workers are not yet fully known. The project is not envisaged to have community workers.

3. Assessment of Key Potential Labor Risks

The main labor risks associated with the project include the following:

- Occupational health and safety (OHS) risks,
- Child and forced labor,
- Labor influx,
- Labor disputes over terms and conditions of employment,
- Sexual exploitation and abuse (SEA)/ sexual harassment (SH),
- Risk from communicable disease,
- Risk from unsafe potable water,
- Lack of provision of basic facilities – water, food, toilets, washing hand facilities, medical aid,
- Unfair recruitment and selection practices which could discriminate against women, vulnerable groups,
- Poor work safety culture, accidents/incidents, lack of provision of personal protective equipment (PPE),
- Salary, wages, and benefits are not in accordance with the labor laws,
- Sub-standard campsite facilities and campsite management,

² KWSSIP has been prepared under the World Bank Operational Policies (OPs) and the WB Environmental and Social Framework and the allied Environmental and Social standards (ESSs) are not a requirement for this project. However, since a series of subprojects will be implemented, it was realized that there a need for LMP as a best practice to be followed.

- Lack of unified rules and regulations for all workers,
- Lack of proper grievance redress channel for workers.

The project is required to address and mitigate these risks and appropriate mitigation and control measures have been devised. The activities involved in construction and operation work of the project will be primarily responsible for the labor issues as well as health and safety risks that could affect the project's workforce, including Project Implementation Unit (PIU), consultants, and construction workers. The typical labor risks include child and forced labor, influx of workers, working conditions, employment terms and conditions, unfair treatment with the workers, poor working and living conditions, SEA/SH issues, and unavailability of a workers' grievance redress mechanism (GRM). The typical OHS risks include being exposed to the physical dangers of using heavy construction equipment, working near moving traffic, operating cranes, and hoisting equipment, working on or near scaffolding, tripping, and falling, handling bitumen, burns, being exposed to noise and dust, falling objects, traffic risks from operating project-related vehicles, exposure to hazardous materials, and exposure to electrical risks from using tools and machinery. Furthermore, the locations where these works are to happen also pose occupational health and safety hazards as these are highly polluted areas, e.g., wastewater treatment plants, filtration plants.

To reduce the risks to the health and safety of employees, it is crucial to identify hazards and manage associated risks. Additionally, it is projected that taking a proactive approach to risk management will lead to significant cost savings, a decrease in compensation claims, and a reduction in noncompliance with health and safety laws, with overall safer and better working conditions for all involved.

Labor related risks will be minimized by adhering to the mitigation hierarchy, which dictates:

- I. Following all the labor laws and the associated requirements for the working areas, living area, employment conditions, fair treatment of workers and availability of an effective workers' GRM, harassment and GBV free environment for all labor
- II. Hazard Elimination
- III. Substitution of process, substance, or tools
- IV. Prevention of contact with risky object i.e., create barriers, install guards, etc.
- V. Implementation of safe system of work such as permit to work systems, fixing of time limits on hazardous activities performance
- VI. Use of appropriate personal protective equipment (PPE).

To ensure a safe and healthy workplace, the PIU along with its consultants and contractors will take reasonable care to identify all foreseeable labor, health and safety hazards, which hold the potential to harm employees. Hazards may arise from the work process, the equipment and materials in use, the work environment, or other people involved.

The project and all associated workers will follow occupational labor, health and safety regulations. All contractors must include a comprehensive description of their labor, occupational health and safety management strategy with their bids. One of the factors the PIU will consider when choosing the contractors is the applicability of these provisions and

their previous track record in doing so. All contractors must make sure that workers use appropriate PPE, get safety training, and take other preventative measures as specified in the WB OHS Guidelines and in a setting that complies with ESS2 criteria. Both the company and the employee are accountable for safety, where they must work together to create and implement an OHS plan as well as safe work practices and procedures.

4. Overview of Labor Legislation

There are numerous labor laws, acts and regulations in Sindh and Pakistan. These labor laws apply to a wide range of industrial, commercial, and labor institutions.. Sindh is required to comply with a number of national and international legal obligations in terms of labor rights. The most relevant policies and laws include Sindh Labor Policy and Sindh Occupational Health and Safety Health. In addition, the government of Pakistan has also ratified 36 International Labor Organization (ILO) Conventions, including eight fundamental conventions.

The following is a list of the most important legislation pertaining to welfare and labor rights.

- National
 - Pakistan Labor Policy, 2010
 - Factories Act, 1934
 - Industrial Relation Act
 - Workman Compensation Act 1923
 - Minimum Wages Ordinance, 1961
 - Payment of Wages Act 1936
 - Industrial & Commercial Employment Standing Orders Ordinance 1968
 - Maternity Benefits Ordinance 1958
 - Apprenticeship Ordinance 1962
 - Employees Old Age Benefit Act 1976
 - Employments of Children Act 1991
 - Bonded Labor Abolition Act 1992
 - Workers Welfare Act 1971
 - Minimum Wages (unskilled workers), Amendment 2015
 - Disabled Persons (Employment and Rehabilitation) Act 2015
 - Protection Against Harassment of Women at the Workplace Act, 2010
 - Transgender Act 2018

- Provincial
 - Sindh Labor Policy 2018
 - Sindh Workers Compensation Act 2015
 - Sindh Minimum Wages Act 2015
 - Sindh Terms of Employment (Standing Orders) Act, 2015
 - Sindh Payment of Wages Act 2015
 - Sindh Bonded Labor (Abolition) Act 2015
 - The Sindh Prohibition of Employment of Children Act 2017
 - Sindh Occupational Health and Safety Act

- Protection against Harassment of Women at the Workplace Act (Amendment) 2022
- Sindh Prohibition of Child Employment Act 2017
- Sindh Differently Abled Persons (Employment, Rehabilitation and Welfare) Act 2017
- Sindh Employees' Social Security Act, 2016

In 2010, subjects of labor and employment were devolved to provinces under the 18th Amendment to the Constitution of Pakistan, as a result of which the federal labor laws were devolved and became applicable on provinces under Article 270 AA (6) of the Constitution of Pakistan. The 18th Constitutional Amendment in Pakistan has altered the landscape of the labor administration system in the country. Provinces now have a greater responsibility and resources in terms of legislation and implementation. Each province has developed its own labor policy to protect worker's rights. The policy relevant to the KWSSIP project is the Sindh Labor Policy, 2018. This policy incorporates the key thematic areas with primary focus on the effective implementation of labor standards, improvements in workplace safety, living wages, child/bonded labor, awareness raising, excellence in labor inspections regime.

The government of Pakistan has also ratified 36 International Labor Organization (ILO) Conventions, including eight fundamental conventions as of now. In the South Asia region, Pakistan is the second country that has ratified all eight fundamental conventions as enshrined in the ILO Declaration on Fundamental Principles and Rights at Work. The ILO works in close collaboration with its tripartite constituents towards achieving Pakistan's decent work objectives.

The ILO Governing Body has identified eight "fundamental" Conventions, covering subjects that are considered to be fundamental principles and rights at work, which are listed below:

- Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)
- Right to Organize and Collective Bargaining Convention, 1949 (No. 98)
- Forced Labor Convention, 1930 (No. 29) (and its 2014 protocol)
- Abolition of Forced Labor Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labor Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111).

The Sindh Occupational Health and Safety Act 2017 is the main applicable local OHS legislation as this Act applies to all Workplaces in Sindh province. The organization needs to formulate OHS Policy which is the requirement of the Act. The contractors and suppliers shall comply with the provisions of the Act.

5. Responsible Staff

The PIU of KWSSIP is in charge of the overall management of the Project and the LMP's implementation. The LMP must be followed throughout the procurement process. Consultants, contractor(s) and subcontractor(s) must be hired transparently based on their

experience and competency. Other entities relevant to this LMP are the supervision consultants (SC), construction contractors, and primary suppliers.

KWSSIP / Project Implementation Unit (PIU) Responsibility: The PIU of KWSSIP is in charge of the overall management of the Project and the LMP's implementation. The LMP must be followed throughout the procurement process. Consultants, contractor(s) and subcontractor(s) must be hired transparently based on their experience and competency.

Supervision Consultant's Responsibilities: The supervision consultants will oversee activities of the contractors in their implementation of the designs proposed under the various sub-projects, compliance of civil works with defined guidelines, and implementation of the Environmental and Social Management Plans. Their purview will also include the implementation and supervision of occupational health and safety measures along with labor working conditions.

Contractors' Responsibilities: To ensure that all LMP requirements are met, the contractor(s) must appoint Labor and OHS representatives. The contractor must provide the PIU with a monthly report on all incidents and accidents. The contractor is responsible for teaching/training employees how to use personal protective equipment and safety precautions. Contractors must keep records in accordance with the procedures outlined in this LMP. PIU may request records at any time to ensure that labor laws are followed. The PIU will compare records to actuals at least once a month and, if necessary, may order immediate corrective action. The Project staff will continue to have access to the KW&SB's current grievance procedures. Contractors will be required to set up a grievance redress system for employees that meet the LMP's minimum requirements. Every month, the PIU's social development specialist will go over all related records. Each contractor's site must be manned at all times by a certified safety officer. The contractor must provide any necessary instructions. The contractor's employees will be directed by the safety officer.

6. Policies and Procedures

All project staff and contractors must be informed of the project management policies and processes. Contracts must be drafted in conformity with ESS2 principles and Sindh Labor Laws, and all recruitment processes must be transparent. The labor policies and procedures will include terms and conditions of employment, age of employment, OHS procedures, SEA/SH prevention procedures, and grievance redress procedures. All contracts will include clauses requiring contractors to abide by labor and OHS laws as well as provisions of this LMP. Similarly, when sourcing for primary suppliers, the project will require such suppliers to identify the risk of child labor/forced labor and serious safety risks where applicable. The PIU and the consultants will review and approve the purchase of primary supplies from the suppliers following such risk identification/assessment.

As part of the conformance to labor laws and procedures, the project team will draft the following procedures for implementation:

- Reporting and Investigation of Incidents /Illnesses
- Procedure for Waste Management
- Procedure for Housekeeping

- Procedure for Hazard Identification and Risk Assessment
- Training Procedure including Induction training
- Toolbox Talks
- Safe Systems of Work – work at heights, hot work, electrical High Tension/ Low Tension (HT/LT) works, Excavation, Confined Spaces (Permits to Work)
- Personal Protective Equipment
- Emergency Response Procedure
- Monthly reporting procedure
- Camp management procedure
- Management of Food and Drinking Water at Campsite(s) and at construction site
- Project Site Security Procedure
- COVID 19 measures procedure
- Internal Auditing Procedure
- Management of visits by WB /AIB, Government agencies
- Storage of fuel, hazardous substances
- Operation and maintenance of heavy equipment and overhead cranes
- Child Labor Avoidance Procedures
- SEA/SV Prevention Procedures.

7. Age of Employment

The Sindh Prohibition of Employment of Children Act of 2017 states that any teenage worker (aged between 14 and 18) hired for training at the site(s) must be kept away from technical equipment and not given any heavy tasks.

According to the International Finance Corporation (IFC) Guidance Note 2 and the Sindh Prohibition of Employment of Children Act of 2017, no one under the age of 18 may be hired to work at the project site(s). The hiring process must specify how candidates' Computerized National Identity Cards (CNICs) will be checked, so that no one under the age of 18 can be hired on site. It is necessary to inspect and confirm the applicant's original CNIC.

8. Terms and Conditions of Employment

The employment terms and conditions applying to project employees as set out in the labor rules will apply to all project employees who are assigned to work on the Project (direct workers). Terms and conditions of part time direct workers are determined by their individual contracts. KW&SB is committed to providing equal opportunities for all its employees and potential employees where everyone is treated with respect and dignity and where there is equal opportunity for all including the vulnerable such as women, disables, transgenders and minorities. The normal hours of work of project workers shall not exceed more than 8 hours a day for 5 days a week, or a 40-hour work week, exclusive of time for meals.

Every project worker is entitled to a 2-day rest day period during weekends (Saturday and Sunday). Workers shall also be entitled to a rest day on regular holidays recognized by the province. Under the Maternity and Benefits Ordinance 1958, leave is granted to pregnant

women for a period of 12 weeks with full pay. It is unlawful for an employer to dismiss a woman worker on maternity leave.

Provincial governments constitute Minimum Wages Boards under Section (3) of the Minimum Wages Ordinance, 1961 to decide the wage rates which are revised annually. The workers welfare legislation includes Employees Old Age Benefits 1976 (with provisions for old age pension, old age grant, invalidity, and widow(er) pension). For contract termination, a notice of one month must be served before severing the employment relationship or payment of one month's wages in lieu of notice may be provided. The law also obliges the employer to provide the termination certificate in writing stating the reason behind it. Any injury, illness or accident sustained by the worker during the work period shall be conveyed to the nearest clinic or hospital by the hiring authority or its representative. Collective bargaining has also been called a fundamental right for the workers to be part of trade unions.

9. Workers' Grievance Redress Mechanism

PIU will establish a GRM (or make provisions in the overall GRM) for the project workers to address labor or workplace-related concerns consistent with the applicable national and provincial laws and ESS2. The workers' GRM will be based on the requirements of the WB's ESS2 – Labor and Working Conditions. The environment and social (E&S) specialists of PIU will monitor the recording and settlement of grievances by workers and report to the PIU in its monthly progress reports. The process will be followed by the GRM focal point, the E&S specialists who will be responsible for the GRM of the Project. All concerned responsible staff shall hold regular meetings with the project workers to discuss any work-related issues and concerns. Every grievance raised by a worker will be documented with the actions undertaken by the PIU and contractors to address such grievance.

10. Contract Management

PIU will make sure that the contractors are trustworthy and legal businesses with established labor management practices that adhere to this LMP. A clause requiring contractors to abide by current OHS, labor, and worker protection laws will be included in all contracts with them. PIU will stay updated on how contractors perform in regard to hired help, paying particular attention to how well they adhere to their written contracts.

11. Primary Supply Workers

The construction work under the Project will require the involvement of primary supplies to provide construction materials essential for carrying out the proposed works on rural roads. The PIU and the consultants will review and approve the purchase of primary supplies from the suppliers following such risk identification/assessment. PIU will oversee the procurements of goods and materials requirements under the construction works. Project Contractors will be responsible for procurement and supply of materials and equipment under the same conditions, and specifications on OHS aspects in their contracting agreements. When sourcing for primary suppliers, the project will require such suppliers to identify the risk of child labor/forced labor and serious safety risks. The PIU and the consultants will review and approve the purchase of primary supplies from the suppliers following such risk identification/assessment. Where appropriate, the Project will be required

to include specific requirements on child labor/forced labor and work safety issues in all purchase orders and contracts with primary suppliers.

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1 INTRODUCTION

The Government of Sindh (GoS) through the Karachi Water and Sewerage Board (KW&SB) is implementing the Karachi Water and Sewerage Services Project (KWSSIP) (the project) with financial assistance from the World Bank (WB) and Asian Infrastructure Investment Bank (AIIB). The KW&SB has prepared these Labor Management Procedures (LMP) to describe the requirements regarding labor and working conditions which will be applicable to the project in line with the international best practice and broadly following the World Bank Environmental and Social Standards (ESSs).³

The LMP serves to direct management and control of actions that can bring labor-related hazards while the project is being implemented. The LMP is a requirement that must be met by all employees of the KW&SB, as well as all of its consultants, contractors, subcontractors, labor supply contracting agencies, third parties and other staff involved in the project's execution.

1.1 Summary Description of the Project

Project Background. KW&SB was established in 1981 by promulgating the Sindh Local Government (amendment) Ordinance of February 1983 leading to creation of KW&SB within Karachi Metropolitan Corporation (KMC). It is a service-based and consumer-oriented organization responsible for production, transmission and distribution, cost recovery of potable water to the citizen of Karachi, managing sewerage system within the city to ensure hygienic environment, development of scheme to cover short falls in services and collection of revenues for sustained economic viability.

There are four prominent, officially declared, and legal water sources for the city of Karachi. Out of which three sources are surface water sources which include; Lake Haleji, Lake Keenjhar and Hub Dam. Fourth water resource is categorized as groundwater source; the Dumlottee wells. City of Karachi has an allocated quota of 650 Million Gallons per Day (MGD) water from Keenjhar Lake and Hub Dam against a demand of 1,200 MGD. Water is collected and treated by the conventional water treatment plants and distributed by a system which is at least 40-45 years old with some new distribution facilities in the city. Approximately 210 MGD of water is supplied without treatment⁴. River Indus feeds water to the Lake Keenjhar. From Keenjhar, water through conduits goes to Haleji, Gharo, Port Qasim, Steel Mills and to Dhabeji Pumping Station. From Dhabeji Pumping Station, water is pumped to different pumping stations to supply water among all districts of the city by using electrical pumping motors.

There is a huge unmet demand for water (550 MGD current capacity versus an estimated demand of 1200 MGD); a high non-revenue water percentage (50-60 percent); very large financial losses (estimated at Pak Rupees (PKR) 569 million/ United States Dollar (US\$) 5.4

³ KWSSIP has been prepared under the World Bank Operational Policies (OPs) and the WB Environmental and Social Framework and the allied Environmental and Social standards (ESSs) are not a requirement for this project.

⁴ *Situational Analysis of Water Resources of Karachi, WWF 2019*

million per month); and significant outstanding arrears (estimated at PRK 32 billion/US\$305 million). Most of KW&SB's 1.1 million customers get water through the piped network on an irregular basis, and some just 2-4 hours every other day.

There is currently no sewage treatment, as the city's treatment facilities are dilapidated and not working, resulting in an estimated 475 MGD of sewage being discharged into the Arabian Sea via the storm water network.

Overview of KWSSIP. KWSSIP has been initiated to address the above-described issues related to the water and sewerage services in Karachi. The KWSSIP has the following three components:

- Component 1- Operational and enabling environment reforms in KW&SB
- Component 2- Infrastructure investments
- Component 3 - Project Management and Studies.

The Component-2 of the project consists of three (03) investments as listed in **Table 1.1**.

Table 1.1: Component-2 of KWSSIP

| Sr. No. | Description | Activity |
|---------|---------------|---|
| 1 | Assignment -A | Rehabilitation of water supply and sewerage in three low-income communities (the Proposed Project) |
| 2 | Assignment -B | Priority Water Network Rehabilitation including operation and maintenance (O&M) Equipment, Meters to Reduce NRW |
| 3 | Assignment -C | Priority Sewer Network Rehabilitation |

Brief descriptions of the sub-projects under component-2 of KWSSIP are provided below.

Assignment – A includes the rehabilitation of water supply and sewerage in three low-income communities (Katchi Abadis) namely Tekri Village, Essa Nagri/ Welfare Colony, and Sobanagar/ Goharabad.

Assignment – B includes the Priority water network rehabilitation including operation and maintenance (O&M) Equipment, meters and district metered areas (DMAs) to reduce non-revenue water (NRW).

Assignment – C includes the rehabilitation of Priority Sewer Network of the following four sewerage schemes:

- (i) P1 - Teen Hatti (Liaquatabad)
- (ii) P2 - Karachi Complex (Liaquatabad)
- (iii) P3 - Gulistan-e-Johar & Gulshan e Iqbal
- (iv) P4 - Gulberg Town.

1.2 Emergency Works

Recent rain events have severely damaged the water and sewerage infrastructure of the city. It has been assessed that the present water supply network including both water trunk mains and the distribution mains have developed leakages while the sewerage system has also developed crown failure of its joints in the sewerage pipes at different locations in almost all districts of Karachi. As emergency work, several roads of different District have been taken up by CLICK for repair and rehabilitation of road patches. In the meantime, Project Implementation Unit (PIU) of KWSSIP has been entrusted the task to identify and carry out the repair of water supply and/or sewerage lines under the selected patches of these roads of different District after conducting a comprehensive survey to identify the locations of the damaged sections of water supply and sewerage networks and the extent of the damages to carry out their repairs/replacement. After completion the repair /replacement of water and sewerage network by KWSSIP-1, repair and rehabilitation of roads will be carried out on the damaged road sections under the project “CLICK”. This activity of emergency works carried out under three different packages described below.

Package 1: The proposed subproject sites are located in all the seven districts of Karachi including East, Korangi, Malir, Central, West, Keamari and South.

Package 2: The proposed subproject sites are located in districts (Central, East, Malir & Korangi) of Karachi.

Package 3: The proposed subproject sites are located in districts (South, West & Keamari) of Karachi.

1.3 LMP Objectives

The objectives of this LMP are to:

- Develop and apply labor policies commonly recognized so that participants in the KWSSIP will have a point of reference;
- Ensure that all KWSSIP participants, whether direct workers or not, abide by employment legislation by creating the necessary working circumstances that are compliant with applicable legislative requirements;
- Assist and guide KW&SB employees who will work on the project in carrying out labor management procedures;
- Encourage just and equitable labor practices to ensure equal opportunity, non-discrimination, and fair treatment for both male and female employees;
- Create, nurture, and oversee a positive management-employee relationship;
- Protect project workers, especially those who are at risk, such as women and people with disabilities, children (of working age, in accordance with the WB Environmental and Social Standard 2 - ESS2⁵) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate;

⁵ World Bank. 2017. “World Bank Environmental and Social Framework.” World Bank, Washington, DC

- Give project participants and workers easy access to ways to voice their complaints about the workplace.

The LMP's description of the key labor requirements and risks associated with the KWSSIP would help KW&SB determine the resources needed to resolve labor difficulties. The LMP is a dynamic document that is initiated early in the planning stage of the project and is evaluated and updated as the project is developed and carried out. As a result, this document defines the types of personnel and their management that the Project is expected to use. Important LMP components will be included in the contractual obligations of contractors and subcontractors. All contractors and subcontractors shall prepare and implement labor management plans in line with the LMP.

KW&SB has prepared this document and its annexes based on the existing labor laws in Pakistan and its ratified international agreements, and in accordance with the guidelines of the ESS2 of the World Bank. Furthermore, the scope and procedures of the LMP, its annexes, constitute a special labor framework, against which compliance is mandatory for KW&SB and its consultants, contractors, subcontractors, and suppliers associated with this project. The LMP will be applicable to all types of workers that will be employed by KW&SB and all personnel employed by the Board in relation to the execution of the project; and therefore, its use and knowledge is mandatory, as necessary.

1.4 Scope of the LMP Application

The LMP is essential to ensure health and safety at workplace and promote fair treatment, non-discrimination and equal opportunities to all workers at the workplace. LMP is consistent with Environmental and Social Standard-2 (ESS2) on 'Labor and Working Conditions.' Its scope encompasses:

- Labor and contracts;
- Management of workers;
- Occupational Health and Safety; and
- Access of information and grievance mechanisms.

The objectives of ESS2 are: to promote safety and health at work; to promote the fair treatment, non-discrimination and equal opportunity of project workers; to protect project workers, including vulnerable workers such as women, persons with disabilities, children and migrant workers, contracted workers, community workers and primary supply workers, as appropriate; to prevent the use of all forms of forced labor and child labor; to support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law; and to provide project workers with accessible means to raise workplace concerns. . In line with these objectives, the goal of this LMP is to make project planning and execution easier by identifying the major personnel requirements and the environmental and social (E&S) actions needed to manage labor-related project challenges. Along with fundamental guidelines that apply to all forms of work, the LMP also addresses problems and issues unique to the Project. No matter how they were hired or whatever labor policy they fall under, as described below, the LMP is applicable to all workers employed by the Project as specified in ESS2.

- Direct Workers: People employed or engaged directly by the KW&SB to work specifically in relation to the Project;
- Contracted Workers: People employed or engaged through third parties to perform work related to core functions of the project, regardless of location;
- Primary Supply Workers: People employed or engaged by the KW&SB and its contractors' primary suppliers.

The Environmental and Social Assessments for all these projects have been completed and submitted to World Bank for approval and their finalization with the World Bank is in process., The specific impacts and mechanisms regarding labor commissioned for the project will be discussed in this LPM Report.

2 OVERVIEW OF LABOR USE ON THE PROJECT

These Labor Management Procedures apply to all Project workers whether direct, contracted, primary supply and community workers as per ESS-2.

The proposed KWSSIP will involve direct workers (implementing agency's employees transferred to the Project Implementation Unit (PIU) and specialists engaged from the market.); contracted workers engaged in construction work and consultancy services for the project (e.g., for preparation of E&S documents); and primary supply workers (e.g., for equipment required for the project).

The LMP has been developed to manage labor risks during the implementation of the KWSSIP. The LMP is in line with national requirements as well as the objectives of the World Bank's ESF, specifically objectives of Environmental and Social Standard 2: Labor and Working Conditions (ESS2).

2.1 Labor Requirement

ESS - 2 divides workers into four categories: direct workers, contracted workers, community workers, and primary supply workers that involve all Project workers. At this stage, community workers are not anticipated for KWSSIP. The workers are further categorized as follows:

1. Direct workers⁶: Direct employees of the KWSSIP are individuals who are hired by the KW&SB to perform work that is explicitly related to the Project. For the purpose of carrying out a variety of project operations, direct workers will include the project-based staff and the permanent staff of the Project Implementation Unit (PIU). The Project Director (PD) will serve as the PIU's leader. PIU will also consist of multiple senior and junior engineers qualified in civil and engineering. Additionally, the PIU will include experts in financial, procurement, environmental, and social management. As part of the PIU, KW&SB may additionally hire consultants and support personnel who will be paid on a contract basis. The national and provincial labor regulations will serve as the basis for these consultants' terms and conditions. The KWSSIP may employ consultants to carry out as many short-term tasks as are required. Any civil officials who are seconded to assist with project implementation must adhere to the occupational health and safety criteria outlined in this LMP.

The PIU will be tasked with:

- General project responsibilities for project management, financial management, procurement, monitoring and evaluation, and environmental and safety management;
- Technical responsibilities to help divisions working on the project; and
- Support services (office manager, assistants, driver, others).

⁶ A "direct worker" is a worker with whom the project has a directly contracted employment relationship and specific control over the work, working conditions, and treatment of the project worker. Where government civil servants are working in connection with the project, whether full-time or part-time, they will remain subject to the terms and conditions of their existing public sector employment agreement or arrangement, unless there has been an effective legal transfer of their employment or engagement to the project.

PIU staff may be transferred from within KW&SB, hired or seconded for the implementation of KWSSIP including technical and non-technical staff.

2. Contracted Workers: For the purpose of carrying out document preparation and carrying out various civil works under the Project, KW&SB will hire a number of contractors and consultants. Contractors, subcontractors, and their employees who are employed by KWSSIP may include consultants who are preparing the feasibility studies and detail design for the project as well as consultants for environmental and social assessment studies. Both expert and unskilled labor will be employed by civil work contractors. Below is a description of the various categories of project contracted employees:

Permanent / skilled staff of contractors (Construction Company): Project managers, site engineers, construction foremen, supervisors, environmental, social, health, and safety (ESHS) officers, as well as administrative and financial officers for the project/subprojects will all be involved in the KWSSIP.

Skilled workers engaged by sub-contractors: Contractors will mobilize their relevant workers and subcontractors to meet project needs based on the expertise needed for each type of project operations. Welders, fitters, steel workers, electricians, technicians, drivers, and operators of large machinery are just a few examples of the specialized workers. It would be expected of the staff to possess knowledge pertinent to the needed tasks.

Unskilled community members engaged by the contractor/subcontractors: To reduce the number of migrant workers at construction sites, local labor will be hired to the extent possible as unskilled and skilled workers, particularly for simple tasks like building ancillary structures, leveling, and excavating land, loading and unloading materials, supporting construction workers, cleaning up construction sites, watering work sites, and watchmen. The contractor will be legally obligated to engage with KW&SB /PIU to prioritize the impacted communities and vulnerable groups, including female workers and labors with disabilities at their request, in order to ensure equal chances in employment.

Project Management and Supervision Support: Design and Supervision Consultants (DSC) with the necessary experience will be hired by KW&SB to perform the following tasks: supporting the PIU in the selection of the contractor(s), developing designs, project management, construction supervision, and contract management. Additionally, DSC will help PIU monitor the contractor(s)' environmental and social performance as outlined in their environmental and social management plans, as well as their adherence to workplace health and safety regulations.

Independent Monitoring Consultants (or Monitoring and Evaluation (M&E) Consultants): PIU may hire independent monitoring consultants. Independent monitoring experts are in charge of ensuring adherence to approved project-related plans and programs, including the environmental and social concerns. The independent monitoring consultants may be hired at the start of the implementation phase, and they will finish their job between six and a year after all project activities have been successfully finished.

3. Community Workers: The project will not have community workers as defined under ESS2.

4. Primary Supply Workers: Skilled and unskilled workers who will be associated with the primary suppliers for the project. They include suppliers of equipment and other supplies, suppliers of pipes, ducts and conduits required for water supply and sewerage networks, and other construction materials such as cement, steel, bitumen required for the construction activities. During the operation and maintenance phase, a separate set of suppliers would be needed to supply various chemicals and additives, in addition to the spare parts needed for routine repair and maintenance.

2.2 Number of Project Workers

Direct Workers: Currently, KWSSIP has approximately 94 direct workers, where this number is expected to increase over time as more projects are introduced and implemented. The staff of the PIU as described in Section 2.1 comprises, among others, the Project Director, several senior and junior engineers, procurement, financial management personnel, and E&S specialists. Direct workers carry out key functions such as project management, coordination, fiduciary, environmental and social management, monitoring and evaluation, and reporting.

Contracted Workers: The precise number of project workers who will be contracted is not entirely known yet. The number of workers contracted for civil and other works under this project are given in **Table 2.1**.

Table 2. 1: Estimated number of staff and workforce required during construction phase⁷

| Sr. # | Subproject | Number of Staff and Workers |
|-------|--|-----------------------------|
| 1 | Assignment – A: Rehabilitation of water supply and sewerage in three low-income communities (Katchi Abadis) namely Tekri Village, Essa Nagri/ Welfare Colony, and Sobanagar/ Goharabad. | 300 |
| 2 | Assignment – B: Priority water network rehabilitation including operation and maintenance (O&M) Equipment, meters and district metered areas (DMAs) to reduce non-revenue water (NRW). | 50 |
| 3 | Assignment – C: Rehabilitation of Priority Sewer Network of the following four sewerage schemes; (i) P1 - Teen Hatti (Liaquatabad) (ii) P2 - Karachi Complex (Liaquatabad) (iii) P3 - Gulistan-e-Johar & Gulshan e Iqbal (iv) P4 - Gulberg Town | 300 |
| 4 | Emergency Works: Repair /replacement of water and sewerage network | 760 |

⁷ Numbers taken from PC-I prepared for the subprojects.

| | | | |
|--|-------|-----------|--|
| | (i) | Package-1 | |
| | (ii) | Package-2 | |
| | (iii) | Package-3 | |

2.3 Workforce Characteristics

The number of project workers required for the projects will be identified by the Project design team in line with PIU. However, given the nature of the project workforce (mostly semi-skilled construction labor) and characteristics of the labor force market in Karachi and nearby project area, it is likely the workforce, especially the lower-skilled workers, may be mostly male. The PIU and its consultants are likely to have a number of female workers as well. In this regard, the PIU and consultant will ensure that the hiring process is gender inclusive.

There will, however, be females also present in the project areas to join in and contribute to the project. The expectation is that the majority of labor will be locally hired with the exception of a few skilled workers. Provisions will be made to train and hire as many as possible from local communities where the activities will take place. Furthermore, professional business/capacity building companies might be contracted in order to carry out surveys, trainings, and other assessments within the project. The nature of labor force will be skilled workers/experts.

2.4 Timing of Labor Requirements

Direct Workers: The direct personnel will typically be needed full-time and all year long when the project is being implemented. Most of these workers are already employed by PIU.

Contracted Worker: The PIU will hire consultants and contractors who will hire people based on their degree of ability and sub-project requirements based on the scope of work included in KWSSIP. When the construction contracts are granted and the contractors produce their work plans, the specifics of the timing of the number of labor requirements, frequency, types of jobs, and length of the requirement will be decided. This LMP may need to be changed at that moment. The maximum number of hours worked per day should be 8, with at least one hour allotted for rest. The yearly construction season can be a little longer or a little shorter depending on the weather. The contractor shall be responsible for organizing the labor force to fit the season and the type of job. Throughout the course of the project, additional experts and consultants will be retained as needed. However, it is apparent that they will be employed in accordance with the implementation of various sub-components for specified time slots. The timing for the engagement of contracted workers will be known at a later point.

Primary Supply Workers: The project will need a wide range of equipment, materials and other supplies for which a number of suppliers will be engaged. These suppliers will engage primary supply workers. The primary supply worker provisions of ESS2 apply to those suppliers with whom the project will have a sufficiently significant and ongoing relationship.

3 ASSESSMENT OF KEY POTENTIAL LABOR RISKS

The primary risks that project operations pose to workers and other project staff are covered in this chapter.

3.1 Key Potential Labor Risks

The main labor risks associated with the project are assessed to be related to:

- Occupational Health and Safety (OHS) risks,
- Child and forced labor,
- Labor influx,
- Labor Disputes over Terms and Conditions of Employment,
- Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH)
- Risks from communicable diseases
- Risks from non-potable water
- Unsafe work environments
- Lack of proper grievance redress channel for all workers.

These risks are discussed in the following sections.

3.2 Occupational Health and Safety Risks

The project's construction and operation activities are primarily responsible for the health and safety risks that could affect the project's workforce, including PIU, consultants, construction workers and operation and maintenance (O&M) personnel.

The typical risks include being exposed to the physical dangers of using construction equipment, working near moving traffic, operating cranes, and hoisting equipment, working on or near scaffolding, working at heights, working in confined spaces, tripping, and falling, handling bitumen, burns, being exposed to noise and dust, falling objects, traffic risks from operating project-related vehicles, exposure to hazardous materials, and exposure to electrical risks from using tools and machinery. Furthermore, exposure to untreated sewage, risk of disease from vectors drawn to standing water (treated and untreated), risk of flooding, working in confined spaces, and risk of acute poisoning from harmful gases / reagents / chemicals.

To reduce the risks to the health and safety of employees, it is crucial to identify hazards and manage associated risks. Additionally, it is projected that taking a proactive approach to risk management will lead to significant cost savings, a decrease in compensation claims, and a reduction in non-compliance with health and safety laws, with overall safer and better working conditions for all involved.

Labor related risks will be minimized by adhering to the mitigation hierarchy, which dictates:

- Hazard Elimination
- Substitution of process, substance, or tools

- Prevention of contact with risky object, i.e., create barriers, install guards, etc.
- Implementation of safe system of work such as permit to work systems, fixing of time limits on hazardous activities performance and
- Use of appropriate personal protective equipment (PPE).

To ensure a safe and healthy workplace, the PIU along with its consultants and contractors will take reasonable care to identify all foreseeable health and safety hazards, which hold the potential to harm employees. Hazards may arise from the work process, the equipment and materials in use, the work environment, or other people involved.

The project and all associated workers will follow occupational health and safety regulations. All contractors must include a comprehensive description of their occupational health and safety management strategy with their bids. One of the factors the PIU will consider when choosing the contractors is the applicability of these safety provisions and their previous track record in doing so. All contractors must make sure that workers wear personal protective equipment (PPE), get safety training, and take other preventative measures as specified in the WB OHS Guidelines and in a setting that complies with ESS-2 criteria. Both the company and the employee are accountable for safety, where they must work together to create and implement an OHS program as well as safe work practices and procedures.

The following **Table 3.1** provides a summary of the major OHS risks related to the project's activities.

Table 3.1: Key Potential Occupational Hazards/Risks and Control Measures

| Activity | Hazards / Risks Involved | Prevention / Control Measures |
|---|---|---|
| Untrained employees at jobs or illegal individuals entering the work area | <ul style="list-style-type: none"> • All the risks listed in this table apply to unskilled people and are therefore relevant to all activities. • Possibility of allowing incompetent staff to engage in a high-risk activity that could harm them or others. | <ul style="list-style-type: none"> • Only physically fit, qualified, and competent people should be hired. • Make sure that everyone on staff has gone through the induction procedure, which includes orientation and training on the dangers specific to the working site and the tasks to be performed. • All Standard Operating Procedures (SOPs) must specify the necessary training and skills. • Every day before work starts, a Toolbox Talk must be completed. • The work area will only be accessible to those who have completed the risk assessment. • Any access to places where work is to be done must be regulated and only authorized by a responsible employee or contractor. |
| Shifting of material at work sites | <ul style="list-style-type: none"> • Ergonomic injuries • Slip, trip and fall | <ul style="list-style-type: none"> • Create a secure entrance to the worksite. • Avoid inclement weather and only labor during the day, when it is not too hot or raining. • Keep a mobile phone on hand as a backup communication tool and a radio. • Choose the least dangerous route. • Use hard hats with chin straps and non-slip shoes. |

| Activity | Hazards / Risks Involved | Prevention / Control Measures |
|----------------------------|---|--|
| Mobile Equipment Operation | <ul style="list-style-type: none"> Accidents can occur when workers come into contact with vehicles or equipment during the mobilization and use of materials and equipment. | <ul style="list-style-type: none"> To operate the mobile equipment to be used and to work near mobile equipment to be used, you must have the necessary training and competence. A regular preventative maintenance inspection program is required for all plant, including mobile equipment and supporting infrastructure. The design and installation of guards should follow the relevant machine safety regulations. All unauthorized individuals and non-essential workers must stay outside of the operating area and swing radius of the equipment. Installation of reverse alarms and warning lights in all vehicles and large machinery. Drivers and operators must keep a maintenance log. |
| Other activities | <ul style="list-style-type: none"> Working under Adverse Weather Conditions | <ul style="list-style-type: none"> Other than during emergency restoration operations where the greatest efforts must be taken to prevent any mishaps, the erection or maintenance work shall not be performed during high wind, thunderstorms, or unfavorable weather conditions that would make the work hazardous. |
| | <ul style="list-style-type: none"> Risks associated with operation of vehicles (eg, accidents) | <ul style="list-style-type: none"> For the project, only licensed drivers will be hired. The project drivers will receive training on safe driving techniques. The cars will be kept in good working condition and equipped with all necessary safety features, such as safety belts. |
| | <ul style="list-style-type: none"> Improper use of PPE (Personal Protective Equipment) | <ul style="list-style-type: none"> All times will be spent wearing the proper PPE. Each employee must dress appropriately for the job in order to comply with PPE regulations, reducing or at the very least preventing safety risks and protecting themselves from them. PPE needs to be in good shape. PPE should only be bought from reliable vendors. |
| | <ul style="list-style-type: none"> Poor Housekeeping/ Maintenance | <ul style="list-style-type: none"> Facilities for employees must be sufficient, spotless, and well-maintained. Where dangerous products are handled, it should be illegal to smoke, eat, or drink in the workplace. It is crucial to immediately clean up any oil or other liquid spills on the floor because they are a major contributing factor to mishaps. Aisles should be broad enough to safely and comfortably fit both people and vehicles. All tools should be routinely inspected, cleaned, and repaired, and any worn or damaged tools should be removed from service. Each trash can should have a distinct label (e.g., recyclable glass, plastic, scrap metal, etc.) Every storage space needs to be identified. |

| Activity | Hazards / Risks Involved | Prevention / Control Measures |
|-------------------------|---|--|
| | <ul style="list-style-type: none"> • Covid-19 Considerations | <ul style="list-style-type: none"> • Work tasks will be rearranged, or the number of workers on the job site reduced, to allow for social/physical distancing, or workers will be rotated through a 24-hour schedule. • All workers will receive prevention training to help them avoid the spread of COVID-19. • Communication strategy/plan to support regular communication, accessible updates, and clear messaging to employees about the most up-to-date facts and statistics, as well as applicable procedures. |
| Chemical / Fuel | <ul style="list-style-type: none"> • Chemical burns / dermatitis / Skin irritation. • Inhalation / Ingestion & Absorption • Spillage. • Fire | <ul style="list-style-type: none"> • Development of safe working procedures. • Reduction of number of workers exposed to hazards & duration and frequency of exposure. • Use of personal protective equipment. • Regular environmental and medical monitoring. • Availability of firefighting equipment. • Earth bonding while transferring fuel. • Use of drip trays. • Lined secondary containment, availability of spill containment kit. • MSDS • Chemical & Fuel handling training for workers. |
| Fire | <ul style="list-style-type: none"> • Accidental fires due to electrical short circuit. • Burns / Fatality. • Equipment Damage | <ul style="list-style-type: none"> • Automatic fire detection system and control system should be provided. • Emergency back-up power like D.G. Sets should be provided for the automatic systems. • Matches, cigarettes, etc. should be prohibited. • Soldering, welding or cutting torches should be used after taking hot work permit from the consent authority. • |
| Electrical | <ul style="list-style-type: none"> • Poor electrical installations and faulty electrical appliances. • Contact with live parts causing shock and burns • Short circuits. | <ul style="list-style-type: none"> • Ensure safety of electrical installation and its maintenance. • Provision of safe and suitable equipment. • Provision of safety device. • Carry out preventive maintenance. • LOTO Procedure. • PTW for maintenances. • PPE |
| Slips, Trips, and Falls | <ul style="list-style-type: none"> • Personal Injury / Fatality • Poor Housekeeping. • Obstructed access. • Trailing Cables. • Poorly constructed work platform. | <ul style="list-style-type: none"> • The risk associated with slip and trip hazards can be reduced by avoid spillages in workplace, especially on uneven floors, and trailing cables, and by maintaining good housekeeping. However, for further reduction in the slips and trips, following measures should be followed. <ul style="list-style-type: none"> • Safety railing / grills, and safety stairs should be |

| Activity | Hazards / Risks Involved | Prevention / Control Measures |
|------------------|---|---|
| | | <p>provided.</p> <ul style="list-style-type: none"> • Safety operating procedure should be followed for tank cleaning, pipeline maintenance work at depth or height, chemical handling, and doing regular maintenance work. |
| Biological | <p>The workers working in the Wastewater Treatment Plant are prone to following biological hazards:</p> <ul style="list-style-type: none"> • Diseases caused by infectious agents present in raw effluent. • Diseases caused by insects or rodents proliferating in the sludge drying beds. | <ul style="list-style-type: none"> • Employees shall understand the risks through proper instruction, training and supervision, there will be no any direct contact with chemicals. • Provisions and use of suitable personal protective measures. • Provision of adequate welfare and sanitation facilities as well as first-aid measures considering the heavy contamination. • Provision of separate eating facilities to avoid food poisoning. • Effective arrangement for monitoring health of staff. |
| Manual Handling | Physical / Back Injuries | <ul style="list-style-type: none"> • Use proper lifting tool and tackle having adequate capacity. • Only authorized person should operate material handling equipment • Assess weight of the material, distance to be carried and hazardous etc., before lifting the load. • Wear PPE's while handling of materials. • Whenever possible, mechanized materials handling shall be adopted. • While lifting a load physically, keep the load as near as possible to the body with feet properly placed for body balance. • Bend knees, keep back straight, keep the load closed to the body and lift the load. |
| Moving Machinery | <ul style="list-style-type: none"> • Personal Injury / Fatality / Equipment & Utility Damage • Struck by vehicle • Blind spot • Toppling of the equipment • Contact with power transmission | <ul style="list-style-type: none"> • Sloping or benching for excavations deeper shall be designed. • Availability of banks man / flag man. • Means of access/egress (ladder) required if it is 4 feet deep or more. • Spoil dirt must remain at least 1 meter from of the trench/excavation. • Trench/ Excavations are to be identified and barricaded. • Personnel are not permitted to work in trench excavations where water is accumulating. • Fall Protection is required for walkways over deeper than 2 feet. • Identification, isolation, protection of underground utilities and structures nearby to be taken care. |
| Fire Breakout | • Burn /Personal Injury | <ul style="list-style-type: none"> • Clearing the area of combustible materials; |

| Activity | Hazards / Risks Involved | Prevention / Control Measures |
|--------------------|---|---|
| | <ul style="list-style-type: none"> • Equipment & Utility Damage • Fire & Explosion | <ul style="list-style-type: none"> • Suitable fire extinguishers; • Maintaining a careful watch throughout the work. • A permit to work (PTW) system can help manage the risk on larger projects. • Plant and equipment: select electrical and engine driven plant of suitable capacity to prevent overheating. • Smoking; bring the rules on smoking to the attention of all workers and visitors to the site and enforce them. • Electrical installations: should be of sufficient capacity for the intended use and designed, installed, inspected and maintained by competent people. |
| Lifting Operations | <ul style="list-style-type: none"> • Personal Injury / Fatality • Equipment & Utility Damage • Equipment Failure. • Falling objects | <ul style="list-style-type: none"> • Use of Inspected and certified crane and Lifting gear • Cordon Off Lifting radius. • Competent Crane operator & rigger/ Signaler. Ensure availability of lift Plan & load chart. Ensure ground is stable • Ensure pre-operational check listing of crane. Prohibition on standing / working under suspended load. • Use of Tag line to control load's movement /swing. • Prohibition of lifting operation in windy conditions. |
| Confined Spaces | <ul style="list-style-type: none"> • Personal Injury / Fatality • Entrapment, oxygen deficiency, toxic & explosive atmospheres, and asphyxiation. • Heat & humidity. | <ul style="list-style-type: none"> • Ensure working in confined spaces under PTW system. • Effective ERP. • Standby Man • Atmospheric / Gas Testing • Ventilation • illumination |

3.3 Child and Forced Labor

People under the age of 18 will not be employed on construction projects that involve hazardous work, except possibly in offices or jobs other than construction, where the minimum age of workers will be 14 years only for some works not hazardous in nature as specified in the provincial laws and WB guidelines. Workers, as part of a contractual requirement, will be required to provide legally recognized documents such as a Computerized National Identity Card (CNIC) to verify their age in order to ensure that no children are hired to work on the project. However, if other labor-related risks emerge during project implementation, the PIU will devise procedures to mitigate the effects. This will include regular community awareness raising sessions to educate residents on the prohibition and negative consequences of child and forced labor.

The above social impact is estimated to be low because: (i) local labor will be prioritized for use in construction activities, while measures to control the age of hired workers will be implemented; (ii) the contractor/subcontractors shall not hire child labor for project-related jobs, where a commitment not to use child labor is one of the required conditions in the bidding documents; and (iii) workers will be trained on labor safety, traffic safety, and sanitation before beginning work. (iv) Contractor supervision PIU staff will monitor and report the absence of forced labor.

3.4 Labor Influx

The Project's focus will be on localizing economic benefits with limited opportunities for outside workers to service work that requires specialized/skilled labor which is not available in project localities. Due to the availability of local labor supply in the province and the scale of work anticipated under the Project, a large-scale labor influx is not anticipated. Except for a few managers, supervisors, and skilled workers, the majority of workers can be found locally or in nearby areas. The preference for local labor (based on skill and experience capacity) is expected to reduce the risk of labor influx. Specific requirements to manage risks associated with labor influx, such as interactions between project workers and local communities, will be addressed in this document through agreed standards, a Code of Conduct (**Annex I**), and training.

3.5 Labor Disputes over Terms and Conditions of Employment

Labor disputes are unavoidable in a new construction environment. Demand for limited employment opportunities; labor wage rates and payment delays; disagreement over working conditions; and health and safety concerns in the workplace are all likely causes of labor disputes. Furthermore, employers such as contractors/subcontractors may retaliate against workers who demand legitimate working conditions, raise concerns about unsafe or unhealthy working conditions, or raise any grievances, and such situations may lead to labor unrest. However, in order to implement the project policy on fair labor treatment in accordance with ESS2, project contractors/subcontractors will be required to provide their labor with employment information while negotiating with the laborers to reach an agreement on terms and conditions of employment before signing labor contracts. The most efficient mitigating actions to deal with labor disputes during project implementation will be to monitor the implementation of the terms of work conditions that have been agreed upon by both sides and to establish the grievance redress mechanism (GRM) for laborers.

3.6 Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH)

The new employees and construction workers may develop strong social ties with the local populations outside of their own social circles. This may result in undesirable and/or unlawful behavior, such as unwelcome sexual advances against women and children and SEA/SH. Using the SEA/SH Risk Assessment Tool of the World Bank, this risk has been rated as Moderate for KWSSIP. All contractors will be expected to follow the procedures outlined in the World Bank's Procurement Regulations in order to establish a written contract with their employees that are materially consistent with ESS2's goal. A Code of Conduct prepared by

the Contractors and authorized by PIU will be required to be explained (in local language) and signed by all employees and workers.

3.7 Summary of Labor Risks and Impacts

The **Table 3.2** below presents a summary of the potential risks and impacts related to labor and working conditions, together with mitigation measures to avoid, eliminate or reduce associated impacts.

Table 3.2: Risks and Impact Mitigation

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|---|---|---|--|--|
| Recruitment and selection of workers | Perception of unfair recruitment and selection processes Perception for female staff that they will not perform. | Community tensions – stop work practices that will affect implementation | Human Resources Policy, including at least: <ul style="list-style-type: none"> • Selection criteria for each position • Equal opportunities for men, women, and transgenders • Method and place of recruitment • Maximize work opportunities for local citizens • Enhance local employee's skills base through training | PIU KWSSIP, contractors, and consultants |
| Conditions of employment (earnings/ benefits) | Perceptions that wages/ salaries and benefits are less for locals relative to outsiders | Work stoppages, protests, absenteeism, sit-ins, sabotage and conflict at the work place | The PIUs policy needs to follow: <ul style="list-style-type: none"> • Contract arrangements and content • Equal pay for equal work • Process for pay increases • Pay scales and increments as well as other benefits | PIU KWSSIP, contractors, and consultants |
| Labor relations (conflict) | Workers feel aggrieved and do not know how to communicate their | Work stoppages, protests, absenteeism, sit-ins, sabotage, and | The PIUs policy needs to include the following: <ul style="list-style-type: none"> • Effective grievance redress process which should | PIU KWSSIP, contractors, and |

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|--------------------------------|---|---|---|--|
| handling) | issues | conflict at the workplace | <p>be gender sensitive</p> <ul style="list-style-type: none"> • Disciplinary procedures • Workplace rules and regulations • Demobilization procedures • Effective information dissemination to workers | consultants |
| Labor communication mechanisms | <ul style="list-style-type: none"> • Workers are not informed about activities or events that affect them • Workers are unable to communicate collective issues plaguing them • Rumors/ misinformation spreading | <ul style="list-style-type: none"> • Inadvertent actions due to rumors or incorrect perceptions • Poor morale and unproductive work force | <ul style="list-style-type: none"> • Effective communication mechanisms including: <ul style="list-style-type: none"> • Regular written communication for all workers about the project activities and operations • Worker committees/ organizations/ unions • Use of notice boards/ toolbox | PIU KWSSIP, contractors, and consultants |
| Child Labor | Recruitment of individuals, who by virtue of age, would be exposed to hazardous situations and be subject to impaired | Increased health & safety risk to workforce, potential non-compliance with national labor laws, and reputational risk to the project | Human resources and contracting policies covering recruitment and selection processes that specifically address issues associated with child labor | PIU KWSSIP, contractors, and consultants |

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|--|---|--|---|--|
| | social development | | | |
| Employment conditions, wages, and benefits | Perceptions that wages, salaries, and benefits are not fair | Work stoppages, protests, absenteeism, sit-ins, sabotage, and conflict at the workplace | <ul style="list-style-type: none"> Human resources policy with respect to equal pay for equal work according to the local conditions and industry averages An effective employee complaints/ grievance process | PIU KWSSIP, contractors, and consultants |
| Worker's relations/ interaction with community | <ul style="list-style-type: none"> Disturbing nearby communities due to the worker's routine activities Communities are negatively impacted by some camp activities | All negative actions on community may cause hindrance in the project construction/ operation as well as other project related activities such as road blockage, community sit ins resulting in prevention of workers, and contractors from entering the project site | <ul style="list-style-type: none"> Implement the control measures to avoid/ and or minimize the impacts of camp and living conditions of workers on communities. Control measures include: <ul style="list-style-type: none"> Encourage to recruit local labor/ staff Limited interaction of outsiders/ foreign workers with the local/ nearby community of the camp Provision of cultural sensitivity awareness training to facilitate appropriate actions interaction with communities Limited movement of workers during the peak working hours of community | PIU KWSSIP, contractors, and consultants |

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|----------------|--|---|--|--|
| SEA/SH aspects | SEA/ SH risks for the communities as well as for workers | Incidents of SEA/SH would bring work to halt and conflict with the community. It will also have an impact on the cost and budget. | <ul style="list-style-type: none"> • Routes/ places used by women will be avoided as far as possible. If unavoidable, alternate routes will be identified for communities, If required, especially along routes frequented by women such as routes to local water wells • Camp sites for construction will be 500 m away from the nearest community • Construction crew will avoid entering villages and settlements • Communities will be informed and consulted before commencing works inside or near the communities • Awareness raising among communities will be carried out for SEA/SH risks • Strict code of conduct will be maintained by the construction crew. Local norms will be respected • Project staff will receive training on the prevention of SEA/SH • Provision related to SEA/SH will be incorporated in the bidding documents • Workers will be required to sign the Code of Conducts prepared by the Contractors which will be reviewed, and approved by PIU • Training and awareness raising will be carried out | PIU KWSSIP, contractors, and consultants |

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|--|---|---|--|----------------|
| | | | <p>for the workers on SEA/SH aspects</p> <ul style="list-style-type: none"> • Identification and mapping of service providers | |
| Worker Accommodation/ camp specifications | Accommodation is considered sub-standard which leads to discontent amongst the residents and concerns about perceived health risks | <ul style="list-style-type: none"> • Workers have low morale • Perception amongst workers that the project does not care for their welfare, affecting the project | <p>Build camps to minimum specifications. The following plans will be applied as necessary:</p> <ul style="list-style-type: none"> • Minimum health requirements • Minimum camp specifications • Operations accommodation • Emergency Response Plan • Security Management Plan | Contractors |
| Camp Management Practices | <p>Residents do not live in harmony and the potential for conflict arises.</p> <p>Residents do not know how to make a complaint</p> | - | <ul style="list-style-type: none"> • Implement an induction program to be attended by all residents that covers at least the following: <ul style="list-style-type: none"> • Camp rules and regulations • Code of conduct • Workers' grievance mechanism • Camp disciplinary procedure • Cultural awareness • Health, safety, and security • First aid kits are adequately stocked • Provision of safe drinking water • Provision of hygienic work and living | Contractors |

| Category | Worker Impacts/ Risks | Project Impacts/ Risks | Mitigation Measures | Responsibility |
|--------------|---|---|--|---------------------|
| | | | conditions. | |
| Housekeeping | The general appearance of the camp deteriorates making camp life unpleasant | The overall camp experience is compromised which in turn leaves workers demoralized and unproductive. | <ul style="list-style-type: none"> • Ensure that campgrounds and common areas are routinely cleaned and organized with appropriate signage in place • Establish easily accessible, designated smoking areas which are clearly highlighted and regularly cleaned • Ensure that equipment and facilities are kept clean and well maintained | Contractors |
| Workers' GRM | Workers may not receive fair treatment from the employers | Demoralized workers Violation of rules and regulations | <ul style="list-style-type: none"> • The project/contractors will establish a GRM for its workers, which shall be accessible to workers. | PIU and contractors |

4 OVERVIEW OF LABOR LEGISLATION

This chapter presents an overview of the labor legislation in the country relevant to the KWSSIP project, along with relevant ESS2 requirements related to workers and working conditions.

4.1 Overview

There are a number of labor laws in Pakistan, where most of the labor legislations are based on the inherited legal framework of Britain. Many of the legislations were derived from colonial acts and amendments, which were enacted from 1850 to 1947 and still exist as a part of the country's labor legislation which has been enacted either at the Federal or Provincial level. These labor laws are broad and contain several ordinances, acts, rules and regulations and other statutes relating to industrial, commercial, and labor establishments. These laws compliment the smooth running of the business with regard to matters relating to employers and employees in order to achieve the target of higher productivity, reasonable profits, better wages and reduction in unjust practices or discrimination. Many of these laws pertain to the implementation of the international labor conventions that Pakistan has ratified.

4.2 Labor Rights in the Constitution of Pakistan (1973)

The Constitution of Pakistan 1973 provides a framework of rights for labor force and contains provisions for the economic and social well-being of the people and for the promotion of social justice. The Constitution of Pakistan contains a range of provisions with regards to labor rights found in Part II: Fundamental Rights and Principles of Policy. Fundamental rights, such as security of livelihood, prohibition of bonded labor, eradication of slavery, and the right of association have been incorporated in the constitution in Part II. Thus, the constitution affirms the progress of labor legislation, which is conducive to change and to benefit the working class in the following articles:

- Article 11 of the constitution prohibits all forms of slavery, forced labor, and child labor
- Article 17 provides for a fundamental right to exercise the freedom of association and the right to form unions
- Article 18 proscribes the right of its citizens to enter upon any lawful profession or occupation and to conduct any lawful trade or business
- Article 25 lays down the right to equality before the law and prohibition of discrimination on the grounds of sex alone
- Article 37(e) makes provision for securing just and humane conditions of work, ensuring that children and women are not employed in vocations unsuitable for their age or sex, and for maternity benefits for women in employment

4.3 International Labor Standards Applicable in Pakistan

Pakistan has various obligations under international law pertaining to labor rights. It is a signatory to the Universal Declaration of Human Rights 1948 which provides the right to work; to free choice of employment in just and favorable conditions of work, and to protect against unemployment. It also includes the right to equal pay for equal work; the right to just and favorable remuneration ensuring an existence worthy of human dignity; and the right to form and join trade unions.

The International Covenant on Economic, Social and Cultural Rights 1966 under Articles 6-8 further articulates these rights by placing obligations on the State to protect the right to work as well as working towards fully realizing the right through provision of fair wages with equal pay for equal work which is sufficient to provide a decent living for themselves and their family; the requirement for safe and healthy working conditions; equal opportunity for promotions; rest, leisure, holidays, limited working hours, etc. It also recognizes the right to join and form trade unions and all acts ancillary to it. The International Covenant on Civil and Political Rights 1966 protects civil rights and the right to join trade unions. All of the above, along with Convention for the Elimination of all Forms of Discrimination Against Women 1979, protect against discrimination, including specific mention of discrimination on the basis of sex. Pakistan is also a signatory to the 1998 Declaration of Fundamental Rights at Work which reaffirms the constitutional principle of the elimination of discrimination in respect of employment and the Protection Against Harassment of Women at the Workplace Act, 2010.

4.4 International Labor Organization (ILO) Labor Conventions – Ratifications from Pakistan

The Government of Pakistan has ratified 36 ILO Conventions, including eight fundamental conventions as of now. In the South Asia region, Pakistan is the second country that has ratified all eight fundamental conventions as enshrined in the ILO Declaration on Fundamental Principles and Rights at Work. The ILO works in close collaboration with its tripartite constituents towards achieving Pakistan's decent work objectives.

The ILO Governing Body has identified eight "fundamental" Conventions, covering subjects that are considered to be fundamental principles and rights at work, which are listed below:

- Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)
- Right to Organize and Collective Bargaining Convention, 1949 (No. 98)
- Forced Labor Convention, 1930 (No. 29) (and its 2014 protocol)
- Abolition of Forced Labor Convention, 1957 (No. 105)
- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labor Convention, 1999 (No. 182)
- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

4.5 Federal Labor Laws

Labor legislation in Pakistan traces its origin to colonialism, which has over time evolved through a continuous process of adjusting to the socio-economic conditions, state of industrial development, level of literacy and social welfare. Laws related to labor rights and welfare are listed below:

- Factories Act, 1934
- Industrial Relation Act, 2012
- Workman Compensation Act, 1923
- Minimum Wages Ordinance, 1961
- Payment of Wages Act, 1936
- Industrial & Commercial Employment Standing Orders Ordinance, 1968
- Shops & Establishment Act, 1969
- Maternity Benefit Ordinance, 1958
- Mines Maternity Benefit Act, 1941
- Apprenticeship Ordinance, 1962
- Employees Old Age Benefit Act, 1976
- Prohibition of Employment of Children Act, 1938
- Employments of Children Act, 1991
- Bonded Labor Abolition Act, 1992
- Employees Cost of Living (Relief) Act, 1973
- Companies' Profits (workers participation) Act, 1968
- Workers Welfare Fund Act, 1971
- Minimum Wages (Unskilled Workers) (Amendment) 2015
- Disabled Persons (Employment and Rehabilitation) Act, 2015
- Protection Against Harassment of Women at the Workplace Act, 2010
- Transgender Persons (Protection of Rights) Act, 2018

The most pertinent of these are discussed below.

4.5.1 Factories Act, 1934

The Factories Act, 1934 concerns regulation of labor in factories and addresses issues regarding working condition, child labor and working hours for men and women labor, wages, working hours, rest interval, overtime, holiday and health and safety. The Factories Act also briefly refers to environmental issues. Section 14 deals with the disposal of industrial wastewater and states that "effective arrangements shall be made in every factory for the disposal of wastes and effluents due to the manufacturing process carried on therein." The Factories Act states that "the Provincial Government may make rules prescribing the arrangements to be made under sub-section (1) subject to the approval of such authority as may be prescribed. This allowed the provincial governments to establish Minimum Wages Act, 2015.

4.5.2 Industrial Relations Act, 2012

The Industrial Relations Act 2012, aimed at regulating the labor-management relations in the country, and allows to bring workers grievance to the attention of his or her employer, in writing, either him or herself, through the shop steward or through his or her trade union within three months of the occurrence of the cause of action. Forms of termination have been described as removed, retrenched, discharged or dismissed from service. To safeguard against abuse of power, victimization or unfair labor practices, the Labor Courts have been given powers to examine and intervene to find out whether there has been a violation of the principles of natural justice and whether any action by the employer was real or unjust.

4.5.3 West Pakistan Maternity Benefits Ordinance, 1958 (The West Pakistan Maternity Benefit Rules, 1961)

This law is applicable to female workers across the board within all establishments. Female workers are entitled to 12 weeks maternity leave. Every employer is liable for payment of maternity benefits at the rate of her wages last paid during the period of six weeks immediately preceding and including the day on which the female worker delivers a child, and for each day of six weeks succeeding the day.

4.5.4 Industrial and Commercial Employment Act, 2013

This law governs the industrial relationship between the employer and the workers to maintain industrial peace and settle disputes between them by negotiations, reconciliations, arbitration, and adjudication. This Act establishes and provides procedures for settling grievances and resolving disputes between workers and employers. It also specifies the procedure for lock-outs and strikers and confers upon the right to establish or join trade unions of their own choices.

4.5.5 The Employees Old-Age Benefits Act, 1976

The Employees Old Age Benefits (EOAB) Act 1976 provides for certain old age benefits for the persons who are employed in industrial, commercial, and other organizations.

4.5.6 Minimum Wages (Unskilled Workers) Act, 2013

The Government has announced that “the minimum wages would be increased from PKR 12,000 to 13,000 per month (with effect from 1st July 2015). Since then, the minimum wages have been reviewed annually. The current minimum wage, as announced in July 2022, was to be PKR 25,000 per month in Sindh.

4.5.7 The Disabled Persons (Employment and Rehabilitation) Act 2015

The Disabled Persons (Employment and Rehabilitation) Act 2015 provides for the employment, rehabilitation, and welfare and wellbeing of disabled persons.

4.5.8 Employment of Child Act (ECA), 1991

Article 11(3) of the Constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mines, or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows the child labor in the country. The ECA defines a child to mean a person who has not completed his/ her fourteenth year of age. The ECA states that no child shall be employed or permitted to work in any of the occupation set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act are carried out.

4.5.9 Protection Against Harassment of Women at the Workplace Act, 2010

In 2010, the Pakistan Government passed a Law called “Protection Against Harassment of Women at Workplace, Act 2010”. The protection against harassment of women at the Workplace Act 2010 provides legal protection to women against harassment at the workplace, and reforms the existing legislation regarding women’s right to work in Pakistan. It focuses on sexual harassment experienced at the workplace by employees and facilitates the transformation of the work environment, so that it is free of sexual harassment, intimidation, and abuse. The law makes it a special crime to use force against a woman, or even threaten to use force, if the intention is to “disturb her modesty”. It is an offence only when the accused intended or knew it to be likely that the acts in question would lead to an outrage of the victim’s modesty.

4.6 Provincial Labor Laws

In 2010, subjects of labor and employment were devolved to provinces under the 18th Amendment to the Constitution of Pakistan, as a result of which the federal labor laws became applicable on provinces under Article 270 AA (6) of the Constitution of Pakistan. The 18th Constitutional Amendment in Pakistan has altered the landscape of the labor administration system in the country. Provinces now have a greater responsibility and resources in terms of legislation and implementation. Each province has developed its own labor policy to protect worker’s rights. The policy relevant to the KWSSIP project is the Sindh Labor Policy, 2018.

This Policy sets out the framework on industrial relations, social and economic wellbeing of the people of the province of Sindh.

After the Eighteenth Amendment, Sindh adopted various laws which comprised of labor laws, welfare and industrial relations laws, where the applicable labor laws are discussed below.

1. Sindh Workers Compensation Act 2015

This act outlines the details regarding compensation to be paid to workers in case of fatality, loss of hearing, eye sight, limbs during the conduct of work activities. It also outlines the Occupational diseases according to the nature of work and compensation to be paid to the workers in case it proved that the worker suffered from the disease due to workplace exposure.

2. Sindh Minimum Wages Act 2015

The Sindh Minimum Wages Act 2015 outlines the details with respect to payment of minimum wages to workers of different categories as per gazette notification by the Government of Sindh. The minimum wages to be paid shall be reviewed periodically and minimum wages notified. Employers are bound to abide by the Minimum Wages Act and pay the wages as notified.

3. Sindh Terms of Employment (Standing Orders) Act ,2015

The Act outlines the classification of workers into:

- i) permanent;
- ii) probationer;
- iii) temporary;
- iv) apprentice;
- v) contract worker.

The terms and conditions of employment shall be provided to the worker in writing, holidays and leave with pay shall be provided. Rules for termination of services are defined in the Act. The Act outlines special provision for construction workers employment and termination at the end of the project.

4. Sindh Payment of Wages Act 2015

The Payment of Wages Act 2015 outlines the responsible person for payment of wages and method of payment of wages to workers. Procedure for fines and deductions is defined. Penalties have been fixed on the employer for non-payment of wages or illegal deductions.

5. Sindh Bonded Labor (Abolition) Act 2015

The Act is gender sensitive, an anti-discrimination clause is added to each new proposed Law in accordance with ILO requirement viz: “No discrimination shall be made on the basis of sex, religion, political affiliation, sect, color, caste, creed, ethnic background in considering and disposing of issues relating to the enforcement of this Act”. In all proposed Laws the cognizance has been changed from that of the Judicial Magistrate to the Presiding Officer Labor Courts who is a Session Judge.

This act is applicable as the proposed project may involve the numbers of staff/worker having different religion, political affiliation, sect, color, caste, creed, ethnic background.

6. Sindh Prohibition of Employment of Children Act 2017

The Sindh Prohibition of Employment Act 2017 provides definitions for child and adolescent. A child is a person who is below fourteen years of age and an

adolescent is a person who is over fourteen years of age and below eighteen years of age.

The Act outlines that no child labor shall be employed and no adolescent shall be employed to conduct hazardous work as defined in the Schedule.

The Act has fixed penalties in case of employment of child labor. All other labor laws are applicable in case of employment of children.

7. Protection against Harassment of Women at the Workplace (Amendment) Act 2022

The Protection against Harassment of Women at the Workplace Act, 2022 introduced amendments in the previous Act of 2010, and has further broadened its scope. The Act defines harassment as (a) “any unwelcome sexual advance, request for sexual favors, stalking or cyber stalking, or other verbal, visual or written communication or physical conduct of a sexual nature, or sexually demeaning attitudes, including any gestures or expression conveying derogatory connotation causing interference with work performance or creating an intimidating, hostile or offensive work environment, or the attempt to punish the complainant for refusal to comply to such a request or is made a condition for employment”; and (b) “discrimination on the basis of gender which may or may not be sexual in nature, but which may embody discriminatory and pre-judicial mind-set or notion, resulting in discriminatory behaviour on basis of gender against the complainant”.

8. Sindh Differently Abled Persons (Employment, Rehabilitation, and Welfare) Act, 2017

The Act provides for the employment, rehabilitation, and welfare of differently able persons. The definition of "differently able" is any persons who on account of injury, disease, or congenital deformity, is challenged for undertaking any gainful profession or employment in order to earn his livelihood and includes a person who is blind, deaf, physically challenged or mentally challenged.

This act is applicable as the proposed project will involve serious occupation health and safety issues during construction phase and may cause serious injury to worker/staff causing permanent disability and differently able

KWSSIP and its contractors are bound to abide by the terms and conditions of the above Acts. No child labor shall be employed at the project site(s). The worker shall be paid compensation as per the Sindh Workers Compensation Act 2015 in case he /she suffers from accident-causing injury during work at the project site(s) involving all Direct, contracted, primary and community workers.

Minimum wages shall be fixed as per the Sindh Minimum Wages Act 2015 (Sindh Act No. VIII of 2016, adopted on 2016-01-25) and any further notifications that may have been issued under the Act. All deductions, benefits shall be in accordance with those defined in the Payment of Wages Act 2015 and terms of Employment (Standing Orders) Act 2015.

4.7 ESS 2 on Labor and working Conditions

The ESS2 outlines how the workers safety and health and working conditions are provided at the work site, The PIU will promote sound worker-management relationships and provide safe and healthy working conditions. Key objectives of this LMP are described below.

- Promote the fair treatment, non-discrimination and equal opportunity of project workers;
- Secure protection of project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS2) and migrant workers, contracted workers, community workers, and primary supply workers, as appropriate;
- Prevent the use of all forms of forced labor and child labor;
- Support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law;
- Provide project workers with accessible means to raise workplace concerns; and
- Promote safety and health at work.

This LMP applies to all workers and where government civil servants are working in connection with the project, whether full time or part time, they will remain subject to the terms and conditions of their existing public sector employment agreement/ arrangement, unless there has been an effective legal transfer of their employment or engagement to the project. ESS2 will not apply to government civil servants. However, the forced labor conditions and OHS requirements as also defined in the local legislations will be applicable to the government officials also.

Project workers will be provided with information and documentation that is clear and understandable regarding their terms and conditions of employment. The information and documentation will set out their rights under national labor law and ESS requirements (which will include collective agreements), including their rights related to hours of work, wages, overtime, compensation, and benefits. This information will be provided at the beginning of the working relationship and when any material changes occur.

The **Table 4.1** below provides the conformance of the National Labor Act with the key elements of the World Bank ESS 2.

Table 4.1: Conformance of the Pakistan National Labor Act with Key Elements of ESS2

| Key Elements of ESS2 | Provisions in Pakistan Labor Laws |
|--|---|
| Equal opportunity and non-discrimination | The law contains important provisions prohibiting discrimination based on sex and disability, including equal wages for equal work. |
| Timely payment | <ul style="list-style-type: none"> • Wages must be paid before the expiry of the 7th working day after the last day of the wage period • Where the employment of any person is terminated by or on behalf of the employer, the wages earned by him shall be paid |

| Key Elements of ESS2 | Provisions in Pakistan Labor Laws |
|---|--|
| | before the expiry of the second working day from the day on which his employment is terminated. |
| Minimum wage | The minimum wage as fixed by provinces in each year |
| Work hours | <ul style="list-style-type: none"> Under the Factories Act 1934, no adult employee can be required or permitted to work in any establishment in excess of nine hours a day and 48 hours a week Section 8 of the West Pakistan Shops and Establishments Ordinance, 1969 likewise, restricts weekly work hours at 48 hours that includes rest and prayer times |
| Worker rights | Regular leaves and benefits. The employer must provide reasons for termination. The workers have right of access to information, safety, and security. |
| Prevents use of all forms of forced and child labor | The national and provincial labor laws prohibit use of all forms of forced labor and child labor. |
| Protection of workers | The labor laws encompass a large array of rights to protect workers including the right to decent work and freedom of association to equal opportunity and protection against discrimination. Specific rights related to the workplace include health and safety in the workplace and the right to privacy at work, amongst many others. |
| Occupational Health and Safety | This law provides for comprehensive OHS and empowers the Department of Labor to conduct inspections of establishments and to impose penalties for violations of non-compliance. |
| Working Age of Workers | Under the Factories act 1934, no child who has not completed his fourteenth year shall be allowed to work in any factory. |
| Women | Under the Ordinance of 1958, women with at least four months employment in an establishment immediately preceding the day of delivery are eligible to get a total of twelve weeks of maternity leave, six weeks before and six weeks after the childbirth. |
| Persons with Disabilities (PWD) | Persons with Disabilities Rights and Protection Act 2013 provides for rights to discrimination free employment opportunities |
| Migrant Workers | No special provisions for migrant workers |
| Contract Workers | In the case where the wages of a worker employed by a contractor are not paid by the contractor, the wages must be paid by the employer of the establishment. |
| Community Workers | The labor law does not recognize community workers as defined in the ESS2 and hence does not provide any special consideration for such contracting arrangements. The law requires that all labor supply contracting agency will have to be formally registered, and workers should first be the responsibility of the contracting agency. |
| Primary Supply Workers | The law does not assign any responsibility to the project on the supplier's laborers and their working conditions. Workers of suppliers will have to be the responsibility of the suppliers. |
| Freedom of Association and collective bargaining | Article 17 of the Constitution not only guarantees freedom of association but also collective bargaining as a fundamental right. Keeping in view this provision, labor law in Pakistan allows formation and joining of trade unions/ associations to both the |

| Key Elements of ESS2 | Provisions in Pakistan Labor Laws |
|---|---|
| | employers and the employees. |
| Access to a grievance redress mechanism | Workers can seek direct civil law redress from the Labor courts for complaints regarding terms and conditions employment and wages, health and safety, maternity welfare, and child labor offences are subject to criminal prosecution. |

The **Table 4.2** below, on the other hand, describes the main gaps of the government system with respect to the WB ESF Standards:

Table 4.2: Main Gaps of Government System with respect to WB ESF Standards

| WB ES Standard | Legislation | Gaps | Mitigation |
|------------------------------------|--|---|---|
| ESS2: Labor and Working Conditions | Factories Act 1934 Pakistan Occupational Health & Safety Act 2018 | Working Conditions: <ul style="list-style-type: none"> The Act does not specifically require that development be assessed and reviewed in terms of labor and working conditions including OHS requirements before approval. The Labor Act does not require development projects to prepare Labor Management Procedures/ Plans or OHS plans. The Labor Act prohibits the use of child labor, however, it does not stipulate what age constitutes a child. The Child Labor (Prohibition and Regulation) Act 2000 prohibits the employment of any child below the age of 14 while children between the ages of 14 and 16 are allowed to work. | This LMP assesses the labor issues including OHS risks and describes mechanisms to address them. In addition, the Environmental and Social Assessments (ESIAs) and Environmental and Social Management Plans (ESMPs) carried out/prepared for various subprojects under KWSSIP also provide mitigation and control measures to address labor risks. |
| ESS4: Community Health & Safety | | Covered under ESIA but the systems do not provide clear requirements for the development project and implementation. | The ESIAs include detailed measures to address the community health and safety risks. |

5 BRIEF OVERVIEW OF LABOR LEGISLATION: OCCUPATIONAL HEALTH AND SAFETY

This chapter discusses the legislation for OHS aspects in the country. Also discussed in the chapter are the WB guidelines on these aspects.

5.1 Occupational Health and Safety (OHS)

The project will observe and ensure the protection against OHS risks to the workers embodied in various international laws, national, and provincial laws and administrative issuances governing the public sector. Observing and enforcing OHS protection should aim at: the promotion and maintenance of the highest degree of physical, mental, and social wellbeing of workers in all occupations; the prevention amongst workers of departures from health and safety caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; and placing and maintenance of the workers in an occupational environment adapted to his/her physiological and psychological capabilities.

5.2 International Conventions

5.2.1 ILO Conventions

ILO has formulated more than forty regulations, particularly concerning with the OHS issues. It has several major regulations as follows:

1. ILO Technical Convention: C187 – Promotional Framework for Occupational Safety and Health Convention.

This Convention stresses:

- i. A safe and healthy working environment by formulating a national policy
- ii. Each member shall promote and advance, at all relevant levels, the right of workers to a safe and healthy working environment
- iii. In formulating its national policy, each Member, in light of national conditions and practice in consultation with the most representative organizations of employers and workers, shall promote basic principles such as assessing occupational risks or hazards; combatting occupational risks or hazards at source; and developing a national preventative safety and health culture that includes information, consultation and training.

2. Prevention of Major Industrial Accidents Convention, 1993 (No. 174)

The purpose of this convention is the prevention of major accidents involving hazardous substances and the limitation of the consequences of such accidents. The convention protects workers, the public, and the environment by preventing major accidents either on or off site and provides guidance on appropriate emergency planning.

3. Safety and Health in Construction (1992)

The objective of this code is to provide practical guidance on a legal, administrative, technical and educational framework for safety and health in construction with a view to: preventing accidents and diseases and harmful effects on the health of workers arising from employment in construction: ensuring appropriate design and implementation of construction projects: providing means of analyzing from the point of view of safety, health and working conditions, construction processes, activities, technologies and operations, and of taking appropriate measures of planning, control and enforcement.

4. Safety and Health in Building and Civil Engineering Works (1972)

Code of practice relating to occupational safety and occupational health in civil engineering and the construction industry, includes provisions concerning the work environment and equipment, fire protection, noise, machinery (including building machinery and electrical machinery, ionizing radiations, explosives, handling, occupational health, welfare, and healthcare services).

This code of practice covers 42 topics related to safety and health in building and civil engineering. The Main topics include workplaces and equipment, scaffolds, ladders and stairs, lifting appliances; railways, road and similar transport; construction equipment; electricity, blasting, concrete work, other building operations, excavations, underground construction, work in compressed atmosphere, work clothes, and personal protective equipment; hygiene and welfare; medical supervision.

5.2.2 United Nations and Group 20 Countries

The United Nations has adopted 17 Sustainable Development Goals with specific target on OSH. Similarly, the G20 summit placed OSH on the agenda.

5.3 Provincial Legislation on OHS

The **Occupational Health and Safety Act 2017** is the applicable local legislation as this Act applies to all Workplaces. Details of each chapter are described below:

Chapter I identifies the duties of the employer as follows:

1. Undertake practical measures for Safety & Health and Welfare;
2. Identify, assess and address existing & new hazards;
3. Report and investigate incidents;
4. Provide and apply Safe Systems of Work, Safe tools & equipment & appliances
5. Safe use, handling, storage, disposal and transport of materials and substances;
6. Control physical, chemical, biological, ergonomic, psychosocial or other hazards, affecting workers and others;
7. Provide Information, Instruction and Training to ensure Safety & Health at Work;

8. Maintain workplace in safe, clean, orderly and risk-free condition with safe means of access;
9. Inform workers regarding work hazards, risks involved and preventive and protective measures;
10. Provide adequate PPE to prevent risk from injury and ill health;
11. Maintain records of all accidents at workplace;
12. Provide first aid arrangements and emergency provisions;
13. Take measures to prevent fires & measures in the event of fire; and
14. Collaborate in the case of simultaneous operations or joint premises

The duties of workers and volunteers are identified as follows:

1. Ensure safety & health of others who may be affected by his acts & omissions & not willfully do anything to endanger himself or others;
2. Use & take care of PPE provided by the employer;
3. Do not willfully interfere or misuse any appliance or equipment or convenience provided for safety & health of persons at workplace;
4. Resolve any situation being unsafe posing immediate threat with the employer or cease work until the dispute is resolved
5. Until the dispute is resolved, employer may assign the affected workers some temporary alternative work; and
6. Worker shall report any occupational accident, occupational Disease, dangerous occurrences, or commuting accident as per company OSH Policy.

The general duties of suppliers have been identified below:

1. Design & construction to be safe & without risk to safety & health;
2. Testing & examination;
3. Adequate information;
4. Substance to be safe & without risk; and
5. Includes supply, handling, assembling, installing, erecting & testing of tools, machinery & equipment

Chapter II states rules that that Government has made for the safety and health of workers in any establishment by notification in official gazette.

The rules include the following matters:

1. Cleanliness and maintenance of building;
2. Illumination, ventilation, temperature, noise, dust, fumes and artificial ventilation;
3. Disposal of wastes and effluents;
4. Floors, stairs, mean of access, proper working space, overcrowding, pits, sumps, opening in floors, and allied things;
5. Drinking water and conservancy;
6. Guarding and fencing of machinery at work and work at, on or near moving machinery;
7. Self-acting machines and device for cutting off power; revolving machinery and pressure plants;

8. Instruction, training and supervision in relation to employment on dangerous machines and fencing or casing of machinery, wet floors, open wiring, safety fitting etc.;
9. Explosives or inflammable dust, gas and precautions against dangerous fumes etc.;
10. Precaution in case of fire;
11. Personal protective equipment;
12. Excessive weights;
13. Loading and earth moving machinery;
14. Cranes, hoists, lifts and other lifting operations;
15. Scaffolding and work at heights; and
16. Safety of building, machinery and manufacturing process

Whereas, The Sindh Occupational Health & Safety Act calls for:

1. Written Statement of Policy;
2. Consultation – formation of OHS Committee with worker representation; appointment of OHS officer;
3. Training of Health & Safety Representative;
4. Precautions against Contagious & Infectious Disease at Workplace; and
5. Compulsory Vaccination and Inoculation.

Chapter III details enforcement measures and requires:

- Registration of workplaces and approval of site, buildings and other constructions to be used as workplaces; and
- Notification and investigation of accidents, dangerous occurrences and occupational illnesses.

Chapter IV details the formation of Occupational Health and Safety Council headed by the Secretary Labor having members from industry, representatives from employers, representatives of workers, professionals, members from civil society and member from the Labor Directorate.

The Act has also fixed penalties and offences in case of non-compliance with the provisions of the Act. The maximum penalty for non-compliance is Rs.250,000/-

The Sindh Occupational Health & Safety Rules 2019 outline the measures to be undertaken to implement the requirements of the Sindh OSH Act 2017.

The organization needs to formulate OHS Policy which is the requirement of the Act. The contractors and suppliers shall comply with the provisions of the Act.

5.4 The Labor Policy 2010 – Government of Pakistan

The Labor Policy 2010 addresses the importance of OHS legislation in Pakistan as provided below:

- Labor laws relating to occupational health and safety will be consolidated and rationalized to avoid overlapping and inconsistencies;
- Government shall enact suitable legislation to ensure health and safety of construction workers; and

- A Tripartite council on Health & Safety has been set up to identify health and safety hazards for workers of all economic sectors and to make recommendations for safety measures on a continuous basis.

5.5 WBG EHS Guidelines

The World Bank Group (WBG) has guidelines for Environment, Health, & Safety (EHS) that serve as useful references for general issues as well as sector specific activities. Projects financed by the WBG are expected to comply with this guideline as required by the policies and the standards. The EHS Guidelines are mainly on occupational health and safety, community health and safety as well as on construction and decommissioning. It contains guidelines cross cutting on environmental (waste management, ambient air quality, noise, and water pollution), occupational health and safety issues amongst others, applicable to all the industry sectors⁸.

⁸ https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

6 RESPONSIBLE STAFF

6.1 KWSSIP / PIU Responsibility

The overall management of the Project is the responsibility of the PIU of KWSSIP. PIU will oversee the LMP's implementation. The LMP will be followed in all aspects of the procurement process. Contractor(s) and subcontractor(s) shall be hired in a transparent manner based on their experience and competency. The contractor(s) must ensure that all LMP requirements for labor (direct and contracted), protection, and facilities are met, and this must be included in the written agreement.

As follows, the E&S team at PIU will implement and monitor the provision of this LMP:

- Ensure that the workers are recruited, retained and treated in accordance with the E&S regulations, including the LMP and OHS provisions;
- Confirm that the duties owed to the direct workforce are carried out as outlined in this LMP and contractual documents;
- Track the project workers' training;
- When conducting activities, keep an eye out for any potential dangers of significant safety issues;
- Create and put into action a grievance procedure for direct employees that include tracking the progress of complaints and their outcomes as well as ensuring that complaints received from employees are quickly addressed.
- Ascertain that the project's workers are aware of the grievance procedure;
- Keep records of the hiring process, including age and gender verification, as well as the hiring of the hired staff. Orient new hires to environmental, social, and occupational health and safety issues and provide ongoing training for these personnel.
- Report any incidents or accidents involving project personnel and information about labor and occupational health and safety performance to the World Bank.

6.2 Contractors' Responsibilities

Occupational Health and Safety: To guarantee adherence to every LMP requirement, the contractor(s) must appoint OHS representative(s). Every month, the contractor must give the PIU a report on all incidences. The contractor is responsible for making ensuring that employees are taught in using personal protective equipment and safety precautions.

Immediately notifying the PIU of serious situations is required. Regular meetings between the PIU of KWSSIP and the contractor(s) will be held to assess progress and make sure that the OHS requirements of the LMP have been met. Follow-up on the action plans developed for the accidents that happened on specific sites. When executing the safety measures in the LMP, any challenges must be addressed by the contractor.

Labor and Working Conditions: Contractors shall maintain records in compliance with the procedures set forth in this LMP. PIU may at any point request records in order to verify that labor rules are being observed. The PIU will compare records to actuals at least once every

month and, if required, may mandate rapid corrective action. A summary of issues and solutions will be delivered in quarterly reports to the World Bank.

Worker Grievances: KWSSIP's current grievance procedures will still be available to the Project staff; however, contractors will be required to establish a separate grievance redress system for employees that satisfy the minimum requirements of this LMP. The contractor's GRM will be in line with the PIU GRM and the contractor will submit the monthly reports to the ESS responsible person in the PIU. The PIU's social development specialist will review all records on a monthly basis. In instances where workers' complaints are not resolved by the national/provincial system, the PIU will nonetheless remain informed of decisions and reflect in quarterly reports to the World Bank.

Additional Training: Each contractor is required to, at all times, have a qualified safety officer on board. If training is required, this will be the contractor's responsibility. The safety officer will provide instructions to contractor staff. PIU will also arrange training to address risks associated with labor influx and will also provide a schedule for training required. The contractor will be obligated to make staff available for this training, as well as any additional mandatory trainings required by PIU, as specified by the contract.

The staff will receive training on the prevention of SEA/SH, codes of conduct, as well as on gender and GBV in general. The PIU will be responsible for (i) training, (ii) implementation, and (iii) supervision of OHS aspects.

It will be a condition in the construction contracts that the contractors give preference to local labor. This entails that wherever possible, unskilled work opportunities should be made available to community members.

7 POLICIES AND PROCEDURES

All project staff and contractors must be informed of the project management policies and processes (s). Contracts must be drafted in conformity with ESS 2 principles and Sindh Labor Laws, and all recruitment processes must be open. Copies must be in Sindhi or Urdu to the greatest extent practicable. Urdu and Sindhi must be used for training sessions and procedure writing. The project team will prepare the subsequent actions as given in this Section. PIU will include the suggested measure in the bidding documents as provided in the **Annex II**.

7.1 Labor Policies and Procedures

These policies and procedures will be updated and modified, if necessary, after the allocation of the contracts of the different positions of the PIU. As specified in the national labor laws, the employment of project workers will be based on the principles of non-discrimination and equal opportunities. There will be no discrimination with respect to any aspects of the employment relationship, including recruitment, compensation, working conditions and terms of employment, access to training, promotion, or termination of employment. The following measures will be followed by contractors and monitored by the PIU with support from Human Resource Department to ensure fair treatment of all employees:

- Recruitment procedures will be transparent, public, non-discriminatory, and open with respect to ethnicity, religion, sexual orientation, disability or gender
- Applications for employment will only be considered if submitted via the official application procedures established by contractors
- Clear job descriptions will be provided in advance of recruitment and will explain the skills required for each post
- All workers will have written contracts describing terms and conditions of work and will have the contents explained to them, after which the workers will sign the contract.
- Unskilled labor will be preferentially recruited from the surrounding communities, and settlements.
- Employees will be informed at least two months before their expected release date of the coming termination.
- The contracted workers will not be required to pay any hiring fees. If any hiring fees are to be incurred, these will be paid by the Employer.
- Depending on the origin of the employer and the employee, employment terms and conditions will be communicated in two languages, in the national language and the language that is understandable to both parties
- In addition to the written documentation, an oral explanation of conditions and terms of employment will be provided to workers who may have difficulty understanding the documentation.
- It is noted that language related problems are not expected, but if they are, interpretation will be provided for workers as necessary.

- All workers will be 18 years old or above for civil works. This will be a requirement in contracts with construction works contractors.
- Normal working time should not exceed 40 hours per week. With a five-day working week, the duration of daily work is limited by the internal work regulations approved by the employer after prior consultation with the representatives of the workers, in compliance with the established working week duration.

The PIU will inform the World Bank of any significant event (social issues) as soon as possible, but no later than five working days, after the occurrence of the event. Such events include strikes or other workers' demonstrations. The PIU will prepare a report on the event and the corrective measures and subsequently submit it to the World Bank within 30 days of the event.

7.2 Occupational Health and Safety

The KWSSIP PIU is committed to comply with the legislation that relates to the occupational health and safety requirements as stipulated in the main law governing OHS and Sindh Factories Act 2015 Chapter 3 in Sindh as well as other provincial and federal OHS Acts. The Sindh Hazardous Substance Rules of 2014 regulate certain occupations as hazardous and contain special provisions to regulate the working conditions in those occupations. In addition, there are other laws to be complied with dealing with OHS including The Mines Act 1923; Social Security Ordinance 1965; Workmen's Compensation Act 1923; Shop and Establishment Ordinance 1969 and Dock Laborer Act 1934 as well as WB ESS2 and ESS 4. These laws and standards will enable OHS hazards identification and risk elimination through promotion of appropriate skills, knowledge and attitudes towards hazards.

The PIU will have a designated Occupational and Community Health and Safety Specialist and an Environmental Representative for an agreed period. This specialist must have a minimum bachelor's degree in civil/environmental engineering/environmental sciences and certificate course in OHS (e.g., The National Examination Board in Occupational Safety and Health – NEBOSH) with a minimum of 5 years of experience as OHS professional in construction of infrastructure projects. Extensive knowledge of all OHS legislation, OHS guidelines and standards are required.

It is important that all staff must be given induction training so that they are aware of the hazards specific to the project and its activities. This is in addition to toolbox talks and other training needs identified during project implementation.

The PIU will ensure that all workers irrespective of any category should be provided with appropriate type of protective masks, helmet, overall and safety shoes, and safety goggles, protective clothing as well as other appropriate PPE as per work job hazard analysis and method statements (such as working on live wires). The PIU and contractors must also ensure appropriate demarcation of workplace and notices for hazardous area where applicable; accident reporting, notification and investigation practices at each workplace required; safety sign and symbols displayed at workplace and ensure availability of first aid box; also identify and service agreement done with specialized hospitals for complicated

accidental and health problems as well as specific details will be included in the emergency management plan (see **Annexes III, IV and V**).

Occupational Health and Safety Management Plans (OHSMP)

Contractors will be required to prepare OHSMP in accordance with OHS standards mentioned in the bidding documents, OHS provisions of ESMP, compliance with the local regulatory requirements, and World Bank EHS Guidelines. All OHSMPs shall have a minimum requirement to include information and details on:

- Reporting and Investigation of Incidents /Illnesses
- Procedure for Waste Management
- Procedure for Housekeeping
- Procedure for Hazard Identification and Risk Assessment
- Training Procedure including Induction training
- Toolbox Talks
- Safe Systems of Work – work at heights, hot work, electrical HT/LT works, Excavation, Confined Spaces (Permits to Work)
- Personal Protective Equipment
- Emergency Response Procedure
- Monthly reporting procedure
- Camp management procedure
- Management of Food and Drinking Water at Campsite(s) and at construction site
- Project Site Security Procedure
- COVID 19 measures procedure
- Internal Auditing Procedure
- Management of visits by WB /AIIB, Government agencies
- Storage of fuel, hazardous substances
- Operation and maintenance of heavy equipment and overhead cranes.
- Recruitment procedures will be transparent, public, and non-discriminatory, and open with respect to ethnicity, religion, sexuality, disability, or gender.

The Guideline for Policies and Procedures are appended in **Annex VI**.

7.3 Child Labor and Forced Labor

To prevent engagement of underage workers, the age employment scheme should be strictly adhered to by parties involved in hiring. The process of hiring Direct Workers should include a proper screening, with age verification to ensure no children are employed in the implementation of the project. Likewise, all contracts must have a provision as to the minimum age requirement and the hiring authority shall keep a registry of all hired workers.

7.4 Labor Influx/ SEA/SH

All project workers will undergo relevant seminars and training to prevent risks of labor influx including SEA/SH issues. Project workers particularly those coming from other communities

will be briefed on the culture and history of the area, allowing them to adapt to the community values and to avoid any conflicts due to the dissimilarities of their cultural backgrounds.

Discrimination and exclusion of vulnerable groups

The employment of project workers will be based on the principle of equal opportunity and fair treatment, and there will be no discrimination with respect to any aspects of the employment relationship, such as recruitment and hiring, terms of employment (including wages and benefits), termination and access to training. This project shall comply with the national labor laws on gender equality in the workplace, which will include provision of maternity leave and nursing breaks and sufficient and suitable toilet and washing facilities, separate for men and women workers.

Development of a SEA/SH Action Plan and Mitigation Measures for Risks Related to Gender

According to the Note on Good practices to combat SEA/SH in the Framework of Financing Investment Projects involving major civil engineering works, all projects, whatever their risk level, should guarantee the minimum actions recommendations for addressing the risks of SEA/SH related issues.

The initial SEA/SH mitigation measures have been included in the ESIA's and ESMP's of the project. A separate GBV/SEA/SH Action plan will be prepared, where additional measures may need to be included.

7.5 Labor Disputes over Terms & Conditions of Employment

Fair, reasonable, and lawful terms and conditions shall be applied in the contractual provisions of all project workers to prevent labor disputes. Moreover, there will be an efficient grievance mechanism to address any issues that may arise during existence of the contract. The guidelines provided later in the document shall be strictly observed to avoid disputes over terms and conditions of employment.

All the contractors who will be engaged for the project will be required to produce their grievance procedure as a requirement for tender, which at a minimum comply with these requirements. In addition, good international practice recommends that the procedure be transparent, confidential, adheres to non-retribution practices and includes right to representation. After they are engaged, they will be required to produce proof that each worker has been inducted and signed that they have been inducted on the procedure.

7.6 Monitoring and Reporting

General Monitoring Activities: Processes for monitoring, assessment and audit will be developed to:

- Document the implementation and effectiveness of management and mitigation measures;
- Assess actual impacts against predicted impacts; and
- Demonstrate compliance with applicable legal and other requirements.

Monitoring will be undertaken for both direct hires (including casual labor) and contract workers.

Assessments: The Resident Engineer or Site Supervisor will take a lead in undertaking periodic assessments to determine the degree to which, the commitments outlined in this LMP are being met. This will include camp inspections and monitoring of grievances.

Audits: It is envisaged that, the site supervisor or resident engineer may, at its discretion, audit the contractors or suppliers to determine their compliance with this LMP. In addition, they may also, at its discretion, undertake audits of other third-party facilities and providers, as relevant to the Environmental and Social Management Plan. The Independent Environmental and Social Consultant, on behalf of KWSSIP may also be engaged to conduct periodic monitoring reviews of the Project, largely based on the social and environmental controls set out in the Environmental and Social Management Plan.

Performance indicators: Performance indicators are used to measure and track performance against the effectiveness of mitigation and control measures described in this LMP. Indicators can be divided into two groups: leading indicators and lagging indicators. Leading indicators predict actions to be taken to prevent a risk from escalating - such as complaints from workers about, for example, the quality of camp food. An example of a lagging indicator would be a work stoppage over camp conditions. General performance indicators may also be relevant, such as training and awareness numbers. Performance indicators must be measurable against a specified target.

Labor and Working Conditions Performance Indicators: Performance indicators should be carefully recorded and graphed where relevant for remedial action to reduce potential risks. They will form a key component of monthly reporting by the Resident Engineer or Site Supervisor.

Non-conformance and corrective action: The project ESMPs alongside provisions in this LMP will be all used for tracking and stewardship of non-conformances identified as part of assessment and audit activities described in this LMP.

Training and Awareness: Before the development of a training and awareness program, a needs analysis will be conducted. The needs analysis will be based on requirements of this LMP. It involves a basic assessment of the knowledge and skills of the people involved in training implementation.

Internal Reporting: A periodic report will be compiled to address the labor and working conditions aspects contained in this document, including the following for both Consulting Engineer and contractor activities:

Workplace:

- Grievances lodged by type and number, illustrated with graphs. Open grievances by type and number;
- Disciplinary action by type and number;
- Induction training numbers, queries and comments;
- Issues raised by workers' committees and action taken;
- Workforce numbers by local and foreign workers - actual against planned;

- Actual demobilization numbers against planned targets. Incidents around demobilization;
- Industrial relations incidents - stoppages go slows, threats, damage to property, violence;
- Incidents, accidents, and near misses;
- Lost hours by category; and
- Absenteeism, sick leave and late arrivals.

Camp:

- Grievances lodged by type and number. Open grievances by type and number;
- Disciplinary action by type and number;
- Induction training numbers, queries and comments;
- Issues raised by camp committees and action taken;
- Camp numbers by local and foreign workers - actual against planned;
- Camp incidents;
- Food or lodging complaints; and
- Recreation activities.

External Reporting: Consulting Engineer and its contractors will meet all statutory notification and reporting requirements.

Disclosure: Disclosure will be done to enable workers understand information regarding safeguards in the workplace. This will be done during the induction period of the workers. Various tools will be used including: Information, education and communication (IEC) materials and Meetings, Induction toolkit (sexual and gender-based violence, EHS company policies, safety, code of conduct, and child protection).

7.7 Fatality and Serious Incidents

In the event of an occupational fatality or serious injury, the PIU shall report to the Bank as soon as becoming aware of such incidents and inform the government authorities (where available) in accordance with national as well as Bank reporting requirements. Corrective actions shall be implemented in response to project-related incidents or accidents. The PIU or, where relevant the consultant, may conduct a root cause analysis for designing and implementing further corrective actions.

8 AGE OF EMPLOYMENT

This Chapter explains the standards and methodology for determining the minimum age of labor for KWSSIP.

8.1 Minimum Age for Employment in the Project

Article 11(3) of the Constitution of Pakistan prohibits the employment of children below the age of 14 years in any factory, mines, or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 does not permit child labor in the country. The ECA defines a child as a person who has not completed their fourteenth years of age, where it further states that no child shall be employed or permitted to work in any of the occupation set forth in the ECA or any workshop wherein any processes defined in the Act is carried out. The KWSSIP PIU and its contractors will be bound by the ECA to disallow any child labor at the project sites or campsites.

Under the Sindh Factories Act, 2015, no adult employee, defined as a worker who has completed his or her 18th year of age, can be required or permitted to work in any establishment in excess of nine hours a day and 48 hours a week. Similarly, no young person under the age of 18, can be required or permitted to work in excess of seven hours a day and 42 hours a week. The Factories Act, which governs the conditions of work of industrial labor, applies to factories, employing ten or more workers.

According to the ESS 2 and the Sindh Prohibition of Employment of Children Act of 2017, no one under the age of 18 may be hired to work at the project site (s). The hiring process must specify how candidates' CNICs will be checked, so that no one under the age of 18 can be hired on site. It is necessary to inspect and confirm the applicant's original CNIC. The contractor(s) and the recruiting agents will be held accountable if any underage workers are discovered to be working on the project site(s). They will be fined and have their contracts terminated.

Under the ILO C138 (Minimum Age Convention, 1973), each Member of the Convention undertakes to pursue a national policy designed to ensure the effective abolition of child labor and to raise progressively the minimum age for admission to employment or work to a level consistent with the fullest physical and mental development of young persons. Article III thereof provides: (a) the minimum age for admission to any type of employment or work which by its nature or the circumstances in which it is carried out is likely to jeopardize the health, safety or morals of young persons shall not be less than 18 years; (b) the types of employment or work to which paragraph 1 of this Article applies shall be determined by national laws or regulations or by the competent authority, after consultation with the organizations of employers and workers concerned, where such exist; (c) notwithstanding, the provisions of paragraph 1 of this Article, national laws or regulations or the competent authority may, after consultation with the organizations of employers and workers concerned, where such exist, authorize employment or work as from the age of 16 years on condition that the health, safety, and morals of the young persons concerned are fully protected and that the young persons have received adequate specific instruction or vocational training in the relevant branch of activity.

The Sindh Prohibition of Employment of Children Act of 2017 states that any teenage worker (aged between 14 and 18) hired for training at the site(s) must be kept away from moving machinery and not given any dangerous tasks. Before allocating the task or job to an adolescent worker, a thorough risk evaluation of the assignment must be made.

Contractors will be required to verify and identify the age of all workers. This will require workers to provide official documents, which would include a birth certificate, CNIC, passport, or medical or school record. If a minor under the minimum labor eligible age is discovered working on the project, measures will be taken to immediately terminate the employment or engagement of the minor in a responsible manner, considering the best interests of the minor.

8.2 Age Verification

Prior to the engagement of labor, age verification must be done and documented. Where available, verify the birthday on official records like a birth certificate, national identification card, or other reliable sources.

9 EMPLOYMENT TERMS AND CONDITIONS

This Chapter defines the employment terms and conditions applicable to the project employees.

9.1 General Requirements

The employment terms and conditions applicable to project employees as set out in the labor rules will apply to project employees who are assigned to work on the Project (Direct Workers). Terms and conditions of part-time workers are determined by their individual contracts.

The contractors' labor management procedure will set out terms and conditions for the contracted and subcontracted workers. These terms and conditions will be in line, at a minimum, with this LMP, the Sindh Factories Act 2015, and specified in the standard contracts to be used by the PIU KWSSIP under the project.

A contract of employment, written in a language known to all parties, shall be executed between the PIU and the direct worker that specifies the following:

- The parties involved, including the name of the worker, age, citizenship, civil status, gender, and address;
- Location of work with regard to the needed services, acceptance of the parties, qualifications of the worker, and attestation that the worker is not related within the third degree of consanguinity or affinity to the hiring authority and/or its representative, and the worker has not been previously dismissed from government service by reason of administrative offense;
- Terms and Conditions of the contract, including the hours and place of work, remuneration payable to the worker, job description, summary of deliverables, duration of contract, procedure for suspension or termination of contract, statement that there is no employer and employee relationship between the contracting parties.

As provided in the Sindh Factories Act, 2015, each worker who has completed a period of 12 months continuous service in a factory shall be allowed, during the subsequent period of twelve months, holidays for a period of fourteen consecutive days. If a worker fails in any one such period of twelve months to take the whole of the holidays allowed to him or her, any holidays not taken by him or her shall be added to the holidays allotted to him or her in the succeeding period of twelve months.

A worker shall be deemed to have completed a period of 12 months continuous service in a factory without considering any interruption in service during those 12 months due to sickness, accident or authorized leave not exceeding 90 days in the aggregate for all three.

9.2 Non-Discrimination and Equal Work Opportunities

Article 19-A of the Constitution imparts the State's obligations aimed at achieving equality in the form of securing the well-being of the people, regardless of sex, caste, creed, or race, by raising their standard of living, by preventing the concentration of wealth and means of

production and distribution in the hands of a few to the detriment of general interest and by ensuring equitable adjustment of rights between employers and employees.

The KWSSIP PIU is committed to equal opportunities for all its employees and potential employees where everyone is treated with respect and dignity, where there is equal opportunity for all. All employees under KWSSIP, regardless of their affiliation, will be treated fairly and with respect. Selection for employment, promotion, training, or any other benefits will be on the basis of aptitude and ability. Decisions about pay and benefits, terms and conditions of employment, appraisals, dismissal, or redundancy will be made objectively and without unlawful discrimination. All employees will be helped and encouraged to develop their full potential, and the talents and resources of the workforce will be fully utilized to maximize the efficiency of the organization.

The KWSSIP PIU will ensure that:

- Equality and non-discriminatory policy are adhered to within its own area of responsibility;
- Spread awareness on the equality in employment policy to the attention of the team members;
- Ensure that information on the equality of opportunity is included in all indication processes; and
- Ensure that the team members are available to attend relevant quality training programs (if any)

The PIU is responsible for assuring that equality in employment is effectively communicated to all employees and all those involved with the organization at whatever level of position and for providing guidance where appropriate. It will also, in particular, provide full text and induction on equal opportunities to all new employees; translate this policy into Urdu and any other traditionally spoken languages and send to all relevant involved parties. In addition, upon any significant update, this policy will be presented to all members of staff or at department/ office meetings and re-translated to all relevant involved parties.

Each member of staff has a responsibility to:

- Follow any measures introduced to ensure equality of opportunity and prevent discrimination, harassment, or bullying
- Report any discriminatory acts
- Treat others fairly without prejudice
- Promote a work environment where an individual can feel valued and realize their potential whilst encouraging others to do so also

Failure to comply with the policy, procedures and practices outlined below will be considered within the framework of the PIUs disciplinary procedure. The PIUs equal opportunity policy also covers bullying and harassment issues at the workplace and in any work-related setting outside the workplace.

9.3 Working Hours

As per the Sindh Factories Act 2015 (Section 34), the Shops and Establishment Ordinance, 1969 (Section 8) and the Road Transport Ordinance, 1961 (Section 4) are used to determine working hours and any rest time in different industries.

Section 34 of the Factories act states “no adult worker shall be allowed (or required) to work in a factory for more than 48 hours in a week: if the factory is seasonal, 50 hours a week and if the work is of continuous nature, he may work for 56 hours in a week. As for the daily hours, these may not be more than 9 hours a day (in case of seasonal: 10 hours). The working hours of an adolescent (15-18) are 5 hours in a day. The Factories Act is applicable to all areas employing 10 or more workers. The law makes provisions for one weekly holiday and if that is not given, a compensatory holiday must be given as soon as possible.

The Shops and Establishments Ordinance 1969 also limits weekly working hours to 48 hours. The ordinance also covers shops and commercial establishments not regulated by the Factories Act, where it states that any adult worker is required to work overtime, If asked, where the rate of overtime payment is double the usual pay (Section 47). Overtime is not payable to the contract workers who are employed on a piece rate basis. The normal hours of work for project workers shall not exceed 8 hours a day for 5 days for a total of a 40-hour work week, exclusive of time for meals. Where exigencies of the service require such personnel to work for 6 days or 48 hours, the project workers shall be entitled to a compensatory time off to offset the overtime rendered. No worker shall be allowed to render services beyond the 48-hour overtime.

9.4 Leaves and Weekly Rest

Each project worker is entitled to a 2-day rest period during weekends (Saturday and Sunday). Workers shall be entitled to a rest day on regular holidays recognized by the province. Each worker is entitled to 10 days casual leave with full pay during a year. Workers are also entitled to 16 days sick leave with half pay (8 days with full pay) in a year. Festival holidays as notified by the provincial government with full pay (usually 10-13) are also allowed. If a worker is required to work on a festival holiday, he will be given one day additional compensatory holiday with full pay and a substitute holiday (300% of usual wages).

9.5 Maternity Leave

If a worker has completed 12 months of continuous service in a factory, he/she shall be allowed a paid annual leave of 14 consecutive days. Under the Maternity Benefits Ordinance 1958, leave is also allowed to pregnant women for a period of 12 weeks with full pay. It is unlawful for an employer to dismiss a women worker who is on maternity leave. The qualifying period for getting this leave is 4 months of preceding employment with the employer.

9.6 Remuneration

The laws relating to fixation and payment of remuneration include the Sindh Payment of Wages Act 2015, the Sindh Minimum Wages Act 2015 and the Sindh Terms of Employment (Standing Orders) Act 2015.

9.7 Workers' Welfare

The workers' welfare legislation includes Employees Old Age Benefits (EOAB) Act 1976 (with provisions for old age pension, old age grant, invalidity, and widow(er) pension). This Act is applicable to establishments employing five or more workers. Contribution has to be made both by the employer (5% of minimum wages) and employee (1% minimum wages). Employees Social Security Ordinance 1965 (applicable like the EOAB Act) provides benefits to employees in case of sickness, maternity, employment injury or death. The amount in this scheme is contributed only by the employer to workers or their legal heirs in case of death, permanent total disablement, permanent partial disablement, and temporary disablement during working in an establishment. The Standing Orders 1968 also provides for compulsory group insurance against natural death and injury for all the permanency employees in a workplace.

9.8 Termination of Contract

The contract of employment shall cease at the end of the period stated in the contract. However, the contract may be pre-terminated by the hiring authority due to breach of any provision thereof, breach of trust, loss of confidence, and for reasons detrimental to the interest of the agency, provided that the project worker is informed in writing at least 30 days prior to the effectivity of such termination. Likewise, the project worker may pre-terminate the contract provided that a written notice is submitted to the hiring authority, stating therein the reasons for the pre-termination, at least 30 days prior to the proposed date of effectivity thereof, and the same has been received, accepted, and approved in writing by the hiring authority.

Industrial and Commercial Employment (Standing Industrial and Commercial Employment (Standing Orders) Ordinance 1968 was enacted to address to the contractual relationship between employer and employee. The ordinance is applicable to establishments employing 20 or more workers. The ordinance classifies workmen in six classes: permanent, probationers, badlis, temporary, apprentices and contract workers (the last category was added in 2006). The legislation requires that workmen should be provided the contract in writing, showing the terms and conditions of his service, at the time of hiring, promotion and transfer. It also requires that the wage rates paid to different categories of workers/work should be posted on the notice boards.

Termination of an employment contract may be either termination simpliciter, which is termination on grounds other than misconduct after a notice (section 12) or termination on account of misconduct (section 15). Notice of termination, for termination simpliciter, is mandatory for permanent employees. A notice of one month must be served before severing the employment relationship or payment of one month's wages in lieu of notice may be

provided (Section 12.1). The law also obliges the employer to provide the termination certificate in writing stating the reason behind it. Although there is no specific provision for just cause dismissal, the requirement of written termination letter and section 41 of IRA 2008 which allow the labor court to inquire into the legitimacy of termination provide that there should be bona fide and valid reason for dismissal.

Termination on account of trade union membership and activity is an invalid reason for termination (ILO, 2000). While termination is being done on account of misconduct, worker has still the right of fair hearing. Of the many types of misconduct is “go slow”, for which a worker can be fired. Termination on economic reasons/retrenchment has not been focused in law; however, law does provide the procedure of retrenchment (last come, first go) and preference for rehiring of retrenched workmen. In case of laying off the workers, they must also be given due notice or payment in lieu of notice. If the employer wants to close down the whole business or is terminating the employment of 50 or more workers, It must get the prior approval of labor court. An individual whose employment is terminated has first to use internal mechanisms for dispute resolution, however if he is not satisfied with the decision, he may appeal to the labor court. In that case, labor court is authorized to go into all the facts of the case and determine whether the termination was valid and bona fide or not. The above-mentioned ordinance also provides for severance pay/gratuity to be paid (when an employee resigns or his services are terminated other than misconduct) equivalent to 30 days wages for every completed year of service or any part thereof in excess of 6 months (for 20 years of service, this means 90 weeks of severance pay).

9.9 Deductions

No deductions other than those agreed upon in the contract or those prescribed by law or regulations shall be made from a worker’s remuneration. The hiring authority is prohibited to demand or accept from the worker any cash payment or gifts in return for admitting such worker to employment or for any other reasons connected with the terms and conditions of employment.

9.10 Medical Treatment of Sick and Injured Workers

Any worker subjected to any illness, injury, or accident which was sustained during the work period shall be transported to the nearest clinic or hospital by the hiring authority or its representative.

9.11 Collective Agreements

The duty to collectively bargain arises only between the “employer” and the “employee”. Where neither party is an “employer” nor “employee” of the other, no such duty would exist. Considering that the terms and conditions provide that no employer-employee relationship shall exist between the contracting parties, there is no duty to bargain collectively.

Collective bargaining has also been called a fundamental right which emanates from article 17(1) of the Constitution. A trade union can move application for determination of Collective Bargaining Agent (CBA) if it has its members not less than one-third of those employed as workmen. However, if more than one union exists in the premises, the registrar of trade

unions will conduct a secret ballot election/referendum and will issue the CBA certificate to union securing votes not less than one third of total votes. If none of the union is able to get one third of total votes, a run-off election between the top two unions will be held and the union getting majority votes will be certified as collective bargaining agent. Not every workman employed in the premises is eligible for voting (Section 24.5). When a union is certified as a CBA, no application for (re) determination of CBA can be made for a period of two years except where the registration of trade union/CBA is cancelled. The CBA is entitled to undertake collective bargaining with the employer or employers on matters connected with employment, non-employment, the term of employment or the conditions of work other than matters which relate to the enforcement of any right guaranteed or secured to it or any workman by or under any law, other than this Act , or any award or settlement; represent all or any of the workmen in any proceedings; give notice of, and declare, a strike and nominate representatives of workmen on the Board of Trustees of any welfare institutions or Provident Funds (IRA 2008: Section 24.13).

10 GRIEVANCE REDRESSAL MECHANISM

This Chapter describes the requirements for establishing a grievance redressal mechanism (GRM) to be established for the project workers.

10.1 Legislative Requirements

As per Article 46 of the industrial Relations Ordinance (IRO) 2002, any worker may bring his/her grievance in respect of any right guaranteed or secured by or under any law or any award or settlement to the notice of the employer in writing, either him or herself or through the shop steward or CBA, within one month of the day on which cause of such grievance arises. The IRO 2002 reduces the delay from three months to one month. Where a worker brings his or her grievance to the notice of the employer, the employer must, within 15 days for the grievance, communicate his or her decision in writing to the worker.

10.2 GRM for Project Workers

For the KWSSIP Project, the PIU and its contractors will establish a separate GRM (or make provisions in the overall GRM) for the project workers to address labor or workplace related concerns consistent with the applicable national and provincial laws and ESS2 before engaging the workers and highlight it in the Project Operations Manual.

Typical grievances that may arise in the workplace include demand for employment, labor wage rates, delays in payment, discontentment with working conditions, labor camp issues, SEA/SH issues, and overall health and safety conditions of the work environment. A GRM structure will be established for project workers (direct workers and contracted/ supply workers) as required under ESS2. Handling of grievances will require objectivity, promptness, and responsiveness' to the needs and concerns of aggrieved workers.

The worker's GRM will also allow for anonymous complaints to be raised and addressed. Individuals who submit their complaints or grievances may request that their names be kept confidential, and this should be respected. Under ESS2, a worker's GRM will be provided for all project workers, including direct workers, contracted/ supply workers, to raise workplace concerns, including SEA/SH issues at the workplace. Any type of worker who has any complaint or grievance has the right to present it and eventually receive a proper response against it.

According to ESS2, different types of workers may approach the workers' GRM for the following key reasons (amongst many others):

- Demand for employment opportunities
- Labor wage rates and delays in payment of wages
- Disagreements over working conditions
- SEA/SH in the workplace
- OHS concerns in the workplace

The workers' GRM which is different from the project GRM, will leverage existing procedures and systems, and will be established in the early stages of the project, whilst serving throughout project implementation. The workers' GRM will be based on the requirements of

the WB's ESS2. Specifically, the workers' GRM will operate according to following key principles:

- It will be made available for all direct and contracted workers (and their organizations, wherever relevant)
- It will be proportionate to the nature and scale and the potential risks and impacts foreseen from the project
- It will be designed to promptly address concerns using an understandable and transparent process that provides timely feedback to those concerned in a language they understand without any backlash
- It will be a free to use system, where complaining workers will not pay any fees to use the worker GRM
- It will utilize existing grievance systems and experiences. In this context, the worker GRM will leverage Human Resource (HR) counseling procedures for direct workers that are available at their respective health ministries and departments, and will ensure HR procedures at contractor's organizations are consistent with the official worker GRM system characterized in this document, which will be further references in their working agreements, and monitored accordingly
- Anonymous grievances are also allowed and facilitated, and will be treated equally as any other grievances, whose origin is known, however, a suitable contact information is a must to be able to communicate responses back
- There will be no discrimination against those who express grievances, and any and all grievances will be treated confidentially
- It does not replace or override requirements to provide workplace processes to report work situations that a project worker believes are not safe or unhealthy
- Workers will be able to raise concerns regarding unsafe or unhealthy working conditions throughout the project
- It will not impede access to other judicial or administrative remedies that might be available under the law or through existing arbitration procedures, or substitute for grievance mechanisms provided through collective agreements.

The worker's GRM will contain the following design and procedures:

Information about the existence of the grievance mechanism will be readily available to all project workers through notice boards, the presence of "suggestion/ complaint boxes", including the different methods of communication, redressal timelines, and rights of workers.

The complainant should be able to use mobile phone-based applications, and in person centers/ mechanisms for complaint registration and resolution, and a free hotline linked with a call center. The grievance will be addressed through each area of feedback value chain:

- i. Uptake
- ii. Sorting and processing
- iii. Acknowledgement and follow up
- iv. Verification, investigation, and action
- v. Monitoring & Evaluation
- vi. Provision of feedback to the complainant to ensure effectiveness.

Grievance handling will be done in a transparent manner, where aggrieved workers will be informed within 10 days of their grievance application, either with a respective solution or with a request of extension.

The aggrieved worker will have the option to refer to a grievance log with key information that will be established by the PIU and quarterly reported upon.

If not satisfied with the outcome of the grievance at the contractor level, the aggrieved party will be able to access the Grievance Redressal Committee (GRC) established at the PIU level, where the GRC will be responsible for the redress mechanism in the areas of labor, environment, and social aspects along with project management.

The mechanism for resolving workers' grievances will be described in the context of staff induction training, which will be provided to all workers.

Collective Grievances and Disputes Resulting from the Negotiations of Collective Agreements

When a trade union is recognized, it is entitled to negotiate on a regular basis with the employer over terms and conditions existing at the workplace and the employer is obliged to negotiate with them also. The procedures followed in such circumstances are usually contained in the agreement, which states how the issues are raised, the procedure for negotiations, the composition of the parties involved in the negotiations, and the procedure to deal with issues that are not resolved through consensus. If the dispute is not resolved at the workplace, the parties to the dispute can utilize the dispute resolution mechanisms provided in the labor legislation.

Sexual Exploitation and Workplace Sexual Harassment

A separate GRM (or specific arrangements within existing GRM) will be established specifically for the purpose of confidentially receiving grievances related to SEA/SH. All SEA/SH related complaints, with the survivor's consent, will be referenced to the project identified service provider who will further manage the case in a survivor-centric approach and will report back to the project GBV GRM once the case is solved. In addition, the ESIA/ESMP will identify additional mitigation measures, including the contractors' ESMP or contractors specific LMP, where required. This will include engagement with communities on gender related risks, grievance, and response measures available as identified in the manual.

The PIU will, with support from consultants, identify institutions and service providers who are actively engaging in the prevention of gender-based violence, sexual exploitation, and workplace sexual harassment in order to establish a manual for referencing potential survivors. The PIU and the contractor are usually not equipped to handle complaints or provide relevant services to survivors, but will reference any person to relevant service providers, including health facilities, law enforcement agency's gender unit or others, as relevant using the information on available services.

All concerned responsible staff shall hold regular meetings with project workers to discuss any work-related issues and concerns. Every grievance raised by a worker will be documented with the actions undertaken by the PIU and contractors to address such

grievance. The aggrieved worker may raise any issue anonymously through a letter which shall be submitted to their immediate supervisor's office. Any grievances which are left unattended by the contractor can be submitted by the worker to the PIU, in which case, actions shall be taken to resolve the issue. Any labor dispute shall be first resolved through mediation, conciliation, and arbitration, in order to provide an efficient procedure in the settlement of disputes and to promote autonomy and freedom of the parties to make their own arrangements to resolve their grievance.

11 CONTRACTOR MANAGEMENT

The Project Team shall select contractors through a transparent process. It will review the following during the contractor selection process:

- Knowledge gathered through publicly available sources, such as company registers and papers pertaining to alleged infractions of applicable labor laws, such as inspection reports and other documentation from enforcement agencies;
- Business licenses, registrations, permits, and approvals;
- Labor management system documents, such as labor management procedures, that address OHS concerns;
- Identification, credentials, and certifications of labor management, safety, and health employees;
- Workers' certifications/permits/training to perform required work;
- Records of safety and health violations, reactions, recordable occurrences, and accompanying Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and necessary corrective and preventive actions (for example, revised job safety analysis, new or different equipment, skills training, and so forth);
- Accident and fatality records and notifications to authorities/ lending agencies;
- Records of the benefits that employees are legally required to receive and evidence that they have enrolled in the relevant programs;
- Worker payroll records, including hours worked and pay received;
- Identification of safety committee members and records of meetings; and
- Copies of prior agreements with suppliers and contractors that have clauses and terms that are materially consistent with ESS2.

The contract document shall include the contractor's commitment to:

- providing a construction management plan that includes reporting all pertinent project information, including workplace accidents;
- Employing suitably qualified personnel for high-risk jobs;
- Taking into account all occupational, safety and health considerations for its workers and at the site(s);
- Provision of first aid facilities;
- Provision of hygienic canteen and rest facilities at the site(s) and in camps (if applicable);
- Provision of PPE commensurate with the nature of job;
- Provision of traffic management plan;
- Conformance of all labor laws and regulations;
- Written code of conduct;
- Emergency response plans;
- Provision of site security plan;
- Labor influx management plan;
- Prohibition of child labor
- Employment of female workers for certain jobs and sexual harassment prevention.

12 PRIMARY SUPPLY WORKERS

The number and type of primary suppliers will be defined once the contractors define and prepare their work plans and make the corresponding adjustments to the designs to optimize them. The construction work under the Project will require the involvement of primary supplies including construction materials essential for the functions of the proposed infrastructure, such as cement, aggregates, sand, and bitumen.

Some contractors may also be able to produce such construction materials by their workforce. However, where the contractor will source essential materials directly from Primary Suppliers on an ongoing basis, the workers engaged by such primary suppliers that meet all three criteria are deemed “primary supply workers”, as defined in ESS2.

As discussed in Chapter 3 (Key Labor Risks), the OHS risks are also deemed to be generally significant in the construction sector including quarry sites. To address these potential risks, the following measures will be taken:

Selection of primary suppliers: When sourcing for primary suppliers, the project will require such suppliers to identify the risk of child labor/ forced labor and serious safety risks associated with the primary supply chain. The PIU and the consultants will review and approve the purchase of primary supplies from the suppliers following such risk identification/ assessment. Where appropriate, the Project will be required to include specific requirements on child labor/ forced labor and work safety issues in all purchase orders and contracts with primary suppliers.

Remedial Process: If child labor/ forced labor and/or serious safety risks are identified, the PIU and the consultants will require the primary supplier to take the appropriate steps to rectify them. Such mitigation measures will be monitored periodically to assess their effectiveness. Where the mitigation measures are found to be ineffective, the PIU and the consultants will, within reasonable period, shift the project’s primary suppliers to suppliers that can demonstrate that they are meeting the relevant requirements.

The PIU will oversee the procurements of goods and materials requirements under the construction works. Project contractors will not be responsible for procurement and supply of materials and equipment under the same conditions and specifications on ESHS aspects in its contracting agreements.

Potential risks of child labor forced labor, and serious safety issues which may arise in relation to primary suppliers shall be identified in the ESMP/ESIAs to be conducted in relation to each of the sub-projects.

Where there is a significant risk of child labor or forced labor related to primary supply workers, the Project Team will require the primary supplier to identify those risks in relation use of child labor, forced labor. The labor management procedures will set out roles and responsibilities for monitoring primary suppliers.

Where there is a significant risk of serious safety issues related to primary supply workers, the Project Team shall require the relevant primary supplier to introduce procedures and mitigation measures to address such safety issues. These procedures and mitigation measures will be reviewed periodically to check their effectiveness. In case the Project Team is unable to control the primary suppliers with respect to their failure to address the safety issues with respect to child labor or forced labor, it may hire those suppliers who comply with requirements of ESS2 and address the risks regarding use of labor or forced labor as identified in the ESMP.

Annex I – Template for Worker’s Code of Conduct

Code of Conduct

I, _____, acknowledge that preventing any misconduct as stipulated in this code of conduct, including sexual exploitation and abuse (SEA), sexual harassment (SH), and child abuse/exploitation are important. Any activity, which constitute acts of gross misconduct are therefore grounds for sanctions, penalties or even termination of employment. All forms of misconduct are unacceptable be it on the work site, the work site surroundings, or at worker’s camps. Prosecution of those who commit any such misconduct will be pursued as appropriate. I agree that while working on this project, I will:

1. Consent to security background check;
2. Treat women, children (persons under the age of 18) and persons with disability with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, birth or other status;
3. Not use language or behavior towards men, women or children/learners that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate;
4. Carry out his/her duties competently and diligently;
5. Comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor’s Personnel and any other person;
6. Maintain a safe working environment including by:
 - a. ensuring that workplaces, machinery, equipment and processes under each person’s control are safe and without risk to health;
 - b. wearing required personal protective equipment;
 - c. using appropriate measures relating to chemical, physical and biological substances and agents; and
 - d. following applicable emergency operating procedures.
7. Report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and danger to his/her life or health;
8. Treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
9. Not engage in any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other unwanted verbal or physical conduct of a sexual nature with other Contractor’s or Employer’s Personnel;
10. Not participate in sexual activity with children/learners—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defense;
11. Not exchange money, employment, goods, or services for sex, with community members including sexual favors or other forms of humiliating, degrading or exploitative behavior;

12. Attend trainings related to HIV and AIDS, SAE/SH, occupational health and any other relevant courses on safety as requested by my employer
13. Report to the relevant committee any situation where I may have concerns or suspicions regarding acts of misconduct by a fellow worker, whether in my company or not, or any breaches of this code of conduct provided it is done in good faith;
14. Regarding children (under the age of 18):
 - a) Refrain from hiring children for domestic or other labor, which is inappropriate given their age, or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
 - b) Comply with all relevant local legislation, including labor laws in relation to child labor.
15. Refrain from any form of theft for assets and facilities including from surrounding communities.
16. Remain in designated working area during working hours;
17. Refrain from possession of alcohol and illegal drugs and other controlled substances in the workplace and being under influence of these substances on the job and during working hours;
18. Follow prescribed environmental occupation health and safety standards;
19. Channel grievances through the established grievance redress mechanism.

I understand that the onus is on me to use common sense and avoid actions or behaviors that could be construed as misconduct or breach this code of conduct.

I acknowledge that I have read and understand this Code of Conduct, and the implications have been explained with regard to sanctions on-going employment should I not comply.

Signed by: _____
Signature: _____
Date: _____

For the Employer/Contractor

Signed by: _____
Signature: _____
1. Date: _____

Annex II: Suggested Measure to be included in the Contracts

| Stage of Contractual Process | Suggested Due Diligence |
|----------------------------------|---|
| Before bidding | <ul style="list-style-type: none"> • Ensure that the terms of reference clearly define the supervision engineer’s responsibilities regarding oversight of, and reporting on, labor influx and workers’ camps. • Ensure the team skills in the terms of reference clearly include key staff qualified and experienced in managing similar projects, and demonstrated capacity to manage social and environmental issues, including issues pertaining to community health and safety. • Ensure that the project GRM is established and its use is widely publicized. |
| Preparation of bidding documents | <ul style="list-style-type: none"> • Review contract conditions included in bidding documents to: (i) Ensure that the relevant mitigation measures in the ESMP are reflected and budgeted in the contract, (ii) Ensure the ESMP forms part of, and is explicitly referred to in the bidding documents. (iii) Identify relevant provisions (workers, camps, child and forced labor, occupational health and safety, grievance redress, etc.) regulating the contractor’s responsibility and identify any gaps, inconsistencies or areas of concern that could be addressed through additional provisions in the “particular conditions of contract” and/or technical specifications (iv) Include a requirement that all workers sign ‘Codes of Conduct’ governing behavior, and identifying sanctions (v) Clearly identify that training programs on implementing the Codes of Conduct, etc. will be undertaken by external providers • Ensure the contract conditions and matrix of consequences clearly specify what type of penalty the contractor will face if the provisions of the ESMP and CESMP including OHS MP are not adhered to—including by subcontractors. This may include direct consequences to contractors in the form of penalties for poor performance on social and environmental matters or specific Performance Securities for ESMP and CESMP compliance. • Ensure that bidding documents clearly indicate OHS standards that are going to be applicable to different aspects of the works • Ensure bidding documents make clear the responsibilities of the contractor to prepare and adhere to a CESMP based on the ESMP and that no civil works will commence until the CESMP has been approved by the supervision engineer. • Ensure the bidding documents detail how the contractor and supervision engineer will be required to monitor and report on the impacts on the local community, issues related to labor influx and workers’ camps. • Propose Key Performance Indicators (KPIs) for Contract |

| | |
|-------------------------------|--|
| | <p>Management, reflecting issues and risks specific to the contract and the monitoring plan.</p> |
| <p>Bidding evaluation</p> | <ul style="list-style-type: none"> • Review the bid evaluation report and request to review the bids where appropriate, to verify for the recommended bidder that documents related to the ESMP, safeguard implementation capacity, and other obligations of the contractor required to be submitted with the bid are sufficiently detailed and cover the contractual requirements. • Require the contractor’s representative or dedicated community liaison staff to have the ability to communicate in the language of the Borrower and/or the local language. • Verify that the contract management framework identifies clearly lines of communication and that these are formalized and a consistent record is provided. • Ensure that the contractor meets the project’s OHS requirements for capability and experience. |
| <p>After contract signing</p> | <ul style="list-style-type: none"> • Prior to commencing works, the contractor submits CESMP(s) based on the ESMP, which includes specific management plans for: (i) work activities; (ii) traffic management; (iii) occupational health and safety; (iv) environmental management; (v) social management; and (vi) labor influx. • Supervision engineer reviews and approves the CESMP— with inputs from appropriate Government agencies—before any works start. For moderate risk sub-projects, the supervision consultants should review and clear the CESMP. Borrower should disclose the approved CESMP. • Supervision Engineers must approve occupational health and safety management plan is approved before contractor is mobilized at site |

Annex III: Written Particulars of Employment

1. Name of Employer
.....
2. Name of Employee
.....
3. Date Employment began
.....
4. Wage and Method of Calculation
.....
5. Interval at which wages are paid
.....
6. Normal Hours of work
.....
7. Short description of employee's work
.....
8. Probation Period
.....
9. Annual Holiday Entitlement
.....
10. Paid Public Holiday
.....
11. Payment during sickness
.....
12. Maternity Leave (if employee female)
.....
13. Nursing Break Entitlement (for female employee)
.....
14. Notice employee entitled to receive
.....
15. Notice employer required to give
.....
16. Any other matter either party wishes to include
.....

Notes:

- (a) An employee is free to join a trade union or staff association, which is recognized by the undertaking. The address of the Trade Union or Staff Association is:
- (b) The grievance procedure and disciplinary procedure in this undertaking requires to be followed when a grievance arises or disciplinary action that needs to be taken.
- (c) When any heading is inapplicable enter NIL.

.....
.....

Employer's signature

Witness

.....
.....

Employee's signature

Witness

.....
.....

Date

Date....

Annex IV: Contractors EHS File Monitoring Form

Contractor Name;

Instructions; Tick (√) if available, put a cross (X) if unavailable. Tick (√) if there was activity, put a cross (X) if there was no activity. Tick (√) if there's evidence, put a cross (X) if there's no evidence. Make a Comment according to the changes that have taken place as reflected by availability, activity and evidence on each EHS item.

| # | Monthly Checklist: SHE items | Available | Activity | Evidence | Comment |
|----|--|-----------|----------|----------|---------|
| 1 | Exposure to Labor Policies, | | | | |
| 2 | Valid Working Contract, | | | | |
| 3 | Current Employee List | | | | |
| 4 | Confirmation Letter Inc. copy of ID (per employee), | | | | |
| 5 | Understanding of Resources, roles, responsibilities & authority, | | | | |
| 6 | Inductions - all contractor staff | | | | |
| 7 | HIRA & Reporting; Incidents, accidents & near misses | | | | |
| 8 | Appointment letters; | | | | |
| 9 | EHS Certificates; Safety Rep | | | | |
| 10 | EHS Certificates; 1st Aider | | | | |
| 11 | Mandatory Qualifications – as per the evaluation form | | | | |
| 12 | Vehicles; Bluebook, Daily inspection sheet, Driver Permit | | | | |
| 13 | Current Evaluation form, | | | | |
| 14 | PPE: Branded & Properly worn at all | | | | |

| | | | | | |
|-----------|--|--|--|--|--|
| | times, | | | | |
| 15 | Internal Communication; minutes showing meetings, | | | | |
| 16 | Environment Management Aspects | | | | |
| 17 | First Aid Kit: availability and usage of the form, | | | | |
| 8 | Fire extinguisher; valid | | | | |
| 29 | Any other | | | | |

PIU Rep

Signature

Date compiled

Contractor Rep

Signature

Date compiled

Annex V: Maintaining Safe and Healthy Conditions for Workers at the Labor Camps

The minimum requirements for maintaining safe and healthy conditions for workers are provided below. The contractors can follow their own OHS policies and requirements.

First AID

Site assessment should be carried out for determining needs of first aid (no. of workers, nature of the works undertaken, hazards present, site geology and access to emergency assistance, etc). Based on needs assessment, an adequate first aid facility shall be maintained by health & safety representative and made available in every labor camp for the emergency treatment of injured persons. Such facilities shall be in charge of a person trained to administer first aid and will be readily accessible for use at all times. The person should also be trained in Cardiopulmonary resuscitation (CPR).

The employer should ensure that qualified first-aid can be provided at all times. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. Eye-wash stations and/or emergency showers should be provided close to all workstations where immediate flushing with water is the recommended first-aid response. Where the scale of work or the type of activity being carried out so requires, dedicated and appropriately equipped first aid room(s) should be provided. First aid stations and rooms should be equipped with gloves, gowns, and masks for protection against direct contact with blood and other body fluids. Records for treatment should be maintained. Remote sites should have written emergency procedures in place for dealing with cases of trauma or serious illness up to the point at which patient care can be transferred to an appropriate medical facility.

First Aid Box Contents Checklist

| ITEM | Quantity Specified | Quantity Present in Box | Comment |
|---|--------------------|-------------------------|---------|
| Adhesive elastic plasters assorted 20's | 1 Box | | |
| Roller bandages-conforming 100mm | 4 Rolls | | |
| Roller bandages-conforming 75mm | 4 Rolls | | |
| CPR Mouthpieces | 2 | | |
| Cotton wool 50 gram | 2 Rolls | | |
| Fabric roll plaster 25mm x3M | 1 Roll | | |
| First Aid dressing No 3 75x 100mm | 4 | | |
| First Aid dressing No 4 150x 200mm | 4 | | |
| Forceps- 10cm | 1 | | |

| | | | |
|---|--------------|--|--|
| Gauze swabs 75mm x 75mm 100's | 1 Packet | | |
| Gauze swabs 75mmx75mm Sterile 5's | 2 Packets | | |
| Gloves-Latex Large | 2 Pairs | | |
| Gloves-Latex Medium | 2 Pairs | | |
| Hypoallergenic Adhesive Tape 25mm x 3M | 1 Roll | | |
| Safety Pins Bunch of 12 | 1 Bunch | | |
| Scissors- 10cm | 1 | | |
| Splints-Straight | 2 | | |
| Triangular Bandages | 4 | | |
| Wound Cleaner- CENTRIMIDE 1% 100ml | 1 Bottle | | |

1. Items in the first aid box are minimum contents as per the Occupational Health and Safety requirements.
2. Checklist must be completed every month to ensure compliance with the LMP.
3. Contents should be regularly replenished by respective department
4. Any deficiencies should be reported to the H&S Specialist or PIU Representative.

Shelter Construction & Facilities: Beds, cots, or bunks, and suitable storage facilities such as wall lockers for clothing and personal articles shall be provided in every room used for sleeping purposes. All sites shall be adequate in size to prevent overcrowding of necessary structures. Each room used for sleeping purposes shall contain at least 50 square feet of floor space for each occupant. At least a 7-foot ceiling shall be provided. Floors shall be of smooth and tight construction. The floors shall be kept in good repair.

All living quarters shall be provided with windows, the total of which shall be not less than one-tenth of the floor area. At least one-half of each window shall be so constructed that it can be opened for purposes of ventilation. Where electric service is available, each habitable room in a camp shall be provided with at least one ceiling-type light fixture and at least one separate floor- or wall-type convenience outlet. Laundry and toilet rooms and rooms where people congregate shall contain at least one ceiling or wall-type fixture.

An adequate supply of running water shall be provided for bathing and laundry purposes. Laundry, hand washing, and bathing facilities shall be provided. Floors shall be of smooth finish but not slippery materials; they shall be impervious to moisture. Floor drains shall be provided in all shower baths, shower rooms, or laundry rooms to remove waste water and facilitate cleaning. All junctions of the curbing and the floor shall be covered. The walls and partitions of shower rooms shall be smooth and impervious to the height of splash.

Toilet facilities: Toilet facilities adequate for the capacity of the camp shall be provided.

Toilet rooms shall have a window not less than 6 square feet in area opening directly to the outside area or otherwise be satisfactorily ventilated. No fixture, water closet, chemical toilet, or urinal shall be located in a room used for other than toilet purposes. Where the toilet rooms are shared, such as in multifamily shelters and in barracks type facilities, separate toilet rooms shall be provided for each gender. These rooms shall be distinctly marked "for men" and "for women" by signs printed in Urdu and Sindhi languages of the persons occupying the camp, or marked with easily understood pictures or symbols. If the facilities for 31 each gender are in the same building, they shall be separated by solid walls or partitions extending from the floor to the roof or ceiling. Every water closet installed shall be located in a toilet room. Each toilet room shall be lighted naturally, or artificially by a safe type of lighting at all hours of the day and night. Toilet rooms shall be kept in a sanitary condition. They shall be cleaned at least daily.

Water supply: An adequate and convenient water supply, approved by the health & safety representative, shall be provided in each camp for drinking, cooking, bathing, and laundry purposes. The distribution lines shall be capable of supplying water at normal operating pressures to all fixtures for simultaneous operation. Where water under pressure is available, one or more drinking fountains shall be provided for each 100 occupants or fraction thereof.

Kitchen and Dining Area: A properly constructed kitchen and dining hall adequate in size, separate from the sleeping quarters of any of the workers, shall be provided in connection with all food handling facilities. There shall be no direct opening from living or sleeping quarters into a kitchen or dining hall. No person with any communicable disease shall be employed or permitted to work in the preparation, cooking, serving, or other handling of food, foodstuffs, or materials used therein, in any kitchen or dining room operated in connection with a camp or regularly used by persons living in a camp.

Sewage/Drainage Facilities: The toilets constructed at the labor camps should have associated septic tanks for primary treatment of the sewage. All sites used for camps shall be adequately drained. The camp shall be located in such manner that the drainage from and through the camp will not endanger any domestic or public water supply. All sites shall be graded, ditched, and rendered free from depressions in which water may become a nuisance. Construction and operation of kitchens, dining hall, and feeding facilities.

Fire Fighting: Firefighting facilities will be established in the camp to deal with the event of fire. Different types of fire extinguishers (powder, foam and carbon dioxide) will be placed at different suitable locations in the camp. These locations should be selected after a risk assessment and should be easily accessible in the event of fire. Fire alarm system providing adequate and audible warning to all the staff in the camp will be installed. The camp Plan shall include adequate escape and evacuation processes in case of fire or another emergency. This should include contingencies. Escape and rescue ways are to be kept free of any type of hurdles/barriers. All fire exits shall be distinctively marked in a language understood by the majority of the workers and in red letters of adequate size or by some other effective and clearly understood sign.

Waste Management: In the labor camp proper collection and disposal of solid waste will be ensured. Separate waste bins will be provided at different locations in the camp to collect organic and inorganic waste. These waste bins will be marked. The segregation of waste at source will be ensured. Inorganic waste will be stored at a safe location within the camp and organic waste will be handed over to waste collector on daily basis.

COVID-19 SOPs: The following SOPs related to COVID-19 will be followed in the labor camp:

- Maintain a physical distance of 6ft (2 m) minimum
- Wear a surgical mask or face covering whenever in close contact of someone. Mask shall be provided by the company free of cost
- Wash your hands-on arrival at work and regularly through the day:
- Wash hands before and after each meeting;
- No hand shaking
- Meetings are to be held in locations that allow for 4 meters distance between attendees in a closed confined space (meeting room/office block)
- Self-monitoring of health by all and reporting any illness at the earliest to the supervisor.
- Proper cleaning and frequent sanitization (at-least once a day) of the rooms, particularly of the frequently touched surfaces must be ensured.
- Proper disposal of face covers / masks / gloves left over by visitors and/or employees in covered bins, shall be ensured
- The doctor and HSE Manager in the camp shall be responsible to provide training to workers on spread of COVID-19 and control measures.

Annex VI – Guideline for Policies and Procedures

A. Emergency Response Procedure

1.0 PURPOSE

The purpose of this plan is to:

- 1.1 Provide guidelines for using internal and external resources to effectively and quickly respond to emergencies covered within the Scope of the Emergency Response Plan at the Project Site in order to:
 - Eliminate or minimize injuries to personnel.
 - Protect the Environment.
 - Prevent or minimize damage to Project site and equipment.
- 1.2 Ensure communication of all essential information to the appropriate personnel as quickly as possible.
- 1.3 Identify the responsibilities of site personnel when an emergency occurs.
- 1.4 Identify training required in order to ensure a high level of preparedness at all times.

2.0 SCOPE:

The Emergency Response Plan for KWSSIP has been developed to respond to the following emergencies at the facility:

- Serious fire or explosion
- Bomb threat
- Medical Emergencies.
- Civil unrest
- Earthquake
- Heavy Rains and Floods

3.0 RESPONSIBILITY:

The Project Manager is responsible to establish, implement and maintain the procedure.

- 3.1 All persons designated in this document shall ensure the effective implementation of Emergency Response Plan

4.0 DEFINITIONS:

- 4.1 **Emergency Response Plan** Emergency Response Plan outlines the steps, which should be followed to enable the Company to respond effectively to an emergency. It addresses:
 - Emergency Team
 - Emergency Notification and Communication Plans.

- Contingency Plans.
- Training Requirements.

4.2 **Contingency Plan**

A response plan specially developed for individual emergency scenario (e.g., fire, medical etc.) which is envisioned to occur. Contingency Plans complement an Emergency Response Plan and enable detailed provision to be made for each emergency envisioned.

4.3 **Incident**

An unplanned event that results in an injury, fire or explosion, a spill or leak, damage to property, personnel, general public or visitors.

4.4 **Emergency**

Emergency may be defined as a sudden event causing or has the potential to cause serious human injury and/or damage to the company assets and/or environmental degradation of large magnitude.

4.5 **Level 1 Emergency**

An emergency that can be controlled or handled by Internal Resources and concerned personnel and **DOES NOT** require the assistance of the local emergency services.

4.6 **Level 2 Emergency**

This is an emergency that requires assistance from the local emergency services, e.g. KMC. Level 2 emergencies can result from a natural disaster, large fire or a spill.

4.7 **Incident Commander**

The Incident Commander is the person responsible for the overall management of the emergency.

4.8 **Visitor**

For the purposes of this plan, a Visitor is anyone within the site boundaries who is not an employee. This includes suppliers, vendors etc.

5.0 **ORGANIZATION:**

Organogram of Emergency Response for KWSSIP is shown in Annexure II.

5.1 **Incident Commander**

Purpose:

To handle and control the Emergency Situation using best available resources

Functions:

- He is overall in-charge of any incident/accident at the Project Site and will communicate any incident to the Project Director.

5.2 **Fire Fighting Team**

Purpose:

To control fires, smoke and explosion during an emergency

Functions:

- Extinguish the fire.

- Control Smoke and Explosion.
- Cordon off affected area and restrict entry of non-concerned people.
- Carry out Rescue and Evacuation of trapped personnel.

5.3 **First Aid Team**

Purpose:

To provide Medical Attention to Injured Personnel

Functions:

- To provide medical care to injured personnel
- To send the injured personnel to the clinic or hospital as appropriate.
- To accompany the injured personnel to the hospital, as directed by Incident Commander

6.0 **COMMUNICATION RESPONSIBILITIES:**

- 6.1 For a Level 1 emergency Incident Commander shall contact the emergency services in the area like the Fire Brigade.
- 6.2 For a Level 1 emergency, which involves a medical emergency, the Incident Commander shall call ambulance service and advise them of the nature of the emergency during the phone call.
- 6.3 For both Levels of Emergency, Incident Commander shall inform the Project Director immediately.

7.0 **EVACUATION:**

- 7.1 Upon hearing the fire alarm, visitors and staff who have not been assigned a responsibility in the Emergency Response Plan shall be asked to go to the designated Assembly Point
- 7.2 Once assembled, the Incident Commander shall perform a head count in order to confirm the presence or absence of the employees at the project site.
- 7.3 In case anyone is missing, Incident Commander shall call on their mobile to check where they are located.
- 7.4 Personnel may return to their work places after the emergency is over

8.0 **CONTINGENCY PLANS:**

8.1 **Purpose**

Contingency plans have been developed to provide guidelines for responding to incidents and emergencies that can occur within the facility. Since it is impossible to predict exact conditions during an actual emergency, they are to be used as guidelines for the response and modified as necessary.

8.2 The following Contingency Plans have been developed for KWSSIP:

- *Fire*
- *Bomb threat*
- *Earthquake*

- *Medical Emergencies*
- *Heavy Rains and Flooding*
- *Civil Unrest*

- 8.3 The Incident Commander is authorized to activate the Contingency Plan for incidents at the office.
- 8.4 The Emergency Response Team working with led by the Incident commander is responsible for implementing the response defined within the Contingency Plan. It is recognized that the actual response may vary from the Contingency Plan.
- 8.5 The following general procedures should be considered when implementing an emergency response:
- 8.5.1 Response should be developed in the following order of priority:
- Rescue of injured or trapped personnel.
 - Protection of the environment.
 - Protection of KWSSIP assets

9.0 DEACTIVATION AND RECOVERY PLAN:

9.1 Deactivation of Emergency Response Plan

- The Incident Commander is responsible for deactivating the emergency response plan at the end of the emergency.
- He shall make this decision after consulting with the Director and other members of the emergency response teams, as appropriate.
- He will then notify all that the emergency has ended.
- The emergency area will be barricaded to prevent entry by unauthorized personnel.

9.2 Following general actions should be taken by the respective Teams at the conclusion of the emergency:

- Emergencies Involving Fires
- Arrange for firefighting equipment used during the emergency to be refilled before returning them to their correct location.
- Clean the fire area, after receiving authorization from the Incident Investigation Team Leader.
- Submit Incident Report to Incident Commander with copy to Project Director.

10.0 INCIDENT INVESTIGATION:

- 10.1 As per the legal requirements, the incident investigation team will investigate all incidents and emergencies, and to develop recommendations to prevent recurrence.
- 10.2 The Incident Commander shall ensure that the following items of evidence are preserved for use by the investigation team:

- Notes taken about the emergency response by Emergency Response Teams.
- Statements taken immediately after the incident from witnesses to the emergency.
- Within 24 hours of the emergency, Emergency Response Team will investigate the root cause of the accident; identify opportunities to improve. Moreover, suggest any suitable changes in the contingency plan or procedure in light of the evaluation of the incident.

11.0 TRAINING:

- 11.1 All concerned shall receive initial as well as periodic refresher training in addition to mock drills order to allow them to fulfill their responsibilities during an emergency.
- 11.2 Training needs be identified and team members should be trained to handle any situation. The training log shall be maintained and regular training in house as well as outside shall be arranged.
- 11.3 Incident Commander is responsible for ensuring that personnel receive the required training before they are expected to perform their duties, and that they also receive the refresher training at the required interval.

12.0 CONTINGENCY PLAN FOR FIRE:

- 12.1 When the fire alarm sounds evacuate the affected area and gather at the assembly point
- 12.2 Incidents Commander will make sure that no employee is left behind at the affected place.
- 12.3 Fire officer will shut off sources of ignition & electricity.
- 12.4 Incident Commander will contact the Security Incharge to notify the Fire Brigade, if required.
- 12.5 The Emergency Response Team will use appropriate firefighting equipment to extinguish the fire; such as:
 - For all solids except metals, use Water Type Fire Extinguisher.
 - For those articles having Electricity/ Power, use Carbon Dioxide Fire Extinguisher.
- 12.6 Prepare and submit an Incident Report.

13.0 CONTINGENCY PLAN FOR EARTHQUAKE

- 13.1 Evacuate and assemble at the assembly point
- 13.2 Provide first aid in case anyone has been injured by falling materials
- 13.3 Alert emergency services and call for ambulance in case there are many injuries
- 13.4 Ensure that all personnel working at the site especially working on heights have left their places of work
- 13.5 Shut off the electricity and fuel and water connections.
- 13.6 Remain at the assembly point till the earthquake tremors cease.

- 13.7 The site shall be inspected for damage and list prepared of damaged structures and equipment

14.0 CONTINGENCY PLAN FOR BOMB THREATS:

- 14.1 Bomb threat may be received at the Project office via telephone call
- 14.2 The person receiving the call must remain calm and try to extract as much information as possible from the caller regarding the place where the bomb is placed, the size of the bomb etc.
- 14.3 Immediately inform the Incident Commander and arrange for evacuation of personnel from the area(s)
- 14.4 Contact Bomb Disposal Squad for taking necessary action to locate the bomb
- 14.5 All personnel to return to work when the Bomb Disposal Squad clears the area.

15.0 CONTINGENCY PLAN FOR MEDICAL EMERGENCIES:

- 15.1 Any employee injured during work or due to an emergency is to be treated by first aid team and provided first aid till the arrival of ambulance.
- 15.2 In case, the injury is severe, then the person shall be sent to the nearest hospital for further treatment.
- 15.3 Incident Commander shall be notified of medical emergency at once.

16.0 CONTINGENCY PLAN FOR HEAVY RAINS AND FLOODING

- 16.1 If rains have started during the night the security in charge must inform the Project Engineer and wait for further orders
- 16.2 Steps must be taken to cover all the equipment at the project site and remove them to a safe place.
- 16.3 In case rains continue then work is not to proceed till the rains stop
- 16.4 In case of flooding at the site, all equipment is to be removed from the flooded area and kept covered
- 16.5 After the rains have stopped, assessment of damages is to be carried out and report prepared by the Incident Commander and submitted to the Project Director.

17.0 CONTINGENCY PLAN FOR CIVIL UNREST

- 17.1 In case there is news of civil unrest, the Security In Charge shall ensure that all gates of the Project Site(s) are closed and secured. Rangers/Police shall be summoned.
- 17.2 No employee shall be allowed out from the site.

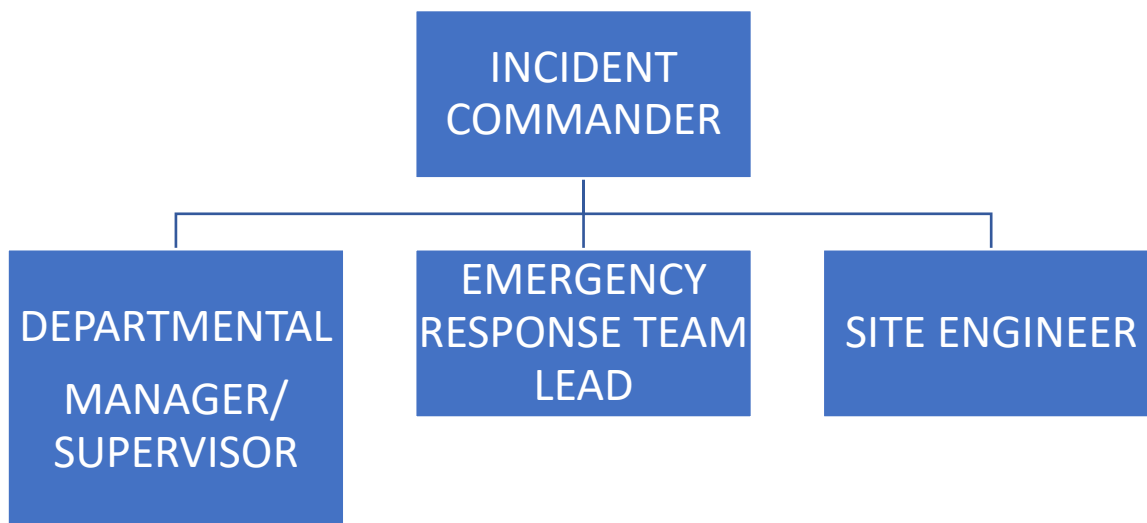
17.3 When it is ensured that there is no danger of any violent demonstrations in the vicinity of the project site, the gates may be opened and traffic in and out allowed.

Emergency Contact Numbers

Karachi

| Name | Number |
|-----------------|--------|
| Karachi Police | 15 |
| Fire Brigade | 16 |
| Sui Gas | 1199 |
| Traffic Police | 1915 |
| CPLC | 1102 |
| Rangers | 1101 |
| Aman Ambulance | 1021 |
| Edhi Ambulance | 115 |
| Chipa Ambulance | 1020 |
| K Electric | 118 |

ORGANOGRAM FOR EMERGENCY RESPONSE



B. Personal Protective Equipment

1. PURPOSE

The purpose of this procedure is to ensure that Personal Protective Equipment (PPE's) are made available to all project site employees.

The key requirements of this procedure include:

- Identification of areas / tasks requiring PPE's
- Selection and issuance
- Use and maintenance
- Eye protection policy
- Foot protection policy
- Training
- Program evaluation

2. SCOPE

This procedure applies to KWSSIP Project Sites, where risks to health and safety cannot be adequately controlled through engineering and administrative means

3. RESPONSIBILITIES

The Project Manager in co-ordination with Site safety Officer will:

- Co-ordinate the overall Personal Protective Equipment program at the Project Site; and
- Prepare and update the PPE procedure;

The concerned Department Manager / Supervisor will:

- Generate list of PPE's used in his area
- Ensure that PPE is worn correctly
- Ensure that PPE is stored as per procedure
- Ensure that the correct cleaning procedures are carried out
- Inspect PPE at regular intervals
- Initiate disciplinary action if appropriate
- Ensure appropriate warning signs are posted for hazardous activities at the project site
- Maintain inventory of PPE's of his area
- Organize PPE training.

4. PROCEDURE

4.1 Identification of Area / Task Requiring PPE

The concerned Department Manager in co-ordination with Manager EHS / his representative will:

- Identify areas / tasks / processes for which PPE is required
- Ensure that PPE is used as last resort after all other feasible controls have been applied or as an interim measure until more effective controls can be implemented

4.2 Selection and Issue

The Project Manager in co-ordination with Site Safety Officer will:

- Select appropriate PPE's as per requirement
- Ensure that only the correct PPE is issued
- Ensure that PPE is issued to personnel who know its use
- Ensure that areas where PPE's use is mandatory are demarcated as "PPE Zone" outside the area
- Ensure that signs are placed in appropriate locations to warn staff where PPE's are required.

4.3 Mandatory PPE for Project Site

Helmets and Safety Shoes are to be worn at all times at the Project Site. The helmets and Safety Shoes must be checked on regular basis by the Site Supervisor to ensure they are in good condition.

Other PPE for construction sites are:

Harness, Welding Shields/Goggles, Gloves , Gum Boots, Respiratory Protective Equipment etc. These are to be worn when performing work at heights, welding activities working in wet areas.

4.4 Use and Maintenance

The Project Supervisor in coordination with the Site Safety Officer will:

- Develop procedures on correct use, storage and maintenance of PPE's
- Ensure that staff require to wear PPE's must be trained on their use
- Ensure that the correct PPE has been issued to the site personnel performing tasks for which it is required and keep a record of the PPE issued to the employees.
- Ensure that the issued PPE is worn correctly
- Ensure that the PPE is properly cleaned and maintained
- Arrange regular inspections of PPE's at appropriate intervals
- Initiate disciplinary action against any person refusing to use issued PPE correctly

4.5 Training

The concerned Project Manager in co-ordination with Site safety Officer will ensure that concerned personnel receive appropriate training as per EHS training program on:

- How and why PPE was selected
- When PPE is necessary
- Which PPE is necessary
- How to put on, take off, adjust and wear the PPE properly
- The proper-care, maintenance, storage, inspection, use, replacement and disposal of the PPE

The Project Manager will retain the PPE training record with a copy to Manager EHS / his representative

C. Operation of Heavy Equipment and Cranes

1. PURPOSE

The purpose of this procedure is to ensure safety in operation of heavy equipment and overhead cranes.

2. SCOPE

This procedure defines the necessary precautions to be taken for operation of heavy equipment and overhead cranes

3. RESPONSIBILITIES

The Engineering Manager/Site Supervisor will ensure implementation of this procedure,

4. PROCEDURE

4.1 Operation of Heavy Equipment

- a) All heavy equipment at site is to be checked and certificate of safety is provided by an approved testing company
- b) Vehicular emissions from the equipment are to be tested by an approved testing laboratory to ensure that they comply with the Vehicular Emissions Standards
- c) The operators of the equipment are to be duly trained and have appropriate license to operate the equipment
- d) The area where the equipment is in operation is to be kept clear and no unauthorized personnel allowed to work around that area.

- e) All the safety alarms, lights etc. are to be in working condition at all times.
- f) Faulty equipment is to be removed from service and tagged that it is not to be used.
- g) All equipment is to be regularly checked and maintained.

4.2 Operation of Cranes

- a) The Project Engineer must ensure that crane operators are trained and hold a valid license to operate the crane
- b) All lifting equipment shall be checked daily to verify equipment is in safe operating condition before using. This check would include brakes, lights, horns, visibility from operator's station, and proper operation of power source for lifting. More detailed inspection of lifting equipment shall be conducted at regular intervals to maintain the equipment in a safe, operable condition. Records of conditions found and repairs made during inspections shall be maintained.
- c) Statutory requirements for annual inspections of lifting equipment shall be observed and records maintained.
- d) Safe working load chart shall be available at site and complied when lifting the loads
- e) No person shall be allowed to ride on the hook of any lifting equipment.
- f) Designated signalman shall be assigned and operation stopped in case operator is unsure of a signal or existence of a hazardous condition.
- g) Area around the crane operation shall be cordoned off and no un-authorized person allowed to work in the area.

D. Storage of Fuel and Other Hazardous Substances

1. PURPOSE

The purpose of this procedure is to provide a guideline for storage of fuel and other hazardous substances

2. SCOPE

This procedure defines the necessary precautions to be taken for fuel storage and storage of other hazardous substances

3. RESPONSIBILITIES

The Engineering Manager/Site Supervisor will ensure implementation of this procedure,

4. PROCEDURE

4.1 Storage of fuel

- a) All fuel for use in generators is to be stored in above ground tanks and provided with bunding. The NFPA 30 guidelines are to be followed.
- b) Appropriate firefighting measures are to be taken in the area where the fuel tank(s) are located.
- c) If more than 5000 Liters of fuel is stored at site then a license from the explosives department is to be obtained.
- d) "FLAMMABLE" "NO SMOKING" signs to be displayed in the fuel storage area

4.2 Storage of Hazardous Substances

- a) All hazardous/flammable materials are to be stored a segregated area and provided with secondary containment.
- b) Thinner should be stored on separate pallets with secondary containment.
- c) Appropriate fire extinguishers are to be placed in the area

4.3 Inspection of Storage Areas

The Site Safety Officer shall carry out regular inspections of the fuel storage areas and hazardous materials storage areas

E. Procedure for Waste Management

Purpose

The purpose of this procedure is to ensure proper disposal of waste from activities conducted by or overseen by project site. In addition, this procedure outlines how to prevent discharges from dumping sites at the facility and other locations on grounds, which could cause pollutants to enter sensitive areas.

Scope

These procedures are to ensure the proper handling and legal disposal of all waste from all **locations of the project site. This program is an aide to summarize the applicable** requirements of many different waste types and regulations but should not be considered all-inclusive of every waste regulation. As new regulations are promulgated and/or other facets of waste become part of this program, updates will be made.

Roles and Responsibility

- Contractors should include storm water pollution prevention strategies in waste management procedures.
- It should be ensured that contractors implement proper Best Management Practices (BMPs) to prevent storm water pollution.

Procedures

- All waste receptacles should be leak-tight with tight-fitting lids or covers. Plastic liners can be used to ensure leak tightness.
- Keep lids on dumpsters closed at all times unless adding or removing material.
- Place waste receptacles indoors or under a roof or overhang whenever possible.
- Locate dumpsters on a flat, paved surface and, if possible, install berms or curbs around the storage area to prevent run-on and run-off.
- KWSSIP up around outdoor waste containers regularly.
- Arrange for wastes to be picked up regularly and disposed of at approved disposal facilities.
- Record Sindh Environmental Protection Agency (SEPA) approved waste disposal contractor's contact details.
- Never place hazardous materials, liquids or liquid-containing wastes in a dumpster or trash receptacle. If liquid wastes must be disposed in the trash, absorb them with kitty litter or other absorbents before disposal.
- Non-hazardous liquid waste must be disposed in the sanitary sewer (if approved) or transported to a disposal site that will accept that type of wastewater.
- Do not wash out waste containers or dumpsters outdoors unless the wastewater drains to sanitary sewer or wash containers/dumpsters in a wash bay or floor drain that goes to the sanitary sewer.
- When working in the field, place all wastes in appropriate containers near the work site. If no public containers are available, containerize or bag the wastes and bring them back the shop for proper disposal.
- Minimize waste by purchasing recyclable products that have minimal packaging. Recycle cardboard, plastics and paper products as accepted by your local recycling agency.

Training

- Training on Infection Control and Waste Management shall be given to all waste handlers at project site to better manage the waste from "cradle" to "grave".
- Training should include how to recognize and report illegal connections or discharges –annually or bi-annually

Record Keeping and Documentation

- Record of forms for waste disposal should be documented.
- Keep a list of all employees trained in the project site or other location:
- Keep records on all wastes disposed of including: hazardous waste manifests, trash removal statements (bills), receipts or invoices from recyclers

F. Procedure for Housekeeping

Purpose

To provide a procedure for cleaning & sanitization all the areas within KWSSIP Project Site(s).

Scope

This procedure is applicable to all sites of the facility for general cleaning and sanitization in facility premises.

Roles and Responsibility

- For Operation, Housekeeper (Administration department) is responsible.

Procedures

Many workplace hazards can be removed or eliminated through an effective worksite housekeeping routine. This doesn't just include a cleaning routine, but rather is an ongoing process of efficient tidying and safety practices, as following:

Maintenance of a safe work area

Work area should be monitored at regular intervals throughout the day and clear up. If trip hazards and mess is starting to build up, it must be sorted out.

Access routes clearance

A safe work area includes access and egress. Any materials/tools/benches etc. should not be kept in the access route in order to clear the way and to minimize any injury.

Safety in Housekeeping

Safety is essential for every job, and housekeeping has its safety concerns. Some aspects of going over during safety training for housekeepers include:

- **Health Safety**
 - Housekeepers work with various germs throughout their day. They need to know how to properly wash their hands, use gloves, and other personal protective equipment when doing specific cleaning tasks, and dispose of trash properly.
 - Housekeepers have the potential to be exposed to blood and other various human body fluids, so they must be trained in blood-borne pathogens and know how to safely handle these types of bodily fluids in these various situations.
- **Fire Safety**
 - In every job, all employees need to know what to do in case a fire occurs in the workplace. Housekeepers must be trained and know what is expected of them to do in case of a fire.

Training

Employees should be trained to properly manage and handle the following:

- Equipment
- Proper Use of Chemicals
- Maintenance

- Laundry and Various Housekeeping Duties
- Safety

Record Keeping and Documentation

Records to be maintained at construction sites play important role in construction activities. It is a document required to prove any construction activity has taken place at site during billing or any other claims. These records have all the data of various construction activities carried out at site.

- First and foremost, important records to be maintained on site are the working drawings approved by the clients and design engineer, based on which all the construction activities take place on site.
- Time and Progress Charts help in tracking the construction activities from time to time and help in effective planning, scheduling and controlling the construction projects activities. These charts need to be approved from the concerned authorities.
- All the orders given by clients to the contractor's need be maintained with serial numbers, signatures and dates as a work orders book.
- Works diary of a construction project should indicate contract agreement number, name of work, amount of contract, date of commencement of work, date of completion and extension time granted. All the relevant details need be entered daily in the works diary. This diary serves as an authentic record. Following details need to be entered in this diary with due care:
 - Weather at site
 - Important materials brought to site with their approximate quantity
 - Types of transport working at site
 - Types of tools and plants being used at site
 - Important items of works completed and passed on the particular date
 - Visits of VIPs and their remarks if any.
- Following records must also be maintained:
 - Labor Attendance Record and Daily Wages Sheet
 - Tests Results Record
 - Records of Changes, Deviation Orders and Amendments
 - Periodic bills records

G. Monthly Reporting Procedure

Purpose

This procedure gives recording and reporting guidelines at workplace to report the injuries at facility, recovery progress, and compliance.

Scope

This guideline is applicable to all works working in the premises of project site. Following aspects are to be reported under scope of this guidance:

- work-related accidents
- specified injuries to workers
- work-related accidents which cause death;

- work-related accidents which cause certain serious injuries (reportable injuries);
- diagnosed cases of certain industrial diseases; and
- certain 'dangerous occurrences' (incidents with the potential to cause harm)

Responsibility

- It is the responsibility of each individual to report all work-related injuries and/or work-related illnesses immediately to his/her supervisor (no exceptions).
- Project Managers are required to maintain a record of information regarding every reported work-related injury and/or illness on the work-related injury/illness log
- Project Managers are responsible for knowing how to report a work-related Injury or Illness and completing a supervisor's incident/injury report.
- It is the responsibility of the injured/ill individual to submit all work-related documentation provided by a health care provider to their supervisor or facility manager.
- The Project Managers is required to submit a supervisor's incident/injury report for each work-related injury/illness to Project Director and to the regulatory body i.e., Labor Department. Report should be made on the prescribed forms within 24 hours.

Procedure

Online Reporting

The appropriate online report form can be appropriately filled and the form will then be submitted directly to the Health, Safety and Environment office or the manager of database. A copy for records must be maintained for documentation.

Telephonic Reporting

All incidents can be also be reported online but a telephone service is also an option for reporting fatal and specified injuries only.

Reporting out of hours

- Project Manager has an out-of-hours duty officer. Circumstances where Project Manager may need to respond out of hours include:
 - a work-related death or situation where there is a strong likelihood of death following an incident at, or connected with, work;
 - a serious accident at a workplace so that Project Manager can gather details of physical evidence that would be lost with time; and
 - following a major incident at a workplace where the severity of the incident, or the degree of public concern, requires an immediate public statement from either Project Manager or government ministers.

Recordkeeping and Maintenance

Project Manager must keep a record of:

- any accident, occupational disease or dangerous occurrence which requires reporting; and
- any other occupational accident-causing injuries that result in a worker being away from work.

H. Camp Management Procedure

Purpose

The purpose of the plan is to define the actions to manage the workers' onsite accommodation during the construction activities during the KWSSIP Project.

Scope

These guidelines are applicable for health and safety management at the campsite.

Roles and Responsibilities

Principal roles and responsibilities for the implementation of this plan are outlined below:

Construction Contractor & Subcontractors

- Construction Contractor has to ensure sufficient and qualified resources are allocated on an ongoing basis to achieve effective implementation of this Management Plan. Camp Manager(s) will be appointed in order to manage all workers' issues related to the accommodation.
- Construction Contractor have to ensure the effective implementation of this plan by issuing its own procedures addressing, detailing and customizing specific actions, measures and monitoring activities .
- Contractor's responsibility. The Contractor procedures have to include a description of allocated resources, responsibilities and communication procedures to relevant personnel.

Procedure

Management

Careful planning and a concern for health, safety and the environment are essential for good project management. Field camps or rented accommodations should provide adequate working, eating and sleeping arrangements for field personnel and should be appropriately equipped to encourage employees to work safely and efficiently. At the same time, camps should make as little impact as possible on the environment.

Project managers have to allow sufficient time to secure the required permits and permissions before sites are opened. The following factors are to be considered:

- Time of residence: Will the camp be in operation for a field season or year-round?
- Duration: Temporary or a permanent establishment
- Size of the camp (at each time of year)
- Accessibility: Transportation access (vehicle, helicopter and fixed wing) may impact the site selection
- Required permits

Audit and Review

The correct implementation of this Management Plan is verified through internal inspections and audits carried out according to the requirements of the company. The schedule, the frequency, the scope and objectives of the audit as well as the responsible internal auditors are indicated in the Audit Program that is developed and updated by Project Department.

Internal auditing will address:

- The correct implementation of this Management Plan;
- The correct development and implementation of Construction Contractor's Procedures;
- The correct and timely implementation of an auditing and review system by the EPC Contractor.

Reporting

Evidences of the implementation of the mitigation actions/measures and related results are collected through inspection and auditing activities. Reporting activities for this management plan is mainly related to:

- Main figures regarding the implementation of Worker's accommodation
- Main figures regarding undesired camp issues
- Collection, aggregation and recording of the data

Training

It should be ensured that employees are trained to do their jobs safely. Training must be related to operating the campsite.

First aid

Make sure that all first aid kits per the requirements of the OSH Act 2017 and OSH Rules 2019 and are replenished as needed. Make sure additional appropriate first aid is available at all times including stretcher(s).

Maintenance

A maintenance schedule should be established for the camp and equipment that includes regular inspections of all generators, pumps, hoses and fittings and other mechanized equipment, including all means of transportation. Maintenance schedules should be followed for water treatment and sewage treatment systems.

Documentation

Records should be maintained for inspections, training, first aid, safety meetings, and equipment maintenance records and communications logs.

Forms

Adequate supply of forms should be made for reporting incidents/accidents, such as required by the jurisdictional Workers' Compensation Board, spill reports, inspection and audit forms, maintenance check forms, etc.

Training

Training should be different on multiple stages, as following:

- Health and Safety During Staff Orientation
- Training During the Camp Season

During training, following aspects must be considered:

- Administration and Operations

- Health, Safety, and Risk Management
- Behavior Management

I. Management of Food and Drinking Water at Campsite(s) and at Construction Site

Purpose

This guidance provides procedures for balanced, healthy and nutritional meals for field employees. Food-borne illness can, however, KWSSIP through a camp and disable many people at one time. Therefore, hygienic food preparation and handling procedures and safe food storage are critical to maintaining employee health.

Scope

These guidelines are applicable for healthy food and safe drinking water at the campsite and at construction site.

Procedure for Food Safety

Food Preparation Safety

- Cross contamination is one of the most common causes of food-borne illness and occurs when bacteria from raw food (especially meat and poultry) is spread to other foods.
- Cooked food should be stored in freezer if required to be kept for more than four days.
- Use potable (drinking) water only to wash salad greens, fruits, vegetables and any food that will be consumed raw. It is advisable to wash pre-washed produce.
- If possible, use a designated cutting board for meat, poultry and seafood, and a separate board for vegetables and fruits. This way, raw fruits and vegetables will not be accidentally contaminated by raw meats etc. Wash cutting boards with hot soapy water and sanitizing solution after use. Keep raw meat, poultry and seafood separate from all other foods. Store them on the bottom shelf of a refrigerator. Then, leaking packages will not drip onto other foods.
- In case raw meat is to be stored for more than a week then it should must be stored in freezers.
- Wash foods in a bowl, not in a water-filled sink. After washing meat, chicken, or fish, always wash the sink as well as the container, as splashed water may contain contaminating bacteria.
- When cooking meats, poultry or seafood on a grill, place the cooked food in a clean container. Discard marinades after raw items are removed.

Food storage tips

- Food handlers should unpack and inspect all food shipments for quality immediately after it arrives. Inspect for quality, freshness, and potential contamination including by vermin.
- After inspection, store it promptly for maximum safety. Proper storage includes both preservation of food quality by refrigeration and prevention of invasion by nuisance animals and insects. Never store food in sleeping tents.

- Store perishable goods in appropriate places – cupboards, refrigerators or freezers.
- Store heavy and bulky items on lower shelves but not necessarily the lowest shelf. Store foods in containers that are insect proof, rodent proof and bear proof, as required. Label the contents.

Animal and Insect Controls

Vermin include rats, mice, cockroaches, bedbugs, flies and other noxious animals or insects. Construct camp buildings to exclude vermin as best possible. Adequate steps are to be taken to keep the premises free of vermin and insects by using appropriate fly screens, traps and baits insect sprays.

Housekeeping

- Set up the cooking area separate from the sleeping area. The space between these locations should be open with clear visibility if bears are a risk.
- Restrict food to the kitchen and dining areas; no food should be permitted in sleeping or work areas to control vermin (or bears).
- Set up hand washing facilities so workers can wash before meals. Workers should not wear dirty work clothes and boots in the kitchen and eating areas.
- Projects should have a policy stating that employees must not feed wildlife. Feeding wildlife encourages animals to become human habituated and food conditioned. Some carry life-threatening diseases such as rabies and plague.
- Camps should have an emergency lighting system in the kitchen area in the event of a power failure.

Health Surveillance of Kitchen Staff

- Kitchen staff must report to supervisor if they are suffering from fever, cold or diarrhea and they should not be allowed to work
- Annual health surveillance of kitchen staff is to be carried out and they are vaccinated against hepatitis, COVID 19, cholera etc.

Procedure for Drinking Water Safety

The primary risks associated with drinking water are disease-bearing organisms, turbidity and the presence of toxic chemicals or sewage that may contaminate drinking water. These are worldwide issues, and water in any locality and in any climate or terrain may be affected by one or more of these factors.

Determine the quantity of drinking water required for the camp. Consider the factors:

- whether the camp is temporary or permanent,
- number of employees,
- the season,
- type of activities at the Project Site
- existing and future requirements (showers, clothes washers, stoves, refrigerators, freezers) of the camp or project.

J. Project Site Security Procedure

Purpose

To detail the General Security Requirements and Procedures for persons entering the site and to manage the onsite security to prevent any harm to employees and overall management.

Scope

Site Security Team ensures a high level of awareness for security measures implemented for general site access and for the facility amongst all staff is of critical importance not only for the safety of project staff and equipment at site. Measures to prevent any terrorist activities are to be ensured at all times.

Roles and Responsibility

Site Security Team ensures the followings:

- Local government and site policy requirements for the handling of controlled substances;
- Prohibition of use of arms at site except for the authorized security staff
- Prohibition of use of alcohol and drugs at site
- Prohibition of smoking at site except in designated smoking areas
- Prohibition of any violent behavior at site by the employees
- Compliance with site security guidelines of KWSSIP
- Control of access to areas where contamination may result from unauthorized or untrained entry;
- Control of access to areas containing Hazardous Chemicals;
- Control and access to areas where project related documentation and other records are stored as well to equipment storage areas.

Procedures and Rules

- Site Entry Rules
 - The following business rules apply for access to the facility:
 - Entry into the facility premises is 'Restricted' to site employees and/or Approved contractors.
 - All visitors to site are to be provided with Induction Training including emergency procedures and fire assembly point,
 - Visitors and un-approved contractors are 'Not' permitted entry into the site building unless accompanied by a permanent staff member.
 - It is the responsibility of the hosting site staff member to remain with the visitors or contractors for the duration of their visit, whilst inside the project site.
- Security Guard
 - The Security Guard must verify identity of the visitor and receive approval form the site authorities before allowing access
 - Security Guard accompanies the person into and out of the site for the emergency or to retrieve any personal belongings
- Multiple Duty Shifts

- Site security policy is that any person remaining at the project site in all shifts must report his presence at the site to the Project Manager.
- Overtime
 - Work staff may work overtime only at defined shift timings.
- Terminated Employees
 - Managers must ensure that the ID badge and any facility keys held by the terminated employee are collected and returned to the Security Management team before the employee leaves the site.
- Contractors and Visitors
 - All visitors and contractors must produce photo identification and be signed into the site visitor's book at the security gatehouse.
 - Visitors and contractors will be issued a visitors' badge and must display the badge at all times, whilst on the site.
 - Security will ask visitors / contractors to wait at the Security or Reception area for collection by the nominated site contact person before continuing on inside the site.
- Building Alarms and Security Lighting
 - The Manufacturing Building is protected by alarm systems.
 - Defective external building lighting and essential walkway / corridor lighting should be reported immediately and not be isolated for any reason without prior consultation with the Facilities Manager.
- Fire and Security Surveillance Schedules
 - At all times and especially when the site is un-occupied or during the evenings
 - Security Officers on duty are required to visually inspect / check defined patrol areas.
 - The areas are defined by the patrol electronic button system to enable reporting of patrols to the security management team.
 - The inspection / patrol should check for:
 - Ensure that there are no signs of fire present in the building;
 - Ensure that all entry, exit and emergency exit doors are secure;
 - Check for signs of forced entry or fraudulent activity.
 - If a Fire is detected, the Security Guards are to initiate emergency procedures immediately.
- Parking of Vehicles
 - Vehicles should be parked only at the defined area of parking.
 - The guard should help the employees in proper parking in ready to move position.
- Monitoring the exit of employees
 - The guard should monitor the exit of employees at end of the day's work and keep a check that all employees are mentioning the correct exit time.
 - Ensure that the main gate is locked after everyone has left the premises.
 - The extension phone is put on the cradle for charging overnight.

Training

Listed below are suggested mandatory trainings for applicable staff functions:

- Data Security, Privacy and Confidentiality
- Interaction with regulatory authorities and lending authorities viz World Bank and AIIB personnel
- Emergency Response Plan

Record Keeping and Documentation

It is the responsibility of the Project Manager to ensure trainings are completed and logs archived. These trainings will be recorded and kept in the project file and employment history and will be made available for audit purposes at any time.

K. COVID 19 Measures Procedure

Purpose

This procedure is intended for planning purposes. Employers and workers should use this planning guidance to help identify risk levels in workplace settings and to determine any appropriate control measures to implement. Additional guidance may be needed as COVID-19 outbreak conditions change, including as new information about the virus, its transmission, and impacts, becomes available.

Scope

This planning guidance for COVID-19 based on traditional infection prevention and industrial hygiene practices. It focuses on the need for employers to implement engineering, administrative, and work practice controls and personal protective equipment (PPE), as well as considerations for doing so.

Procedure

Develop an Infectious Disease Preparedness and Response Plan

- Follow federal and state, local, tribal, and/or territorial recommendations regarding development of contingency plans for situations that may arise as a result of outbreaks
- Plans should consider and address the level(s) of risk associated with various worksites and job tasks workers perform at those sites. Such considerations may include:
 - Where, how, and to what sources of SARS-CoV-2 might workers be exposed
 - Non-occupational risk factors at home and in community Settings
 - Workers' individual risk factors (e.g., older age; presence of chronic medical conditions, including immune compromising conditions; pregnancy).
 - Controls necessary to address those risk

Prepare to Implement Basic Infection Prevention Measures

- For most employers, protecting workers will depend on emphasizing basic infection prevention measures. As appropriate, all employers should implement good hygiene and infection control practices, including:
 - Promote frequent and thorough hand washing, including by providing workers, customers, and worksite visitors with a place to wash their hands. If

soap and running water are not immediately available, provide alcohol-based hand rubs containing at least 60% alcohol.

- Encourage workers to stay home if they are sick.
- Encourage respiratory etiquette, including covering coughs and sneezes.

Develop Policies and Procedures for Prompt Identification and Isolation of Sick People

- Prompt identification and isolation of potentially infectious individuals is a critical step in protecting workers, customers, visitors, and others at a worksite.
- Employers should inform and encourage employees to self-monitor for signs and symptoms of COVID-19 if they suspect possible exposure.
- Employers should develop policies and procedures for employees to report when they are sick or experiencing symptoms of COVID-19

Develop, Implement, and Communicate about Workplace Flexibilities and Protections

- Actively encourage sick employees to stay home. Ensure that sick leave policies are flexible and consistent with public health guidance and that employees are aware
- of these policies.
- Talk with companies that provide your business with contract or temporary employees about the importance of sick employees staying home and encourage them to develop non-punitive leave policies.
- Maintain flexible policies that permit employees to stay home to care for a sick family member.

Implement Workplace Controls

Occupational safety and health professionals use a framework called the “hierarchy of controls” to select ways of controlling workplace hazards. In other words, the best way to control a hazard is to systematically remove it from the workplace, rather than relying on workers to reduce their exposure.

- Engineering Controls
- Administrative Controls
- Safe Work Practices
- Personal Protective Equipment (PPE)
- Follow existing National Command and Operation Center (NCOC) Guidelines

Food Preparation and Handling at Work Premises

- Food handlers should wear masks and gloves during food preparation and handling activities.
- Food handlers must wash their hands prior to glove use and after gloves are removed. The gloves must be replaced and hands washed, after any suspected contamination including sneezing, touching the face, or contact with frequently touched surfaces.
- Food handlers who are sick or develop symptoms of COVID-19 should be granted sick leave
- Food should be protected from contamination at all times e.g., using guards or coverings for food and utensils.
- Clean and sanitize all utensils and equipment regularly

Roles and Responsibility

Following initiative and responsibilities should be managed by team leader:

- Establishing a Safety and Health Program
- Compliance Assistance Specialists
- On-Site Safety and Health Consultation Services
- Cooperative Programs
- Strategic Partnerships and Alliances
- Voluntary Protection Programs (VPP)

Training

All employees must be imparted training on the following:

- Signs, symptoms and modes of transmission of COVID-19
- General hygiene
- Reporting procedure for illness
- Personal and workplace cleaning and disinfection procedures
- Use of face masks (including cloth face covers)
- Maintenance of social distancing (Including use of technology to promote social distancing e.g., telework and virtual meetings)
- Proper use of PPE
- Safe work practices
- Stress management

Recordkeeping and Maintenance

COVID-19 can be a recordable illness if a worker is infected as a result of performing their work-related duties. However, employers are only responsible for recording cases of COVID-19 if all of the following are true:

- The case is a confirmed case of COVID-19;
- The case is work-related; and
- The case involves one or more of the general recording criteria e.g., medical treatment beyond first aid, days away from work.

L. Procedure for External Visits

Purpose

The purpose of this procedure is to ensure that visits by regulatory authorities and lending agencies are conducted with due protocols.

SCOPE

This procedure is applicable for visits by external agencies to all KWSSIP Project Sites.

RESPONSIBILITIES

The Project Manager will be responsible for overall coordination of visit to the Project Site(s) by regulatory agencies – Labor Department, Environmental Protection Agency and lending agencies – World Bank and Asian Infrastructure Investment Bank.

PROCEDURE

SCHEDULED VISITS

Visit /Audits by World Bank

- a) World Bank auditors conduct visits of Project Site(s) to check that the project is being managed in compliance with the requirements of the World Bank Environmental and Social Framework and related Standards.
- b) The Project Manager must ensure that all necessary documentation is available and up to date at the Project Site.
- c) The observations by the World Bank auditors are to be noted and action plans prepared on receipt of the audit report.

Visit by Regulatory Agencies

- a) Such visits may be scheduled or impromptu or visit after receipt of accident report.
- b) The Project Manager must meet the regulatory agency personnel or delegate a supervisor to conduct the visit.
- c) All required documentation must be shared with the regulatory personnel.
- d) The observations made during the visit are to be noted and compliance ensured on receipt of the report.
- e) Compliance report shall be prepared and sent to the concerned regulatory agency.

M. Procedure for Internal Audits

Purpose

The purpose of this procedure is to have a defined procedure in place for conducting EHS Audits (inspections, Self-Audits) as per agreed schedule against the Labor Management Plan, Local Regulatory Requirements, and World Bank Standard ESS2 and Guidance Note

SCOPE

This procedure is applicable to all KWSSIP Project Sites.

RESPONSIBILITIES

The Project Manager will be responsible for overall coordination of KWSSIP audits at Project Sites. The Project Manager will be responsible of issuing internal audit report within two weeks of the audit followed by the audit action plan within one month of the audit to all concerned. The internal audit report compliance status will be discussed in the Site Monthly Project Committee Meetings.

Department Manager / Supervisor will be responsible for carrying out H&S Audit of their respective areas quarterly (attachment 03). The findings of inspections will be discussed in the Monthly Project Committee Meeting.

PROCEDURE

1.1 AUDIT SCHEDULE

- Internal H&S Audits of the Project Sites are to be conducted quarterly as per internal audit schedule.
- The audit schedule will be approved by the Director Projects & and a copy is to be distributed to all concerned.

1.2 AUDIT TEAM

Following will be the internal audit team members at respective Sites:

- Project Manager/ Supervisor
- Engineering Manager /Supervisor
- Site Safety Officer
- Occupational Health Physician / Technician (if required)

1.3 EHS INSPECTIONS

- Department/Area inspections will be carried out by the Project Supervisor using the checklist (attachment 03) every week. The purpose is to evaluate the physical H&S conditions / requirements at the workplace.

1.4 AUDIT INITIATION

The internal EHS audit schedule will be conveyed one week prior to the audit to the concerned personnel.

INTERNAL H&S AUDIT REPORT

Area:

| S # | Observation | Recommendations |
|-----|-------------|-----------------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

INTERNAL H & S AUDIT ACTION PLAN

| S # | Recommendation | Action Required | Action By | Target Date | Status / Comments |
|------------|-----------------------|------------------------|------------------|--------------------|--------------------------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Department / Area : _____ Date of Inspection: _____ Conducted by: _____

Note: Area inspections to be carried out every week

PROJECT SELF- INSPECTION REPORT

| S # | Description | Observation / Action Required | Responsibility | Target Date | Comments |
|------------|---|--------------------------------------|-----------------------|--------------------|-----------------|
| 1. | General House-keeping Area / Dust | | | | |
| 2. | Flooring Surface Condition | | | | |
| 3. | Ventilation Air Conditioning | | | | |
| 4. | Lighting Mounting Bulbs & Shades | | | | |
| 5. | Electrical Switch Boards / Wiring | | | | |
| 6. | Work Station Table, Chair, Stools, Platforms | | | | |

| S # | Description | Observation / Action Required | Responsibility | Target Date | Comments |
|-----|--|-------------------------------|----------------|-------------|----------|
| 7. | Machinery / Equipment Positioning / Guarding/Condition | | | | |
| 8. | Waste Management Disposal Procedure / Record | | | | |
| 9. | First - Aid First-aid Box Items, Eye-Wash Station Record | | | | |
| 10. | Personal Protective Equipment Required PPE's in Use/condition | | | | |
| 11. | Accident / Incident and Near Miss Reporting and Records | | | | |
| 12. | Lifting Devices Cranes, Pallet Trolleys, Fork Lifters etc. | | | | |

| S # | Description | Observation / Action Required | Responsibility | Target Date | Comments |
|-----|--|-------------------------------|----------------|-------------|----------|
| 13. | Ladders & Platforms Condition | | | | |
| 14. | Material Storage Fuel Storage, Other materials storage areas | | | | |
| 15. | Emergency Exits/ Assembly Point Exit Passage | | | | |
| 16. | Safety Signboards Displayed in areas | | | | |
| 17. | Fire Extinguishers Checked | | | | |

General Remarks

Annexure 4-1: Physical Conditions of the Project Alignment



Road Adjacent Dhabeji Rising Mains RoW



One of the Dhabeji Rising Main Lines near N5 National Highway



Dhabeji Rising Mains near Fore bay (High point)



Proposed Jacking Location - Dhabeji Rising Mains Crossing Underneath – N5 National Highway



Proposed Jacking Location - Dhabeji Rising Mains Crossing Underneath – N5 National Highway



Proposed Jacking Location - Dhabeji Rising Mains Crossing Underneath – ML 01 near N5 National Highway

Annexure 4-2: Environmental Monitoring Results

Table 4-1: Ambient Air Quality Results

| S. No. | Measuring Parameter | Unit | SEQs Limit | WHO / WB | Results at Dhabeji Monitoring Point |
|--------|---|-----------------------------|------------|----------|-------------------------------------|
| 1 | Oxides of Nitrogen as NO | 24 Hr (µg/ m ³) | 40 | N/A | 45.83 |
| 2 | Sulfur Dioxide (SO ₂) | 24 Hr (µg/ m ³) | 120 | 40 | Nil |
| 3 | Carbon Monoxide (CO) | 8 Hr (µg/m ³) | 5 | 4 | Nil |
| 4 | Total Suspended Particulate (TSP) | 24 Hr (µg/m ³) | 500 | N/A | 189.00 |
| 5 | Particulate Matter (PM ₁₀) | 24 Hr (µg/m ³) | 150 | 45 | 31.75 |
| 6 | Particulate Matter (PM _{2.5}) | 24 Hr (µg/m ³) | 75 | 15 | 27.45 |
| 7 | Ozone (O ₃) | 1 Hr (µg/m ³) | 130 | N/A | 14 |
| 8 | Lead (Pb) | 24 Hr (µg/m ³) | 1.5 | N/A | ND |

Table 4-2: Noise Monitoring Results

| S. No. | Monitoring Location | Time | Category | Measured Values | SEQS | WHO / WBG |
|--------|-----------------------|-------|-------------|-----------------|------|-----------|
| 1 | KWSB Colony - Dhabeji | Day | Residential | 47.25 | 55 | 55 |
| | | Night | | 37.56 | 45 | 45 |

Table 4-3: Water Quality Results

| S. No. | Measuring Parameters | Unit | Testing Method | SEQs Limits | WHO / WBG | KWSB Colony - Dhabeji |
|--------|-------------------------------------|-------|-------------------|---------------------------|---------------------------|-----------------------|
| 1 | Color | TCU | Pt-Co | < 15 TCU | < 15 TCU | <1 |
| 2 | Taste | Taste | Sensory Evolution | Objection / Non-Objection | Objection / Non-Objection | Non Objection |
| 3 | Odor | Odor | Sensory Evolution | Objection / Non-Objection | Objection / Non-Objection | Non Objection |
| 3 | Turbidity | NTU | APHA-2130 | < 5 NTU | < 5 NTU | ND |
| 5 | Total Hardness as CaCO ₃ | mg/l | APHA-2340 | < 500 | - | 135 |
| 6 | Total Dissolved Solids (TDS) | mg/l | APHA-2450C | < 1000 | < 1000 | 368 |
| 7 | pH @ 25°C | pH | ASTM-1293 | 6.5 - 8.5 | - | 7.42 |
| 8 | Aluminium (AL) | mg/l | ASTM D-857 | <0.2 | 0.2 | 0.04 |
| 9 | Antimony (Sb) | mg/l | APHA 3111 Sb | <0.005 | 0.02 | Nil |
| 10 | Arsenic (Ar) | mg/l | Merck Kit Method | < 0.05 | 0.01 | Nil |
| 11 | Barium (Ba) | mg/l | APHA-D3651 | 0.7 | 0.7 | 0.019 |

| S. No. | Measuring Parameters | Unit | Testing Method | SEQs Limits | WHO / WBG | KWSB Colony - Dhabeji |
|--------|-----------------------------|------------|---------------------------|--------------|--------------|-----------------------|
| 12 | Boron (B) | mg/l | APHA 4500-B | 0.3 | 0.3 | 0.01 |
| 13 | Cadmium (Cd) | mg/l | ASTM D-3557 | 0.01 | 0.003 | Nil |
| 14 | Chloride (Cl ⁻) | mg/l | APHA 4500-Cl ⁻ | < 250 | 250 | 51.61 |
| 15 | Chromium (Cr) | mg/l | APHA 3500-CrB | < 0.05 | 0.05 | Nil |
| 16 | Copper (Cu) | mg/l | Test Kit Method | 2 | 2 | 0.61 |
| 17 | Cyanide (Cn) | mg/l | APHA 4500 CN | <0.05 | 0.07 | 0.01 |
| 18 | Fluoride (F) | mg/l | APHA 4500 F ⁻ | < 1.5 | 1.5 | 0.61 |
| 19 | Lead (Pb) | mg/l | APHA 3500 Pb B | < 0.05 | 0.01 | Nil |
| 20 | Manganese (Mn) | mg/l | APHA 3500 MnB | < 0.5 | 0.5 | 0.3 |
| 21 | Mercury (Hg) | mg/l | Test Kit Method | < 0.001 | 0.001 | Nil |
| 22 | Nickel (Ni) | mg/l | APHA 3500 Ni | < 0.02 | 0.02 | 0.009 |
| 23 | Nitrate (NO ₃) | mg/l | Test Kit Method | < 0.50 | 50 | Nil |
| 24 | Nitrite (NO ₂) | mg/l | Test Kit Method | < 3 | 3 | Nil |
| 25 | Selenium (Se) | mg/l | APHA 3500 Se | 0.01 | 0.01 | Nil |
| 26 | Residual Chlorine | mg/l | Test Kit Method | 0.2 - 1.5 | - | 0.29 |
| 27 | Zinc (ZN) | mg/l | APHA 3500 Zn | 5 | 3 | 2 |
| 28 | Fecal Coliforms | Count / ml | APHA 922 B | 0 Per 100 ml | 0 Per 100 ml | 0 |
| 29 | E Coli | Count / ml | Total Viable Count | 0 Per 100 ml | 0 Per 100 ml | 0 |
| 30 | Total Bacterial Count | Count / ml | APHA 922 B | 0 Per 100 ml | 0 Per 100 ml | 8 |
| 31 | Pesticides | mg/l | Kit Method | 0.001 | - | ND |

Annexure 4-3: Floral and Faunal Species of the Project Area

Table 4-1: Vegetation within the Aol

| S. No. | Name of Species | Common Names | IUCN Status |
|---------------|------------------------------------|---------------------------------------|-------------|
| TREES | | | |
| 1. | <i>Acacia nilotica</i> | Babur | LC |
| 2. | <i>Azadirachta indica</i> | Neem | LC |
| 3. | <i>Conocarpus lencifolius</i> | Cono | NT |
| 4. | <i>Ficus palmata</i> | Phagwara, Anjir, Patguleri | NE |
| 5. | <i>Ficus religiosa</i> | peepal | NE |
| 6. | <i>Leucaena leucocephala</i> | White lead tree | NE |
| 7. | <i>Mangifera indica</i> | Mango/ Aam | DD |
| 8. | <i>Phoenix dactylifera</i> | Date palm | NE |
| 9. | <i>Pithecellobium dulce</i> | Jungle jalebi/ Madras Thorn | LC |
| 10. | <i>Prosopis glandulosa</i> | Vilayati keekar | LC |
| Herbs | | | |
| 1. | <i>Alternanthera sessilis</i> | sessile joyweed | NE |
| 2. | <i>Blepharis indica</i> | Asad | NE |
| 3. | <i>Brassica juncea</i> | Sarson | NE |
| 4. | <i>Brassica nigra</i> | Kali Sarson | LC |
| 5. | <i>Cleome brachycarpa</i> | Ponwar | NE |
| 6. | <i>Eclipta alba</i> | Bhringraj | LC |
| 7. | <i>Heliotropium crispum</i> | --- | NE |
| 8. | <i>Cassia senna</i> | Senna-i-Makki | NE |
| 9. | <i>Convolvulus glomeratus</i> | Clustered Bindweed | NE |
| 10. | <i>Cleome brachycarpa</i> | Ponwar | NE |
| 11. | <i>Cressa cretica</i> | Rudranti | LC |
| 12. | <i>Datura alba</i> | Tooh | NE |
| 13. | <i>Fagonia indica</i> | Dhamasa, Dhamana | NE |
| 14. | <i>Melilotis indica</i> | - | NE |
| 15. | <i>Peristrophe paniculata</i> | Atrilal, Ubut kundri | NE |
| 16. | <i>Portulaca oleracea</i> | Kulfe Ka Sag, Salunak, Lunak, Khurfa. | LC |
| 17. | <i>Phyla nodiflora</i> | Makna, Wakan, Jal-nim | LC |
| 18. | <i>Sida ovata</i> | Oval-Leaf Fan | NE |
| 19. | <i>Senna holoserica</i> | Jangli Sana. | NE |
| 20. | <i>Solanum surratense</i> | kundiari, 'Momoli, Mokri | NE |
| 21. | <i>Sonchus asper</i> | Sow thistles | NE |
| 22. | <i>Tetraena simplex</i> | Alethi, Putlani | NE |
| 23. | <i>Tribulus terrestris</i> | puncture vine | LC |
| 24. | <i>Trichodesma indicum</i> | Indian Borage | NE |
| Shrubs | | | |
| 1. | <i>Abutilon fruticosum</i> | Texas Indian mallow | NE |
| 2. | <i>Abutilon indicum</i> | India Abutilon | NE |
| 3. | <i>Achyranthes aspera</i> | Ubat kandi | NE |
| 4. | <i>Aerva javanica var javanica</i> | Booh | NE |
| 5. | <i>Barleria acanthoides</i> | Asad | NE |
| 6. | <i>Capparis decidua</i> | Karil, Karir | LC |

| S. No. | Name of Species | Common Names | IUCN Status |
|--|--------------------------------------|-----------------------------|-------------|
| 7. | <i>Calotropis Procera</i> | Aak | NE |
| 8. | <i>Echinops echinatus</i> | Indian globe thistle | NE |
| 9. | <i>Euphorbia caducifolia</i> | Thuhar/ leafless milk hedge | NE |
| 10. | <i>Ipomoea cornea ssp. fistulosa</i> | Bush Morning Glory | NE |
| 11. | <i>Jatropha gossypifolia</i> | bellyache bush | LC |
| 12. | <i>Pluchea lanceolata</i> | arimei, Reshami, Phar Buti | NE |
| 13. | <i>Prosopis juliflora</i> | Vilayati keekar | NE |
| 14. | <i>Pseuderanthemum reticulatum</i> | Gold-Veined Eranthemum | NE |
| 15. | <i>Rosa indica</i> | Rose | NE |
| 16. | <i>Salsola imbricata</i> | Lana, Gora Lana, Hashok | NE |
| 17. | <i>Salvadora persica</i> | khabar | LC |
| 18. | <i>Tamarix indica</i> | Lai/ | NE |
| 19. | <i>Tamarix aphylla</i> | lai | NE |
| 20. | <i>Ziziphus nummularia</i> | Jungle berr/ berri | NE |
| Grasses | | | |
| 1. | <i>Cenchrus ciliaris</i> | Buffalo Grass | LC |
| 2. | <i>Chloris barbata</i> | Ganni, Jargi. | NE |
| 3. | <i>Desmostachya bipinnata</i> | Drabh | LC |
| 4. | <i>Dactyloctenium aegyptium</i> | Egyptian crowfoot grass | NE |
| 5. | <i>Dactyloctenium scindicum</i> | Sind Crowfoot Grass | NE |
| 6. | <i>Phragmites australis</i> | Kaano | LC |
| 7. | <i>Saccharum griffithii</i> | - | NE |
| 8. | <i>Typha sp,</i> | <i>Booh/ bulrush</i> | LC |
| NOTE: NE=NOT EVALUATED, LC= LEAST CONCERN, DD= DATA DEFICIENT, NT= NEAR THREATENED, EN= ENDANGERED, CR= CRITICALLY ENDANGERED | | | |

Table 4-2: List of mammalian species observed/reported in the project area

| No. | Common ame | Scientific Name | Occurance | | | Listing IUCN Red list |
|-----|-----------------------------|-----------------------------|-----------|-------------|------|--------------------------|
| | | | Common | Less Common | Rare | |
| 1. | House Mouse | <i>Mus musculus</i> | x | | | LC |
| 2. | Five stripped-palm Squirrel | <i>Funambulus pennantii</i> | x | | | LC |
| 3. | House Shrew | <i>Suncus murinus</i> | x | | | LC |
| 4. | Indian Gerbil | <i>Tatera indica</i> | x | | | LC |
| 5. | Little Indian field Mouse | <i>Mus booduga</i> | x | | | LC |
| 6. | Indian Grey Mongoose | <i>Herpestes edwardsi</i> | x | | | LC |
| 7. | House Rat | <i>Rattus rattus</i> | x | | | LC |

Table 10-3: List of Reptiles Reported in the Project Area

| No. | Common Name | Scientific Name | Listing | | |
|-----|--------------------------------|--|---------|---------------|----------------|
| | | | WP Act | IUCN Red list | CITES Appendix |
| 1 | Indian Cobra | <i>Naja naja naja</i> | | | II |
| 2 | Indian Fringe-toed Sand lizard | <i>Acanthodactylus cantoris cantoris</i> | | | |
| 4 | Saw scaled Viper | <i>Echis carinatus pyramidum</i> | | | |
| 5 | Garden Lizard | <i>Calotes versicolor</i> | | | |
| 6 | Spotted Indian House Gecko | <i>Hemidactylus brookii brookii</i> | | | |

Table 10-4: Birds Recorded / Reported in the Project Area

| S. No | Common Name | Scientific Name | Priority Water Migratory | Status | | | Listing | | |
|-------|--------------------------|----------------------------------|-----------------------------|-----------|----------|---------|---------------|--------------|-------|
| | | | | Migratory | Resident | W P Act | IUCN Red List | CMS Appendix | CITES |
| 1. | Bank Myna | <i>Acridotheres ginginianus</i> | x | | x | | | | |
| 2. | Black Drongo / King Crow | <i>Dicrurus macrocercus</i> | x | | x | | | | |
| 3. | Black Kite | <i>Milvus migrans</i> | x | | x | P | | | II |
| 4. | Black-winged Stilt | <i>Himantopus himantopus</i> | x | x | | | | II | |
| 5. | Blue Rock Pigeon | <i>Columba livia</i> | x | | x | | | | III |
| 6. | Collared Dove | <i>Streptopelia decaocto</i> | x | | x | | | | |
| 7. | Common Sandpiper | <i>Actitis hypoleucos</i> | x | x | | | | | |
| 8. | Crested Lark | <i>Galerida cristata</i> | x | | x | | | | |
| 9. | Grey Partridge | <i>Francolinus pondicerianus</i> | x | | x | | | | |
| 10. | House Crow | <i>Corvus splendens</i> | x | | x | | | | |
| 11. | House Sparrow | <i>Passer domesticus</i> | x | | x | | | | |
| 12. | House Swift | <i>Apus affinis</i> | x | | x | | | | |
| 13. | Indian Myna/Common Myna | <i>Acridotheres tristis</i> | x | | x | | | | |
| 14. | Indian Tree-Pie | <i>Dendrocitta vagabunda</i> | x | | x | | | | |
| 15. | Jungle Babbler | <i>Turdoides striatus</i> | x | | x | | | | |
| 16. | Koel | <i>Eudynamys scolopacea</i> | x | | x | | | | |
| 17. | Little Green Bee-eater | <i>Merops orientalis</i> | x | | x | | | | |
| 18. | Pied Bushchat | <i>Saxicola caprata</i> | x | | x | | | | |
| 19. | Purple Sunbird | <i>Nectarinia asiatica</i> | x | | x | | | | |
| 20. | Red-vented Bulbul | <i>Pycnonotus cafer</i> | x | | x | | | | |
| 21. | Red-wattled Lapwing | <i>Hoplopterus indicus</i> | x | | x | | | | |
| 22. | Rose-ringed Parakeet | <i>Psittacula krameri</i> | x | | x | | | | III |
| 23. | White-cheeked Bulbul | <i>Pycnonotus leucogenys</i> | x | | x | | | | |

Annexure 4-4: Tree Plantation Plan

As detailed below, the Tree Plantation Plan has been prepared for the restoration vegetation being affected by the project construction activities.

As estimated during ESMP study of the proposed project, **35** trees would be cut/uprooted during project execution. These trees will be cut with the condition that the Contractor will plant 10 trees for each cut tree i.e. total **350** trees will be planted. An indicative replenishment cost of **Rs. 190,826** will be required for raising one avenue mile (500 plants) of tree and their maintenance for 5 years, keeping the rate of daily wages as Rs. 700 per man per day (MD) as detailed in Table 1.1 to 1.4. The total replenishment cost of **Rs. 190,826 (0.7 avenue miles x Rs. 272,609)** should be reflected in the bidding as well as contract documents related to the project execution. During project implementation, it should be ensured that the tree plantation has been carried out and appropriate arrangements have been made for its nourishment at least for five years after execution of the project as per recommendations of Forest / Wildlife Departments and under KWSB's supervision.

Suitable spaces for compensatory tree plantation will be identified by the PIU - KWSSIP before execution of construction activities in consultation with Forest Department and District Municipal Corporations – DMCs.

The following or other suitable indigenous trees species are suggested to be planted as compensatory plantations at the identified sites however necessary alterations in the selection of species may be made by the Contractor in the light of Forest Department guidelines:

Melia azadarach L (Neem), Moringa oleifera (Sohanjana), Albizia lebbek (Srikh), Cassia fistula (amaltas), Cordia myxa (Lasura), Phoenix dactylifera, (Date Palm), Terminalia arjuna (Arjan), Ficus bengalensis (Bur), Ficus religiosa (Peepal). In addition orchids may also be developed where feasible using drip irrigation techniques.

Estimated Cost of Plantation of One Avenue Mile (500 Plants) for First Year.

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|--------|---|------------------------------|--------------------|-------------------------|--------------|
| 1 | Clearance of site | One Avenue Mile (500 plants) | 700/MD | 10 | 7,000 |
| 2 | Layout | One Avenue Mile | 700/MD | 4 | 2,800 |
| 3 | Digging of pits @ 3cft each | 500 pits | 700/MD | 20 @ 25 pits per person | 14,000 |
| 4 | Average cost plants | 500 plants | Rs.50/- | - | 25,000 |
| 5 | Carrying of plants from nursery to site including loading/unloading | 500 plants | Rs. 10/- per plant | - | 5,000 |
| 6 | Planting of plants (including 25%) restocking with ball of earth | 500+125 =625 plants | Rs. 5 per plant | - | 3,125 |

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|------------------------------------|--|----------------------|------------|--------------------------|--------------------|
| 7 | Replacement of earth with silt 1 cft. (0.0283 m ³) per pit 500 cft. (14.15m ³) | 500 pits | 700/MD | 20 @ 25 pits per person | 14,000 |
| 8 | Hand watering 30 times during dry months | 500x30=15,000 plants | 700/MD | 50 | 35,000 |
| 9 | Reopening of pits 2 times @ 1 Cft | 500x2=1000 pits | 700/MD | 10 @ 100 pits per person | 7,000 |
| 10 | Weeding 4 times | 500x4=2000 plants | 700/MD | 5 | 3,500 |
| 11 | Miscellaneous/ Unforeseen | Lump Sum | | | 4,000 |
| Total (1st year) | | | | | Rs. 120,425 |

Estimated Cost of Maintaining Plantation of One Avenue Mile (500 Plants) for Second Year

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|------------------------------------|--|----------------------|-----------------|----------------------------|-------------------|
| 1 | Restocking of 25% plants per Avenue Mile | 125 plants | Rs.30/- Each | - | 3,750 |
| 2 | Carrying of plants from Nursery to site including loading/ unloading | 125 plants | Rs.10/- Each | - | 1,250 |
| 3 | Re-digging of pits 25% @ 3cft each | 125 pits | 700/MD | 5 @ 25 pits/person | 3,500 |
| 4 | Planting of plants with ball of earth | 125 plants | Rs. 5 per plant | - | 625 |
| 5 | Hand watering 30 times During dry months | 500x30=15,000 plants | 700/MD | 50 @ 300 plants per person | 35,000 |
| 6 | Re-opening of Pits 2 times @ 1 Cft. | 500x2=1,000 pits | 700/MD | 10 @ 100 pits/person. | 7,000 |
| 7 | Weeding 2 times | 500x2=1,000 | 700/MD | 10 @ 100 pits/person. | 7,000 |
| 8 | Miscellaneous/ Unforeseen | Lump Sum | | | 3,000 |
| Sub-Total | | | | | 61,125 |
| Escalation @ 10 % | | | | | 6,112 |
| Total (2nd year) | | | | | Rs. 67,237 |

Estimated Cost of Maintaining Plantation of One Avenue Mile (500 Plants) for Third Year.

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|--------|--|------------|--------------|----------|--------------|
| 1 | Restocking of 20% plants per Avenue Mile | 100 plants | Rs.30/- Each | - | 3,000 |
| 2 | Carrying of plants from Nursery to site including loading/ unloading | 100 plants | Rs.10/- Each | - | 1,000 |

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|--|--|----------------------|-----------------|-----------------------|-------------------|
| 3 | Re-Digging of Pits @ 3cft. | 100 pits | 700/MD | 4 @ 25 pits/person | 2,800 |
| 4 | Planting of plants with ball of earth | 100 plants | Rs. 5 per plant | - | 500 |
| 5 | Hand watering 20 times During dry months | 500x20=10,000 plants | 700/MD | 33 @303 plants/person | 32,100 |
| 6 | Re-opening of Pits 2 times @ 1cft. | 500x2=1000 pits | 700/MD | 10 @100 plants/person | 7,000 |
| 7 | Weeding | 500 plants | 700/MD | 5 @100 plants/person | 3,500 |
| 8 | Miscellaneous/ Unforeseen | Lump Sum | | | 3,000 |
| Sub-Total | | | | | 50,200 |
| Escalation @ 10% | | | | | 5,020 |
| Sub-total for 3rd year | | | | | Rs. 55,220 |

Estimated Cost of Maintaining Plantation of One Avenue Mile (500 Plants) for Fourth Year.

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|--------------------------------------|--|----------------------|----------------|----------------------------|-------------------|
| 1 | Restocking of 10% plants per Avenue Mile | 50 plants | Rs.30/- Each | - | 1,500 |
| 2 | Carrying of plants from Nursery to site including loading/ unloading | 50 plants | Rs.10/- Each | - | 500 |
| 3 | Re-Digging of Pits @ 3cft each | 50 | 700/MD | 2 @ 25 pits per person | 1,400 |
| 4 | Planting of plants with ball of earth | 50 plants | Rs.5 per plant | - | 250 |
| 5 | Hand watering 10 times During dry months | 500x10 = 5000 plants | 700/MD | 17 @ 300 plants per person | 11,900 |
| 6 | Weeding | 150 plants | 700/MD | 1 | 700 |
| 7 | Miscellaneous/Unforeseen | Lump Sum | | | 2,000 |
| Sub-Total | | | | | 18,250 |
| Escalation @ 10% | | | | | 1,825 |
| Total for 4th year | | | | | Rs. 20,075 |

Estimated Cost of Maintaining Plantation of One Avenue Mile (500 Plants) for Fifth Year.

| S. No. | Description | Quantity | Rate (Rs.) | Man Days | Amount (Rs.) |
|--------------------------------------|--|---------------------|----------------|----------|------------------|
| 1 | Restocking of 5% plants per Avenue Mile | 25 plants | Rs.30/- Each | - | 750 |
| 2 | Carrying of plants from Nursery to site including loading/ unloading | 25 plants | Rs.10/- Each | - | 250 |
| 3 | Re-Digging of Pits 5% @ 3 cft each | 25 pits | 700/MD | 0.5 | 350 |
| 4 | Planting of plants with ball of earth | 25 plants | Rs.5 per plant | - | 125 |
| 5 | Hand watering 5 times During dry months | 500x5 =2,500 plants | 700/MD | 8 | 5,600 |
| 6 | Weeding | 150+25= 175 plants | 700/MD | 1 | 700 |
| 7 | Miscellaneous/Unforeseen | Lump Sum | | | 1,000 |
| Sub-Total | | | | | 8,775 |
| Escalation @10% | | | | | 877 |
| Total for 5th year | | | | | Rs. 9,652 |

Total cost of 1 avenue mile (500 trees) for 5 years (120,425+67,237+55,220+20,075+9,652) = **Rs. 272,609**

Replenishment Cost of Tress=

- ◆ Total trees to be uprooted = 35
- ◆ Planting of trees for each uprooted tree =10
- ◆ Avenue miles = 35 x 10 / 500= 0.7

Cost for 0.7 avenue miles = Rs. 272,609 x 0.7 = PKR **190,826/-**

Annexure 4-5: Socio-economic Questionnaire



Questionnaire for Institutional Consultation

Name of department _____ District _____

Name of consulted representative _____ Designation _____

Health

| Health facilities | Total Numbers in district |
|--------------------|---------------------------|
| District Hospitals | |
| BHU | |
| RHC | |
| MCH | |

What major water born disease are observed in the district?

What measures are taken by the health department/Ministry to overcome these diseases?

What would be the social or environment impacts on peoples by the implementation of this project?

1. _____
2. _____
3. _____

How your institution can help to this project for increasing its efficacy for the public interest

1. _____
2. _____
3. _____

Name of interviewer _____ Date _____ Designation _____

Name of interviewer _____ Date _____ Designation _____



Questionnaire for Institutional Consultation

Name of department _____ District _____

Name of consulted representative _____ Designation _____

Education

| Total no of primary schools in district | Girls | Boys |
|--|-------|------|
| Estimated enrollment | | |
| School having washroom facilities | | |
| Schools having drinking water facilities | | |

What kind of problems you are facing with current sewerage system /how it is effecting to the enrollment in schools

Through this project implementation, how it would benefit you/education department

Any campaigns are runned by education department or any other institution on health and hygiene if yes what was the campaigns?

Any suggestions

Name of interviewer _____ Date _____ Designation _____

Name of interviewer _____ Date _____ Designation _____



Questionnaire for Institutional Consultation

Name of department _____ District _____

Name of consulted representative _____ Designation _____

Fisheries

What are the effects/problems facing the fisherman's due to untreated sewer water wasted in marine

What kind of water born disease are they facing?

What kind of skin disease they are facing due to direct exposure to marine water?

How this project will impact on fisherman's community?

What are your suggestions?

Name of interviewer _____ Date _____ Designation _____

Name of interviewer _____ Date _____ Designation _____



Questionnaire for Institutional Consultation

Name of department _____ District _____

Name of consulted representative _____ Designation _____

Agriculture

The vegetables cultivated on waste water are good enough for health Yes No

If yes then how

If no then what are the adverse effects of these on health

How departmentally these are these are prohibited

How this project will effect on improving the public health?

Any suggestion or recommendation

Name of interviewer _____ Date _____ Designation _____

Name of interviewer _____ Date _____ Designation _____



Socio-Economic Survey (Key Informant) Questionnaire

Questionnaire No.

1. Geographic location

Settlement / Kachi Abadi _____ Tehsil/town _____ District _____

North _____ South _____

Respondent Name _____ Fathers Name _____ Age _____

Education (Yes / No) if yes then what is qualification _____

Family size

| Male | Female | System of family | | Children |
|------|--------|------------------|--------|----------|
| | | Joint | Single | |
| | | | | |

2. Estimated population of area

| Total no of HH | No. Mohalla / Streets | Type of Housing Units |
|----------------|-----------------------|-----------------------|
| | | |

3. Source of Drinking water

| Water Supply | Groundwater / Hand-Pump | Water Filter Plant | Masjid | Bottle Water |
|--------------|-------------------------|--------------------|--------|--------------|
| | | | | |

a) Condition of available water sources

| Easy Access | Partially Easy Access | Un Fit |
|-------------|-----------------------|--------|
| | | |

b) availability of water supply water for houses

No of hours per day _____ no# houses for available # _____

c) ground water condition for use

| Sweet water | Water table |
|-------------|-------------|
| | |



d) Usages of ground water

| Cleaning | Bathing | Cooking | Drinking | Other |
|----------|---------|---------|----------|-------|
| | | | | |

e) do you use of treatment technique at house

Yes No if yes what _____

f) how would you rate the quality of drinking water

Good Acceptable Poor don't know

g) is there any water treatment facility available in village

Yes No nearby is _____ it functional Yes No

h) in which months availability of water is most vulnerable _____

i) major water born disease _____

4. Sanitation

Do you have toilet within house premises Yes No how many _____

a) Types of toilet available in house

| Flush to piped sewer system | Flush to septic tank | Flush to pit | Flush to open sewerage | Compositing toilet | PIT latrine | Bucket | Hanging toilet | Open defecation | others |
|-----------------------------|----------------------|--------------|------------------------|--------------------|-------------|--------|----------------|-----------------|--------|
| | | | | | | | | | |

How your HH disposes off waste water _____

How dispose of the solid waste collection _____

Any treatment measures are taken _____

5. General

Is there any NGO working on water or on sanitation? Yes No

If yes specify how / what type of /project doing ? _____

Your suggestions on to improved and effective water and sanitation system



Socio-Economic profile

(Focus Group Discussion)

1. Geographical information

Locality _____ Tehsil/Town _____ District _____

2. Population

Estimated population _____ No. HH _____

Family system

Joint (in percentage) single _____

Structure of Housing

Kachaa Pacca Kacha and Pacca

3. Ethnicity

| S. No | Communities | No./Percentage (approx.) |
|--------------|-------------|--------------------------|
| | | |
| | | |
| | | |
| Total | | |

4. Languages

Sindhi Urdu Pashto Sreiky Others _____

5. Major occupations

| S. No | Occupation | Percentage |
|-------|------------|------------|
| | | |
| | | |
| | | |

6. Educational facilities

| Description | No. of institution | | | | In case of no. nearest to the locality |
|-----------------|--------------------|------|-------|------|--|
| | Girls | Boys | Girls | Boys | |
| Primary school | | | | | |
| Middle school | | | | | |
| High school | | | | | |
| Colledge | | | | | |
| Madersa | | | | | |
| Other (specify) | | | | | |



7. Health facility

- Facility within village _____
- Government hospital _____
- BHU _____
- Mother and child care Health unit _____
- Dispensary _____
- Hakeem / Practitioners _____

8. Common Diseases in Village

- Malaria Typhoid Polio TB Diarrhea Haptitas
- Skin diseases Eye Diseases Any other) _____

9. Civic infrastructure

| Type of Amenity | Available in the village | Available in nearby village/locality | Distance from the village |
|------------------------------|--------------------------|--------------------------------------|---------------------------|
| Electricity | | | |
| Water supply/Tap water | | | |
| Sui-Gas | | | |
| Fuel cylinder | | | |
| Filling station (petrol/Gas) | | | |
| Fuel Agency | | | |
| Cable Television | | | |
| Access to internet | | | |
| Telephone (land line) | | | |
| Post office | | | |
| Bank | | | |
| Mosque | | | |
| Graveyard | | | |
| Other | | | |

10. Source of drinking water

| Tap water/ water supply | Hand-pump | Bottled water | Public Filtration plant | Stream /canal | Others |
|-------------------------|-----------|---------------|-------------------------|---------------|--------|
| | | | | | |

Water table (ft) _____

Quality of table water for drinking

| Excellent | Good | Unfit |
|-----------|------|-------|
| | | |



11. Sewerage system availability in in locality

Yes No

If not then where do you disposes your sewerage

| Open pit | Septic tank | Open drain | Pipe | Socking pit | Other |
|----------|-------------|------------|------|-------------|-------|
| | | | | | |

Do you have any system for collection of solid waste

Yes No

a) If yes give details _____

b) If No, then where do you dump your waste _____

Leadership Patterns

12. Who is the most influential person in the village

| Designation | Name |
|-------------------|------|
| MNA/MPA | |
| UC Member | |
| Village elder | |
| Teacher | |
| Cast/family elder | |
| Religious leader | |
| Other | |

13. Conflict resolving patterns

How conflicts are resolved

| Jirga | Tribal/cast/head | Family head | Court | Any other |
|-------|------------------|-------------|-------|-----------|
| | | | | |

14. Women participation

| S. No | Activities | Participation Tick (yes/No) | Hours per day | % of Contribution |
|-------|----------------------------|-----------------------------|---------------|-------------------|
| 1. | House Hold | | | |
| 2. | Child caring | | | |
| 3. | Farming/crop activities | | | |
| 4. | Livestock raring | | | |
| 5. | Sale and purchase of goods | | | |
| 6. | Produce products | | | |
| 7. | Do formal jobs | | | |
| 8. | Others | | | |

a) Women contribute in HH income

Yes No

If yes, how



b) Are women consulted in decision making matters Yes No
 If yes, in what matters?

c) Is there any industry in your village or in the vicinity? Yes No
 If yes which industry?

15. Does any NGO or CBO exist in the area? Yes No
 If yes: explain their names and activities?

| | |
|--|--|
| | |
| | |
| | |

Do there exist any vulnerable households in the area Yes No

| Widows | Handicapped | Homeless | Others |
|--------|-------------|----------|--------|
| | | | |

16. Specify the nearest facility or amenity? (KM)

Police station Grain Market Cattel Market Other

State the pressings needs of the area

Any development in progress at your village regarding community benefit

Community perception about the project

Any specific observations

a) _____

b) _____

Facilitator: _____

Date: _____

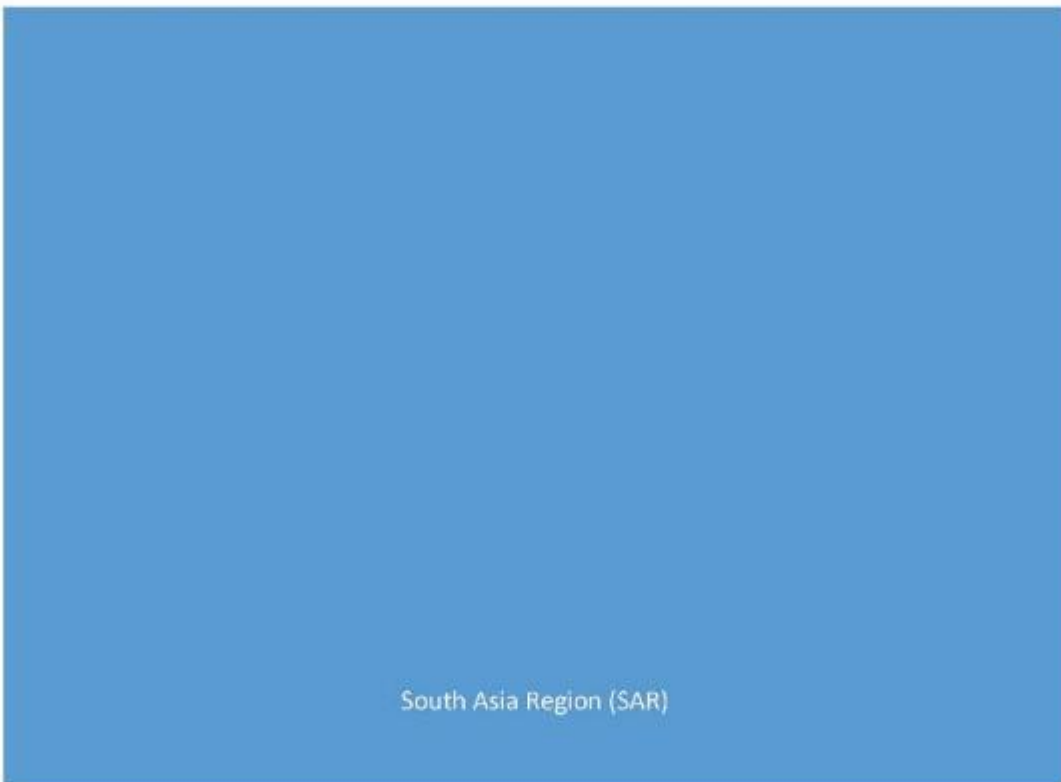
Facilitator: _____

Date: _____

Annexure 5-1: A Health & Safety Framework



HEALTH AND SAFETY
FRAMEWORK



South Asia Region (SAR)



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1 Overview

Health and Safety is defined as the process of anticipation, recognition, evaluation and control of hazards arising in or from the workplace and the community that could impair the health, safety and well-being of workers, considering the possible impact on the surrounding communities and the general environment. The Health and Safety Framework outlines the management of workplace and community hazards and take appropriate preventive measures to make workplace and community safer and healthier.

2 Purpose

This document is a framework for the Borrower to implement a practical approach to manage Occupational Health and Safety (OHS) and Community Health and Safety (CHS) impacts and risks in accordance with national/local regulatory framework, the World Bank Environmental and Social Standards and Environmental Health and Safety (EHS) Guidelines, ISO Standards, Good International Industry Practices (GIIP), etc. This framework document will be in accordance with the following:

- National laws including Acts, Regulations, Codes of Practice, Guidelines, etc. where the project is located.
- ESS2 – Labor and Working Conditions
 - o The Borrower will develop and implement written labor management procedures applicable to the Project.
 - o Measures relating to occupational health and safety will be applied to the project. The OHS measures will include the requirements of ESS2 and consider the General Environmental Health and Safety Guidelines (EHSGs) and, as appropriate, the industry-specific EHSGs and other GIIP.
 - o The OHS measures will be designed and implemented to address, (a) identification of hazards, (b) provision of preventive and protective measures including method statements, safe work procedures, etc., (c) training of project workers, (d) documentation, reporting, and remedies of occupational incidents, (e) emergency prevention and preparedness and response arrangements to emergency situations, and (f) remedies for adverse impacts such as occupational injuries, deaths, disability and disease.
 - o All parties who employ or engage project workers will develop and implement procedures to establish and maintain a safe working environment, including that workplaces, machinery, equipment and processes under their control are safe and without risk to health, including by use of appropriate measures relating to chemical, physical and biological substances and agents. Such parties will actively collaborate and consult with project workers in promoting understanding, and methods for, implementation of OHS requirements, as well as in providing information to project workers, training on occupational safety and health, and provision of personal protective equipment without expense to the workers.
 - o Workplace processes will be put in place for project workers to report work situations that they believe are not safe or healthy, and to remove themselves from a work environment which they have reasonable justification to believe presents an imminent



and danger to their life or health. Project workers will not be retaliated against or otherwise subject to reprisal or negative action for such reporting or removal.

- o Project workers will be provided with facilities appropriate to the circumstances of their work, including access to canteens, hygiene facilities, and appropriate areas for rest.
 - o A system for regular review of occupational safety and health performance and the working environment will be put in place and include identification of safety and health hazards and risks, implementation of effective methods for responding to identified hazards and risks, setting priorities for mitigation actions, and evaluation of results.
 - o Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) reporting, prevention and management in the workplace must be addressed in the project health and safety management plan and in the labor management procedures.
- ESS4 – Community Health and Safety (CHS)
 - o The Borrower will develop, implement and review/update (as required) a CHS Management Plan or CHS Management measures which will be included in the Environmental and Social Management Plan (ESMP) applicable to the Project.
 - o Conduct risk assessment to identify and assess the risks and prevent their adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances.
 - o Implement appropriate control measures to avoid or minimize community exposure to project-related traffic and road safety risks, diseases, and hazardous materials.
 - o Ensure the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.
 - o Ensure appropriate community emergency preparedness and response plan is available and communicate to all stakeholders to address emergency events.
 - o Community engagement, communication and reporting processes shall be developed and implemented for community members to report health and safety incidents, incidents (including complaints) must be investigated appropriately, and action plans implemented and communicated to the community.
 - o The Borrower will promote quality and safety, and considerations relating to climate change and natural disasters, in the design and construction of infrastructure projects, including dams.
 - o SEA/SH reporting, prevention and management for local communities must be addressed in the project health and safety management plan.
 - World Bank Group Environmental Health and Safety Guidelines (EHSGs), 2007.
 - International Labour Organization (ILO) Code of Practice: Safety and Health in Construction Industry, 1992.
 - ILO Codes of Practice: Safety and Health in Building and Civil Engineering Work, 1972.
 - International Organization of Standardization (ISO) Standards. Examples include 45001 - Occupational Health and Safety Management Systems, ISO 4007 – Eye and Face Protection, ISO



20345 – Safety Footwear, ISO 3873 – Industrial Safety Helmets, ISO 20345 & ISO 16024 – Fall Protection.

- Good International Industry Practices (e.g., UK HSE Executive, Safe Work Australia, US OSHA, Global Reporting Initiative (GRI)).

3 Scope

The Health and Safety Framework is applicable on all World Bank-financed projects in the South Asia Region (SAR).

4 Implementation of the Health and Safety Framework

The implementation of this framework should adopt a risk-based approach when applying to the World Bank-financed projects. It is critically important that the project conducts impact/risk assessments (environmental, social and health & safety) to identify and assess impacts and risks both in the workplace and in the community.

For OHS impacts and risks, the Borrower shall develop and implement a Health and Safety Management Plan (HSMP) to manage OHS impacts/risks. The detail and comprehensiveness of the Project HSMP should be based on the risk and not on the size of the project or types of contracts (ICB, NCB, etc.). All projects are required to have a HSMP that includes all elements of this framework (e.g. policy, organization, emergency management, etc.). In large (mega) projects where the risk assessment identified multiple significant risks (substantia/high), it is advisable that the Contractor (or Subcontractor) prepare and implement H&S sub plans to manage these risks and will be included in the annex of the Project HSMP. A Project HSMP Plan template is provided in Annex 1.

The Borrower is responsible for the project and shall ensure that this Health and Safety Framework is applied. The Borrower can delegate/assign the PIU or Contractor to develop and implement a HSMP to address the Health and Safety Framework requirements and to manage health and safety impacts and risks at the project operational level.

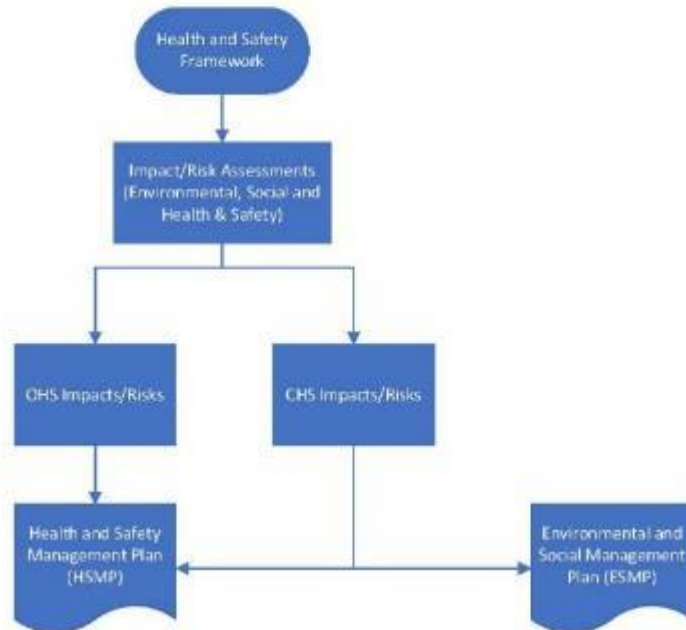
For CHS impacts and risks, the Borrower shall address and manage CHS impacts/risks under the Environmental and Social Management Plan (ESMP) and to some extent in the Health and Safety Management Plan (HSMP).

In some situations, there may be overlapping of the management plans due to project activities impacting both the workers and local communities. For example, road construction projects have significant impacts to workers and local communities and will require robust plans to manage OHS and CHS risks.

The Health and Safety Framework implementation flowchart is provided below (Figure 1).



Figure 1. Health and Safety Framework Implementation Flowchart



Note: OHS impacts and risks may overlap both management plans (HSMP and ESMP) in some projects, e.g. road construction (traffic management plan) will impact both workers and the community.

The Health and Safety Management Plan (HSMP) is the key tool to manage health and safety risks and impacts associated with the Project. Its core purpose is to ensure that all activities are planned, carried out, controlled and directed with consistent, approved, health and safety management practices, procedures or standards.

The HSMP should be applied as a living document and undergo routine review and updates when any of the following happens:

- There is a change in the scope of the project, or
- There is a change in construction methodology/technique based on site condition, or
- Following a major incident/near miss, or
- New or emerging health and safety risks (e.g. disease pandemic), or
- Change in local legal/regulatory requirements, or
- At the end of the Project (to allow for improvements in subsequent projects).



The PIU/Contractor is responsible for the review and update of the HSMP and communicate with relevant stakeholders (e.g. workers, subcontractors, suppliers, local communities, etc.).

In addition, the Contractor/Sub-Contractor can also prepare, submit and implement H&S sub-plans, procedures or SOPs to address specific work activity hazards either as a separate document or as part of the HSMP.

There should be one overall project HSMP that outlines the management of health and safety risks. Do not duplicate efforts by having multiple Health and Safety Plans for contractors, subcontractors, suppliers, etc.

5 Health and Safety Management Strategy - Working Together for Success

The responsibility for safety cannot be “delegated” to the “OHS Officer or Manager”. The OHS staff of the PIU and/or Contractor support line management by assisting in jobsite training, serving as trained and knowledgeable observers, providing administrative assistance, monitoring and evaluating the success of the safety program and acting to continuously improve this plan. While this role is important, commitment and active participation by everyone, every day, on every task, is necessary if the PIU and Contractor are to achieve the level of health and safety excellence, both in the workplace and in the community, that the Borrower expects.

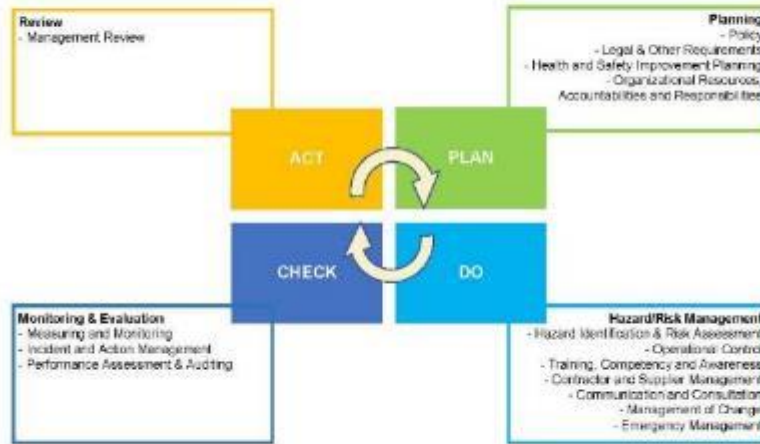
6 Health and Safety Management System

The PIU/Contractor management goal is to aspire Zero Harm to all workers and the community members while carrying operational activities. To achieve this goal, the PIU/Contractor shall prepare a HSMP in accordance with the minimum expectations in line with the policies, standards and best practices noted in this framework (e.g. ESS2 & ESS4, ISO, GIIP, etc.). The HSMP is an overarching health and safety management system for the project. All 15 elements of this framework must be included in the HSMP. In addition, safe work processes and procedures (e.g. Work Statements, SOPs, Work Instructions, etc.) must be developed and implemented for complex and high-risk activities. For example, Operational Control is one of the key elements, and it is expected that in high-risk work activities (e.g. crane lifting, tunnelling, etc.) the Contractor must develop and apply SOPs/Safe Work Procedures to operate safely.

The Health and Safety Management System is designed on the principles of continual improvement and adopts the methodology of Plan, Do, Check and Act (PDCA) (Figure 2). The structure of the management system generally follows the layout of common international standards such as the ISO 45001 and OHSAS 18001 where key elements of the system are aligned to PDCA.



Figure 2. PDCA – Health and Safety Management System



Given all the resources of standards, procedures and guidelines that have been described, the PIU/Contractor shall comply with the following principles:

- Wherever there is a conflict in guidance of the above, the more stringent safety requirement shall be applied. The PIU/Contractor must make sure that all applicable national laws and regulations are always complied.
- In this document 'Shall' and 'Must' signifies a mandatory requirement whereas 'Should' will be used to mention a recommended practice that the PIU/Contractor management will strive to accomplish.

7 Health and Safety Framework Elements

7.1 Element 1 - Health and Safety Policy

The PIU/Contractor must develop a Health and Safety Policy that establishes a clear set of objectives and targets for the effective management of Occupational Health and Safety (OHS) and Community Health and Safety (CHS) performances for the project. It should be consistent with the World Bank's codes of business practice (e.g. Environmental and Social Framework and Standards) and aligned to the local legal framework and requirement.

The Health and Safety Policy must commit to:

- a) The prevention of incidents that may lead to injuries, illnesses, pollution, property and environmental damage, security, process losses and product quality impacts.
- b) Compliance with legal and other requirements, including international accords and external requirements to which the Borrower is committed.
- c) The effective management of OHS and CHS risks and impacts.



- d) Establishing measurable objectives and targets for improving OHS/CHS performance.
- e) Providing the resources needed to meet OHS/CHS performance objectives.
- f) Encouraging worker participation and promoting awareness of OHS/CHS risks and opportunities.

The PIU/Contractor shall establish project specific measurable targets to achieve above mentioned objectives. The determination of these targets is based upon the drive for continuous improvement, external peer group benchmarking and stakeholders' input.

7.2 Element 1 - Human Rights Policy

The Borrower's human rights policy should have focus on the responsibility to respect human rights and play a positive role in the communities where they operate. To this end, the Borrower (PIU/Contractor) should commit to respecting human rights as set out in the United Nations Universal Declaration of Human Rights and the International Labour Organization (ILO) Declaration on Fundamental Principles and Rights at Work, as well as adhere to the United Nations Guiding Principles on Business and Human Rights, the Voluntary Principles on Security and Human Rights and the World Bank Environmental and Social Standards (ESS) 2: Labor and Working Conditions.

The Borrower (PIU/Contractor) must continually assess the human rights context of their activities, including impacts that they may cause and those to which they may contribute or be directly linked. This determines the prevention, mitigation and control measures required, including using leverage from their business relationships.

The Borrower (PIU/Contractor) should recognize, respect and abide by all project workers, community worker, and employment laws and expect their subcontractors and other third-party companies to meet the same standards. No child or forced labor and discriminatory behavior is allowed under the project/program – by the contractors or sub-contractors or primary suppliers.

The Borrower (PIU/Contractor) should value and respect the traditions, diversity and the culture of different communities in the project area where they do business.

The Borrower (PIU/Contractor) should recognize the effect that their activities may have on local communities, and they should strive to engage in a meaningful way with the communities where they do business to help ensure that they positively contribute to the welfare of the local communities.

The Borrower (PIU/Contractor) preferably should endeavor to conduct business with communities who share their values and business principles.

7.3 Element 2 - Legal and Other Requirements

All applicable OHS/CHS legal requirements such as national laws and regulations, World Bank ESS2 & ESS4, etc. must be identified, evaluated for compliance and documented in a project legal register.

The project legal register must:

- a) Define accountability for maintaining compliance or conformance to each requirement.
- b) Be reviewed regularly for currency, and expiry/renewal dates.
- c) Include or provide reference to records that show periodic evaluation of compliance.
- d) Include relevant legislative obligations (international, federal, state/provincial, regional or local).



- e) Include relevant Borrower policies and standards and external voluntary commitments.
- f) Include any other requirements, such as license, codes of practice and product quality obligations.
- g) Be accessible to the relevant personnel and stakeholders.

Any new/periodic changes or updates must be communicated to relevant stakeholders.

7.4 Element 3 - Risk Assessment

Risk assessment involves hazard identification and risk management, which are core activities to manage OHS/CHS risks and performance. The objective is to ensure OHS/CHS hazards are timely identified, and their resulting risks to people, property, assets and the environment are evaluated and managed.

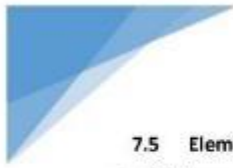
A risk assessment is a critical examination of health and safety hazards at a project worksite and to ensure the PIU/Contractor to implement corrective measures to protect workers from health and safety hazards in the workplace.

A community health and safety risk assessment is required to identify, assess and manage for all World Bank financed projects. It is critically important that community health and safety impacts resulted from the project be identified and managed to ensure that the project social license to operate will not be impacted.

The process for analyzing and managing OHS/CHS risk includes:

- a) Establishing the context, including acceptability criteria for the risk analysis.
- b) Hazards identification to determine risk scenarios and select a suitable level of risk evaluation.
- c) Risk estimation outcome and assigning risk ownership.
- d) Recording the risk analysis in a risk register.
- e) Managing risks according to their classification of either High, Substantial, Moderate, and Low to achieve levels that are deemed to be As Low As Reasonably Practicable (ALARP).
- f) Utilizing the hierarchy of control:
 - Elimination of the hazard;
 - Substitution with less hazardous materials, processes, equipment, etc.;
 - Use engineering and process controls;
 - Apply administrative controls or management strategies; and
 - Use of personal protective equipment (PPE).
- g) Developing and agreeing on further actions or monitoring of the risks, considering the hierarchy of controls.
- h) Verifying the completion of actions.
- i) Re-evaluating the risk and classification as appropriate.
- j) Reviewing and updating the risk register over time.
- k) Documenting, reporting and communicating the risk information.

As noted in the framework implementation section, CHS impacts/risks will be addressed and managed under the ESMP and HSMP.



7.5 Element 4 – Health and Safety Improvement Planning

Establish processes and plans to manage performance and to provide for continual improvement. Objectives and targets must be established for the management of OHS/CHS performance. They must be measurable and contribute to the prevention of incidents or reduce their impact(s).

To enable objectives and targets to be met, improvement plans must be developed, documented and integrated into the overall project planning process.

OHS/CHS improvement plans must:

- a) Specify the required resources (both human and financial/budget) needed to meet the objectives.
- b) Specify role responsibilities for implementing the improvement plans and their actions.
- c) Establish the timeframes for completion of the improvement plans and achieving the objectives.

Project Director, Project Manager, Construction Manager and/or Resident Engineer are fully committed to achieve the above-mentioned targets. Leading and lagging indicators should be established to drive performance to meet these targets.

7.6 Element 5 - Organizational Resources, Accountabilities and Responsibilities

Resources, responsibility and accountability is appropriately allocated for the implementation, maintenance and continual improvement of the Health and Safety Management Plan.

The PIU/Contractor shall establish committees with representatives of workers and management or make other suitable arrangement consistent with national laws and regulations (if available) for the participation of workers in ensuring safe working conditions. A Community Health and Safety Committee comprising of community members may be required under the ESMP/HSMP to address for CHS risks.

All roles with health and safety accountability and responsibilities (including regulatory requirements) must:

- Be documented in role descriptions; and
- Be included in the organization chart specific to the managed site. The organizational charts must be available to all workers and local communities.

Where subcontractors and suppliers are involved, these areas of accountability and responsibility must be clarified with respect to those contractors.

7.7 Element 6 - Training, Competency and Awareness

Processes are established to provide the requisite training, competency and awareness to effectively manage OHS/CHS impacts and risks. There must be a process for the delivery and maintenance of awareness and/or competence based training. Every worker shall receive instruction and training regarding the general safety and health measures common to the project site(s).

All new workers, contractors and/or visitors must undertake relevant safety training. At a minimum, safety induction/orientation training must include reference to the significant OHS/CHS risks identified at the managed site. No person shall be employed in any worksite unless that person has received the necessary



information, instruction, and training to be able to do the work competently and safely. All training must be recorded and documented.

All roles requiring technical certification, registration or licensing are verified and documented. The requisite qualifications/competencies must be maintained for all personnel performing such roles and their associated work activities.

There must be a process to communicate and engage with local community members on CHS impacts and risks. Awareness communications, training and outreach should be conducted throughout the life of the project.

7.8 Element 7 - Contractor and Supplier Management

OHS/CHS risks associated with procured materials, equipment, services and labor are effectively managed.

There must be a process to identify and evaluate risks associated with the planned procurement of materials, equipment, services and labor. This must include an analysis of any downstream implications which may be impacted by the selection. This process must be supported by a written procedure that specifies the criteria for contractor/supplier selection, evaluation and re-evaluation and the rejection of product(s) or material(s).

Individuals engaged on a temporary or casual basis to work within existing managed sites are to be inducted and managed in the same way as permanent staff. There must be a process to ensure all contractor tools and equipment are inspected and evaluated to be in a safe condition and conform to the site's standards and procedures.

7.9 Element 8 - Communication and Consultation

There must be a process to encourage the participation of workers, contractors and community members in activities which promote improvements in health and safety performance. In particular, this must include their appropriate involvement in:

- Hazard identification, risk analysis and determination of controls.
- Incident investigation.
- The development and review of the health and safety policy and objectives.

Workers must be informed about their participation arrangements, including:

- Who is their representative(s) on health and safety matters?
- Time and resources necessary to participate in health and safety activities.
- Access to information that is relevant to current or planned health and safety improvement activities.
- The mechanisms to identify and remove obstacles or barriers to participation.
- Disciplinary actions for safety violations and non-compliances.

There must be a process for communicating about the management of OHS/CHS risks at the various levels of the managed site. This includes, but is not limited to:



- Internal communications to raise awareness about OHS/CHS risks, performance measures and changes or improvements.
- Pre-start meetings or briefings (e.g. toolbox talks) for sharing safety observations/ experiences, lessons learned or raising awareness about OHS/CHS risks.
- Sharing knowledge and lessons learned from around the Project (external to the site, business or site); such as relevant incidents, hazardous conditions or suggested practices.

There must be a grievance process to receive feedback, suggestions and complaints on OHS and CHS matters. This process must include a procedure for documenting, evaluating, implementing (as appropriate) and archiving the improvements.

There must be a process to ensure that, when appropriate, relevant external stakeholders are consulted about pertinent OHS/CHS matters (including statutory and regulatory requirements) as needed.

Communications, engagement and consultation with local communities on CHS matters shall be addressed in the ESMP.

7.10 Element 9 - Operational Control

The Contractor is responsible to manage risks associated with the site's work activities. This shall be achieved by implementing operational controls, as well as other mandated or necessary risk treatment processes to control the risk to As Low As Reasonably Practicable (ALARP).

There must be a process for the development of procedures or work instructions that detail the controls required to treat risks associated with the work activities. These procedures must reference applicable operating criteria, be communicated, available to the appropriate users, and followed.

Plant and equipment must be maintained, inspected and tested to ensure they meet the design descriptions and specifications. All equipment or services provided by third parties, must be inspected, and have the controls verified to ensure the safe operation, and adherence to the health and safety performance objectives.

Where new or non-routine tasks and activities are conducted, the controls identified during the pre-task hazard assessment must be implemented.

Operational controls are health and safety controls designed to eliminate, mitigate or manage the risks/impacts. The Contractor shall develop and implement health and safety controls for risks identified by the project risk register. For example, if a project identified working at height, crane lifting and scaffolding as high-risk activities then the Contractor must develop and implement Working at Height, Lifting, Hoisting & Rigging and Scaffolding procedures incorporating the hierarchy on control concepts (i.e. elimination, engineering, safe work procedures and PPE) to manage these risks. By applying a risk based approach, the Contractor will need to develop and implement operational controls/procedures based only on the risk identified.

Table 1 below summarizes the types of health and safety controls/procedures generally found in civil construction projects. This list is not intended to be all-inclusive as there may be other high-risk activities in projects not listed here.



Table 1 – Health and Safety Controls/Procedures

| | |
|---|--|
| OHS / Safety Rules (e.g., Golden Rules) | Permit to Work Systems |
| Excavations and Trenching | Fire Safety |
| Heavy / Mobile Equipment | Electrical Work / Safety |
| Barricading and Signs | Hazardous Material Management |
| Cell/Mobile Phone Use | Equipment Inspection & Maintenance |
| Safe Driving (Light Vehicles) | Dredging |
| Material Handling (Loading and Unloading) | Demolition |
| Traffic Interface Planning / Management | Confined Space |
| Severe Weather Management | Hot Work (Welding, Grinding, Cutting) |
| Lifting, Hoisting and Rigging | Hand and Power Tools |
| Scaffolding | Housekeeping |
| Work at Height | Lockout/Tagout (Isolation) |
| Working Near or Over Water | Ladder Safety |
| Illumination | Hazardous Waste |
| Ground Support | Fitness for Work (Health/Medical Surveillance) |
| Water Management | Personal Protective Equipment (PPE) |
| Tunnelling | Noise Hazard & Protection |
| Bulk Earthworks and Civil Works | Respiratory Protection |
| Steel Erection | Working in Heat / Cold |
| Pressurized Equipment | Manual Handling (Ergonomics) / Vibration |
| Clearing and Land Disturbance | Fatigue Management |
| First Aid | Travel and Remote Site Health |
| Project Worker Welfare Facilities | Animal Bites & Stings |
| Camp Management | Working Alone |
| Site Security Management | Radiation (Ionizing and Non-Ionizing) |
| Blasting and Explosives | Infectious / Communicable Disease (e.g. COVID-19) |
| Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) Reporting and Management | Other hazards/risks on project site identified through risk assessment |

The Contractor shall ensure workers are trained, supervised and applied the required health and safety procedures on managed site.

7.11 Element 10 - Management of Change

There must be a procedure to identify and manage changes to the operational processes and controls that may impact on OHS performance. Changes may be planned or unplanned, sudden or gradual, and temporary or permanent. The procedure must include an analysis of the risks associated with a change and include a contingency to cover emergency situations where the full management of change procedure cannot practically be applied. These situations require the Resident Engineer / Project Manager (or his/her designated deputy) who is accountable for the managed activity to approve the change.

Workers and contractors must be trained to identify what constitutes a change and how to initiate the management of change process.



After completing the change, a formal review must be carried out to evaluate the actual impact against the intended impacts, and to identify the reasons for any deviation.

7.12 Element 11 - Emergency Management

To ensure that the appropriate resources and emergency response plans are prepared, practiced and available. The PIU/Contractor is responsible to develop and implement an Emergency Response Preparedness (ERP) Plan that will provide an effective response for the mitigation, control and recovery from incidents/ accidents including natural disasters which can impact or disrupt the project and/or its managed site(s) and activities.

The PIU/Contractor must clearly define accountability for the ERP and ensure it is adequately resourced. PIU/Contractor must also ensure that individual team members are provided with the relevant training for their required roles. The ERP exercise (drill) must be tested and validated annually. The ERP must be updated to reflect the lessons learned from the exercises and actual incidents.

The process for managing incident communications, notification and reporting must be integrated into the ERP and clearly:

- Identify who is responsible for incident communication, notification and reporting.
- Define how communication protocols are to be conducted with internal and external stakeholders.

The ERP must include local communities during emergencies including natural disasters when the risk and impact assessments identified potential aspects/impacts caused by the project.

7.13 Element 12 - Measuring and Monitoring

The objective is to monitor risks and impacts of the work activities and evaluate the effectiveness of the operational controls. There must be a process for measuring and monitoring the key characteristics of the managed site and its work activities that may have significant OHS/CHS risks. Measuring and/or monitoring can be either qualitative or quantitative but must follow a standardized methodology.

Procedures for measuring and monitoring occupational health exposure and environmental impact must conform to national laws and other international standards that are stated in the contract. Exceedances from specified requirements or limits must be recorded, investigated and reported back to the worker, work area or the community involved. The appropriate actions in response to the exceedance must be recorded, assigned accountability and tracked to completion.

Medical/Health Surveillance

Any medical/health surveillance program must:

- Include project personnel and contractors.
- Be consistent with local regulatory requirements.
- Be designed based on the identification and evaluation of operational health risks.
- Support the project and site's objectives and targets.



7.14 Element 13 - Incident and Action Management

All incidents including near misses must be reported, investigated and corrective actions identified, implemented and communicated. There must be a written procedure for incident management including investigation, reporting and corrective action(s) to prevent recurrence. It must include reference to the appropriate methodologies for:

- a) Reporting.
- b) Investigating.
- c) Analysis of the impact(s) and the potential risk of future incident.
- d) Communicating to relevant people/stakeholders.
- e) Managing corrective actions to prevent reoccurrence.

The Resident Engineer/Project Director is responsible for all incidents that occurred in the project, and the Site Manager/Supervisor of the involved person(s) must ensure that incident is reported and investigated.

Incident investigations must be completed by competent investigators who have been trained in the appropriate investigation methodology.

All significant incidents must be summarized for lessons learned after the investigation and communicated to all workers and relevant stakeholders.

Community health and safety incidents caused or impacted by the project must be reported, investigated and corrective actions identified, implemented and communicated to the community.

7.15 Element 14 - Performance Assessment and Auditing

A process must be developed for measuring OHS/CHS performance. Metrics must include leading and lagging indicators and be based on qualitative and quantitative data.

Performance must be measured on a regular basis and include an evaluation of:

- the extent to which objectives are being met;
- progress against targets;
- the effectiveness of controls;
- proactive conformance measures; and
- reactive or historical performance measures.

The Contractor should provide a monthly report summarizing the OHS/CHS performance and contain details or summaries of all incidents and progress against corrective actions. The report must be sent to the Project Management Team, the Borrower and other relevant stakeholders.

Audits and Inspections

There must be a process for conducting audits and regular inspections of all work areas including those areas/sensitive areas where there is a potential concern for local communities. The process must include a written procedure, where relevant, to define the scope and depth of audit/inspection and consider:

- a) The level of evaluated risk associated with specific activities that the project or site undertakes.



- b) The identification of non-conformances with health and safety procedures and the HSMP requirements.
- c) The identification of hazards and impacts in the project risk register.
- d) Compliance to legal and other requirements as identified and recorded in the legal register.
- e) The results of previous audits and inspections.

At the completion of the audit and inspection, a report must be provided to the Resident Engineer/ Project Director, Site Manager and the Supervisor responsible for the work area.

The Project and/or managed site must define an annual schedule of planned audits. The schedule must be developed, based on an evaluation of significant OHS/CHS risks associated with the project or site and the results of previous audits. The audit should be conducted by external third party. Corrective actions to address non-conformance must be assigned and tracked until completion.

7.16 Element 15 - Management Review

The HSMP must be reviewed bi-annually at a minimum. The review must evaluate any need for change and establish actions to improve the HSMP, its processes and resource needs.

Records of completed management review(s) must be retained and include:

- a) Decisions and actions relating to possible changes to policy, objectives and targets.
- b) Information relating to revised risks and any proposed treatment and controls.
- c) Improvement suggestions (including the community) for inclusion into future management plans.
- d) Any other alternation, modification and improvement to the HSMP that demonstrates a commitment to continual improvement.

Relevant outputs from the management review(s) must be made available for communication and consultation throughout the project/managed site, the Borrower and relevant stakeholders.

Annex 1 - Health and Safety Management Plan (HSMP) Template

Project title

Effective Date XXXXXX
Version Number XXX

Status DRAFT
Document Number XXXXXX

Health and Safety Management Plan

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About the Project Health and Safety Management Plan template

The Project Health and Safety Management Plan (HSMP) is a key document to address the Health and Safety Framework requirements of how OHS and CHS risks will be managed in a project. The HSMP incorporates the 15 elements of the framework to which the Borrower (PIU/Contractor) must address for the project.

Under the Health and Safety Framework, it is mandatory that each project to develop and implement a Project HSMP that identifies the hazard, assess the risk and implement control measures to eliminate or reduce the risk.

The purpose of the Health and Safety Management Plan is to:

- Clearly and succinctly communicate how significant risks in the project will be managed;
- Ensure key requirements including legal / regulatory obligations are considered and met;
- Provide requirements on health and safety standards, procedures and guidelines; and
- Outline how the implementation of the HSMP will be evaluated.

Project personnel and contractors must have access to the HSMP. They should understand it (as it relates to their role) and implement it in their work area, relevant to the hazards encountered by each role.

If a project is subjected to local government regulators management plan template(s), then those templates must be used. Do not duplicate effort.

The Project HSMP should be considered live and dynamic during each stage of the project life cycle. It is recognised that project risks and how they will be managed can change during the life of a project. If the HSMP changes, it must comply with Health and Safety Framework's management of change requirements (Element 10).

This template should be suitable for any project (type and size) with some modifications as required. Additional sub sections may be added as required depending on the size, complexity and risk of the project.

Finally, the Resident Engineer and/or Project Director must determine and justify how this template is to be applied to each project (e.g. a single Plan covering the entire project, or individual Plans or Sub-plans for each work package area, or sub-contractor).

Note: As stated in the Health and Safety Framework, CHS impacts, and risks are addressed in the ESMP. There may be overlapping of CHS and OHS in both the HSMP and ESMP such as road construction where significant risks are found both in the workplace and in the community. In such instances, the Contractor must ensure the HSMP and ESMP requirements are implemented and enforced.

Project title

1 Introduction

1.1 Overview

Describe the purpose of the Project HSMP (e.g. Health and Safety Framework and/or local legal requirements), intended audience (stakeholders), issuance, etc.

1.2 Change Authority

Describe the management of change for any future changes to this HSMP and who can authorize it.

2 Project Description

Provide the project background and scope including the project stage and the activities to be undertaken. Provide brief description of people involved in project (employees, contractors, sub-contractors, suppliers, etc).

3 Objectives

Set out the health and safety objectives and should include Key Performance Indicators (KPIs) to achieve these objectives.

Include any assumptions/ constraints made in the objectives or project scope.

4 Health and Safety Values

4.1 Health and Safety Policy Statement

Insert the Project Health and Safety Policy and/or Contractor Policy (if available) statement.

4.2 Message from Project Leader

Provide an overall vision, values and conduct and behavior expectations from the Resident Engineer or Project Director.

If this template is used by contractors, then the Contractor Director/Manager will address in this space.

5 Health and Safety Organization

Having the appropriate organizational structure and people are essential for the success of a project. Clearly identify and describe the organization structure and people who will be responsible for the management of the project's OHS/CHS risks and compliance to this Plan and other legal requirements. Health and Safety accountability and responsibility must be documented in the role descriptions.

5.1 Team Structure

Short description/ chart of personnel responsible for health and safety management and supervision.

5.2 Roles and Responsibilities

Short description of health and safety roles and responsibilities include the project management team.

6 Legal and Other Requirements

Provide a summary of all the legal obligations with a short description of the main requirement(s) under each obligation (e.g. *Labour Act, Work Bank ESS2 & ESS4, etc.*).

A Project legal register form is provided in Annex 1.

7 Hazard Identification and Risk Management

7.1 Project OHS / CHS Significant Risk Summary

Describe the process of how the Project Risk Register was achieved including the name of the facilitator and participants (e.g. project team members, health and safety staff and contractor representatives) and when it was undertaken.

Insert a brief bullet point summary to outline the key significant **inherent** risks (i.e. substantial and high). Follow a format like this: *the impact arising from a defined hazard due to a specific activity* e.g. "respiratory disease due to the inhalation of respirable crystalline silica during underground drilling".

Provide details of all significant inherent risks for the project showing current controls in Appendix 1. The significant inherent risk register is a subset of the comprehensive risk register for the project.

Community health and safety (CHS) risks must be identified, assessed and documented in the Project Risk Register. The management of CHS risks will be addressed in the ESMP but can may overlap with the HSMP. For example, road construction projects will impact both workers and local communities. In this situation, a traffic management plan may be included in the both the HSMP and ESMP as operational control.

7.2 Health and Safety Operational Control

This section outlines how the key significant risks for the project (as defined in Section 7.1) will be managed. At a minimum, the project current controls must comply with the Health and Safety Framework and other legal requirements.

This is the most important section of the HSMP. It needs to be kept specific to the project and written in a clear and concise manner that enables the information to be used during project familiarisation and induction. As in Section 7.1, there is flexibility to communicate this information in a way that best suits for the project. You may use paragraphs, dot points, tables, etc. You may combine this information with the summary presented in Section 7.2.1.

Provide sufficient information to ensure that current and planned controls are understood by the reader.

7.2.1 Impact / Hazard / Activity 1

Describe how the risk will be managed during the project.

8 Communications

8.1 Onsite Communication and Consultation

8.1.1 Health and Safety Training including Induction

Describe the Health and Safety training process and requirements.

8.1.2 Health and Safety Activities, Meetings and Committees

List all activities, briefings and committee meetings such as toolbox talks, daily pre-start meeting, pre-job briefing, safety committee meeting, safety inspections/ audits, etc.

There is flexibility to communicate this information in a way that best suits your project. You may use

paragraphs, dot points, tables, etc.

8.1.3 Health and Safety Message Board

List strategic locations of Health and Safety message boards so that project workforce will be able to receive relevant information.

8.2 Communication with Contractors and Suppliers

8.2.1 Contractors and Sub-Contractors

List processes and types of information to ensure contractors and subcontractors can safely manage the activities and people in their work areas.

8.2.2 Suppliers

List processes and types of information to ensure the supplier can safely manage the activities and people within their responsibility.

8.3 Community / External Communication

8.3.1 Community Liaison

Describe accountability and process to report any OHS/CHS information to the communities as part of the community engagement requirements.

8.3.2 Regulatory/ Local Government

Describe accountability and process to report any OHS/CHS information to local government agencies/ department as part of the legal reporting requirements.

8.4 Consultation and Complaints

Describe the process to promote the active participation of project workforce in health and safety decisions. Employees and contractors are consulted and given opportunity, encouragement, and training to be proactively involved in health and safety matters affecting the project and their work activities. All workplace consultation should be recorded.

Describe the process to ensure health and safety complaints are received, reviewed and managed in accordance with the health and safety framework requirement.

A similar process shall be developed and implemented for CHS consultation and complaints from community members.

8.5 Non-Compliance/ Conformance and Disciplinary Process

Describe the disciplinary process for non-compliance or non-conformance to health and safety policies and procedures including the requirements of this document.

9 Training and Competency

Describe the project specific health and safety training required by workers and contractors including inductions (where relevant). For project personnel refer to the training needs analysis. For contractors, refer to the contractor prequalification to identify and specific training and induction needs on what the contractor approval is conditional. It is not sufficient to just list the types of training. The HSMP should document which role types should receive each type of training.

| Role Type | Project Training |
|-----------------------------|------------------|
| All workers and contractors | Safety Induction |
| | |
| | |

9.1 Awareness and Competency

Describe the health and safety training induction, awareness, and competency on the project. Awareness and competency considerations should include:

- Safety induction and training provided by the project to raise awareness levels;
- Task specific competency assessments conducted by the Contractor;
- Training and induction for the Owner’s team specific to the area in which the work is conducted; and
- Competency assessment and required training to render workers/contractors competent to carry out the work activity.

10 Emergency Management

10.1 Emergency Response

Provide a brief summary of site’s emergency response preparedness (ERP) plan including reporting procedures, emergency contacts, emergency response team (ERT), evacuation plan/ assembly points and emergency test/ evacuation drills. The intent of this section is to ensure that the site manager/supervisor/worker at the operational level will know what to do in an emergency situation. It is not the intention that the complete site’s ERP procedure be included in this section. In large, complex projects the ERP should be a standalone document that is managed by the PIU/Contractor.

There is flexibility to communicate this information in a way that best suits your project. You may use paragraphs, dot points, tables, etc.

Fire, spill response and first aid training and competency can be addressed in the sections below.

The ERP must include local communities during emergencies including natural disasters when the risk and impact assessments identified potential aspects/impacts caused by the project.

10.2 Fire Protection and Prevention

Provide a brief summary of the site’s fire protection and prevention procedures including fire response (internal/ external), fire notification and alarms, use and management of firefighting equipment (e.g. fire extinguishers), high risk fire activities such as welding, smoking policy, fuel storage and fire inspections.

10.3 Hazardous Substance Spill Response and Prevention

This Section is not mandatory but if the project or site use or store large quantity of hazardous substances you may include a brief summary of the hazardous substance spill response and prevention management procedures.

10.4 First Aid and Medical Facilities

Provide information on the first aid kits, first aiders, eye wash stations and emergency showers including their locations within the project site.

Describe the first aid and/or medical facilities available onsite including the location, medical supplies and equipment and personnel (e.g. first responder, paramedic, nurse) manning the facilities. Also provide information in regard to medical evacuation (i.e. ambulance, medivac, etc), hospitals or health clinics.

11 Site Security Plan

Describe the site's security plan addressing building and infrastructure security, exterior boundaries, access/ egress of project personnel and visitors, movement of equipment and materials, site traffic and vehicle parking, patrol and security inspections, responsibility during emergency situations, etc.

12 Incident Reporting and Investigation

Describe the project incident reporting and investigation process which must be aligned to local legal requirements (if available), SAR OHS Incident Reporting and Investigation Guidelines and any other requirements specified in the contract.

There is flexibility to communicate this information in a way that best suits your project. The sub sections below are outlines to assist – add or delete as required. Use paragraphs, bullet points, flow chart, etc.

Community health and safety incidents caused or impacted by the project must be reported, investigated and corrective actions identified, implemented and communicated to the community.

12.1 Roles and Responsibilities

Provide a short description of the investigation team roles including competency. Also include the roles and responsibilities of the corrective action owners.

12.2 Management of Incidents

Refer to SAR OHS Incident Reporting and Investigation Guidelines and/or Contractor's Incident Management Procedure (if available).

12.2.1 Investigation of Incident and Near Miss

12.2.2 Corrective and Preventive Actions

12.2.3 Reporting and Recording

12.3 Injury Management

Describe the project injury management process to ensure that any workplace injury is treated, managed and complied with the project's fitness for work criteria before the individual can return to normal work duties (i.e. return-to-work program).

13 Project Health and Safety Performance

Develop objectives, targets and key performance indicators (KPIs) such as the number of risk assessment, training and inspection/audit conducted that are proactive and where the outcomes can be directly controlled by the project/ owner's team by implementing OHS and CHS operational controls based on the project risk assessment. Do not develop targets that may inadvertently discourage incident reporting or create a blame culture (e.g. zero incident reports raised, zero audit findings etc).

13.1 Measuring and Monitoring

Describe the health and safety monitoring process where the project impacts the workplace, the environment and the community. Environmental and occupational health monitoring will be conducted to verify the efficacy of operational controls identified in the management of 'High' risks.

13.2 Key Performance Indicators

Develop and describe the key performance indicators (KPIs) for project health and safety objectives and targets. This section can be combined with Section 3 Objectives.

13.3 Audits and Inspections

The HSMP shall be audited internally by the PIU and externally by relevant stakeholders (e.g. Bank). During these audits, the auditor(s) must determine if the risks are being mitigated as described and whether the measures of success (e.g. KPIs) are being achieved.

The following table outlines when the plan will be audited and by whom.

| Audit / Inspection | Who will audit the plan? | When is it scheduled for? |
|--------------------|--------------------------|---------------------------|
| | | |
| | | |

The table above contains examples only. Delete examples and adjust as required for each project.

The Contractor shall implement a routine inspection program for specific work area and activity. Where the work activity/ process has been identified as 'Substantial or High' risk, daily or pre-start inspection should be applied.

14 Management of Change (MOC)

Describe the MOC process and requirements for changes to the operational processes and controls that may impact on OHS / CHS performance. Changes may be planned or unplanned, sudden or gradual, and temporary or permanent. MOC must be approved by area or process owner(s) and communicated to area workers, community members (if impact the community) and other relevant stakeholders.

14.1 New Significant Risk/ Hazard Identified

Describe the process when a new or unforeseen risk/ hazard has been identified (e.g. through a near miss, incident, new process or non-routine activity that was not planned) and how the risk will be managed.

15 Management Review

Describe the management review of the HSMP process including participants and how often it is done. The review must evaluate any need for change and establish actions to improve the Plan, its processes and resource needs. The review must be documented and communicated to workers, contractors and relevant stakeholders.

Annex 1
Project Legal Register

Health and Safety Management Plan

PROJECT LEGAL REGISTER

Using the Health, Safety, Environment, Community (HSEC) legal obligations identified for the project, list the obligations relevant to the project and describe how they will be met. You may choose to delete rows containing legislation that does not apply to your project. If so, include the statement below. If not, delete the statement below.

Version xxx of the Legal Obligations Register was reviewed by (names) and legislation deemed to be not applicable to the project was omitted.

| Legislation | How does the legislation apply to Project? | H | S | E | C | Last Amendment: | How will these obligations be met in this project? |
|-------------|--|---|---|---|---|-----------------|--|
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Annex 2

Project Significant Risk Register

You may present your Significant Risk Register in the table below, or as a separate Excel or Word document (provide a link to the document or a specific reference including document name and location).

Health and Safety Management Plan

SIGNIFICANT RISK REGISTER

| Project Activity | OHS / CHS Issue or Hazard | Hazard | Risk Scenario | Risk Scenario Impact Description | Cause(s) | Existent Risk | | | Controls | Current Risk | | | Comments and Action Items |
|------------------|---------------------------|--------|---------------|----------------------------------|----------|---------------------------|--------------------------|------------------------------|----------|---------------------------|--------------------------|------------------------------|---------------------------|
| | | | | | | Risk Scenario Consequence | Risk Scenario Likelihood | Risk Scenario Classification | | Risk Scenario Consequence | Risk Scenario Likelihood | Risk Scenario Classification | |
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Revision History

| First Issue | Effective date | Prepared by | Approved by | |
|-----------------|----------------|-------------|-------------|-------------------|
| I.D | | | | |
| Revision Number | Revision date | Revised by | Approved by | Reason for change |
| | | | | |
| | | | | |

Annexure 5-2: Typical Fire Safety Checklist

| <p align="center">TYPICAL FIRE SAFETY CHECKLIST (SELF-INSPECTION FORM FOR CONSTRUCTION WORK)</p> <p align="center">Adequate protective equipment and planning for fire emergencies helps keep small fires small, limits losses.</p> | | | |
|---|--------------------------|---|--|
| Yes | No | CONDITION | |
| <input type="checkbox"/> | <input type="checkbox"/> | <u>Housekeeping</u> | <u>Extinguishers and Small Hose</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Are construction materials stored in an orderly manner? | Are sufficient portable extinguishers of the proper type provided throughout? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is combustible scrap and trash removed from the site regularly? | Are extinguishers and small hoses kept in good operating condition? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are metal containers with covers provided for disposal of oily or paint-soaked rags? | Is equipment unobstructed and its location highlighted? |
| | | <u>Smoking</u> | Is equipment protected against freezing? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are NO SMOKING signs posted in hazardous areas? | Are selected personnel trained to operate extinguishers and small hose? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are NO SMOKING regulations enforced? | |
| | | <u>Electrical</u> | <u>Sprinkler Systems</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Is temporary wiring installed according to the provisions of the National Electrical Code? | Is sprinkler installation progressing with construction? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is wiring, including connections to junction boxes, panels, equipment, and the like in good condition? | Are sprinkler controlled valves accessible, labeled and open where necessary? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are overcurrent protective devices (fuses, circuit breakers) in good operating condition? | Are systems adequately protected against freezing? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are ground fault circuit interrupters (GFCI) provided where required? | Are sprinkler alarms in service? |
| | | <u>Welding and Cutting</u> | Are sprinkler system pumper connections clearly marked and accessible to the public fire department? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are any welding, cutting, or brazing operations in progress? | Is the public fire department familiar with the sprinkler installation? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are any combustible materials exposed by these operations? | <u>Hydrants</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Is a fire watch provided during, and for at least 30 minutes after, these operations? | Are hydrants unobstructed and accessible to the public fire department? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is portable fire extinguisher or small hose protection available where these operations are carried on? | Are hydrants in good operating condition? |
| | | <u>Temporary Heaters</u> | <u>Standpipes</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Are temporary heaters in use of "approved" type? | Are standpipe systems installed and in service up to the highest level of construction operations? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is sufficient clearance maintained between heaters and combustible materials? | Are standpipe system hose connections unobstructed and accessible to the public fire department? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is a competent (licensed, where required) person responsible for temporary heating operations? | Are standpipe systems adequately protected against freezing? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are fuel storage and refueling arrangements satisfactory? | Are standpipe system pumper connections clearly marked and accessible to the public fire department? |
| | | <u>Flammable-Combustible Liquids</u> | <u>Fire Alarms</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Are flammable-combustible liquids stored and dispensed in a satisfactory manner? | Is a standard procedure established for reporting a fire to the fire department? |
| <input type="checkbox"/> | <input type="checkbox"/> | Is adequate ventilation provided where flammable adhesives, paints, solvents, and other chemicals are in use? | Are all workers instructed in this procedure? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are roofing operations involving tar kettles supervised by a competent person? | Is an audible alarm in operation to alert workers of a fire on the site? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are tar kettles in use equipped with metal covers? | Is there a public fire alarm pull box located nearby? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are asphalt-saturated roofing mops removed from the building and safely discarded after use? | Has the public fire department visited the site during the past month? |
| | | <u>Exits</u> | <u>Watchmen-Guards</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Are fire exits unobstructed, including access ways and discharge areas? | Is watch service provided during all nonoperating hours? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are all exits clearly marked? | Does service cover the entire project site? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are exits adequately lighted? | Are watchmen-guards instructed in the fire reporting procedure? |
| <input type="checkbox"/> | <input type="checkbox"/> | Are stair exit fire doors in good operating condition? | |
| <input type="checkbox"/> | <input type="checkbox"/> | Is adequate egress provided from uppermost work areas? | <u>Construction Offices, Trailers, Sheds</u> |
| | | | Are combustible offices, trailers and sheds located at least 30ft (10m) away from major buildings and materials storage? |
| | | | Are heating devices in offices, trailers and sheds of an "approved" type? |
| | | | Are heating devices properly installed and vented? |
| | | | Are fuel cylinders and fuel lines for heating devices protected against vehicular damage? |
| | | | <u>Tarpaulins</u> |
| <input type="checkbox"/> | <input type="checkbox"/> | Are tarpaulins used for temporary enclosure of building construction? | |
| <input type="checkbox"/> | <input type="checkbox"/> | Are tarpaulins in use of the flame-resistant type? | |
| <input type="checkbox"/> | <input type="checkbox"/> | Are tarpaulins in use tightly secured to prevent contact with ignition sources such as temporary heaters? | |

Annexure 5-3: Security Management Guidelines for Contractors

Security Management Guidelines for Contractors

The Contractor during construction phase shall use security arrangements and personnel to safeguard the installations, sites and personnel.

To accomplish project security objectives, the security should be provided for the following:

- ◆ Construction camp
- ◆ Project offices and work sites;
- ◆ Visitors and foreign consultants
- ◆ Critical assets and infrastructure related to the project; and
- ◆ Local labors' residential accommodation and other facilities.

Security Guidelines for the Project

- ◆ Adoption/compliance with the World Bank Group's Good Practice Notes on Assessing and Managing the Risks and Impacts of the Use of Security Personnel and a project/contract specific Code of Conduct for the security personnel.
- ◆ Security will be provided in a manner that does not jeopardize the community's safety and security, or the KWSB's relationship with the community.
- ◆ Security arrangements will follow the principle of proportionality, respect for human rights, and good international practice.
- ◆ Community engagement will be maintained about the project's impacts on community safety and security, create awareness concerning the Code of Conduct commitment and project grievance mechanism, as outlined in the Stakeholder Engagement Plan (SEP) and SEA/SH mitigation measures given in the ESMP.
- ◆ Contractor's Social Specialist will share information with nearby communities if required, about security arrangements, the Contractor's security policies, and the expected conduct of security personnel.
- ◆ Arrange dialogue with communities about security issues to identify potential risks and local concerns, and can serve as an early warning system.
- ◆ Maintain coordination with the contractors regarding the security issues.

Security Guidelines for Contractors

- ◆ Contractors will maintain liaison and coordination with any government's security agencies deployed in the area;
- ◆ The Contractor will carry out a continuous risk assessment of the security arrangements in place, monitor its security personnel, and identify any necessary corrective or preventive actions for continuing security operations.

- ◆ The contractor will prepare and implement clear standard operating procedures (SoP) for the security personnel;
- ◆ Security personnel will not use force or extract work from workers;
- ◆ The Contractor will ensure that those providing security are not implicated in past abuses;
- ◆ The Contractor will provide adequate training in the use of force and appropriate conduct toward workers and communities;
- ◆ The Contractor will ensure that security personnel act within the applicable legislation of the province / country;
- ◆ The Contractor will not sanction any use of force except when used for preventive and defensive purposes in proportion to the nature and extent of the threat;
- ◆ The Contractor will provide a grievance mechanism to express concerns about the security arrangements and acts of security personnel;
- ◆ If security personnel are permitted to use force, instructions must be clear on when and how force may be used, specifying that security personnel are permitted to use force only as a matter of last resort and only for preventive and defensive purposes in proportion to the nature and extent of the threat, and in a manner that respects human rights;
- ◆ Security personnel will be instructed to exercise restraint and caution, clearly prioritizing prevention of injuries or fatalities and peaceful resolution of disputes. The use of physical force will be reported to and investigated by the Contractor;
- ◆ Any persons injured as a result of the action of security personnel will be transported to medical facilities;
- ◆ The instructions for security personnel will make clear that arbitrary or abusive use of force is prohibited;
- ◆ Unlawful acts of any security personnel will be reported to the appropriate authorities.
- ◆ The Contractor may seek support from government authorities or other providers of the security services to aid preventative planning, evaluation, monitoring and follow-up to ensure security services providers meet Project expectations. Support may include strategies to identify and manage presence of ex-combatants and ex-military personnel within the community and within the Project security services.
- ◆ The Contractor's security services' responsibilities will include preventing hazardous materials or waste from leaving the Project site or the hazardous waste disposal site for the Project.
- ◆ The Contractor will need to establish mitigation measures in relations to engaging and partnering with local stakeholders, such as supporting the extension of policing services to prevent the intensification of violent conflicts.

Annexure 7-1: Environmental Code of Practice

The ECPs are listed below and details are presented subsequently:

- ◆ ECP 1: Waste Management
- ◆ ECP 2: Fuels and Hazardous Goods Management
- ◆ ECP 3: Water Resources Management
- ◆ ECP 4: Drainage Management
- ◆ ECP 5: Air Quality Management
- ◆ ECP 6: Noise and Vibration Management
- ◆ ECP 7: Protection of Flora
- ◆ ECP 8: Protection of Fauna
- ◆ ECP 9: Road Transport and Road Traffic Management
- ◆ ECP 10: Construction Camp Management
- ◆ ECP 11: Worker Health and Safety

ECP 1: Waste Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| General Waste | Soil and water pollution from the improper management of wastes and excess materials from the construction sites. | <ul style="list-style-type: none"> • The Contractor shall • Develop site specific waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submit to supervision consultant for approval. • Organize disposal of all wastes generated during construction in the designated disposal sites approved by the Project. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the wastes, wherever practical. • Vehicles transporting solid waste shall be covered with tarps or nets to prevent spilling waste along the route. • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <ul style="list-style-type: none"> • Request suppliers to minimize packaging where practicable. • Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal. • Potable water should be supplied in bulk containers to reduce the quantity of plastic waste (plastic bottles). Plastic bag use should be avoided. |
| Hazardous Waste | Health hazards and environmental impacts due to improper waste management practices | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Collect chemical wastes in 200 liter drums (or similar sealed container), appropriately labelled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous wastes appropriately in bunded areas away from water courses. • Make available Material Safety Data Sheets (MSDSs) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills. |

ECP 2: Fuels and Hazardous Goods Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|--|--|
| <p>Fuels and hazardous goods.</p> | <p>Materials used in construction have a potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.</p> | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare spill control procedures and submit them for supervision consultant approval. • Train the relevant construction personnel in handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on top of a sealed plastic sheet away from watercourses. • Refueling shall occur only within bunded areas. • Store and use fuels in accordance with MSDSs. Make available MSDS for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous material are used and stored; and ensure personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use. • Make sure all containers, drums, and tanks that are used for storage are in good condition and are labelled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Store and use fuels in accordance with MSDSs. • Store all liquid fuels in fully bunded storage containers, with appropriate volumes, a roof, a collection point and appropriate filling/decanting point. • Store hazardous materials above flood level considered for construction purposes • Put containers and drums in temporary storages in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area shall preferably |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <p>slope or drain to a safe collection area in the event of a spill.</p> <ul style="list-style-type: none"> • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. |

ECP3: Water Resources Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|--|---|
| Hazardous material and Waste | Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Follow the management guidelines proposed in ECPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes). These substances must not enter waterways or storm water systems. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|--|--|
| Discharge from construction sites | Construction activities, sewage from construction sites and work camp may affect the surface water quality. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area. These changes in hydrological regime lead to increased rate of runoff, increase in sediment and contaminant loading, increased flooding, and effect habitat of fish and other aquatic biology. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials. • Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site. • Divert runoff from undisturbed areas around the construction site. • Stockpile materials away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewaters from brick, concrete and asphalt cutting where possible and transport to an approved waste disposal site or recycling depot. • Wash out ready-mix concrete agitators and concrete handling equipment at washing facilities off site or into approved bunded areas on site. Ensure that tires of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This should be done in every exit of each construction vehicle to ensure the local roads are kept clean. |
| Soil erosion and siltation | Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Stabilize the cleared areas not used for construction activities with vegetation or appropriate surface water treatments as soon as practicable following earthwork to minimize erosion. • Ensure that roads used by construction vehicles are swept regularly to remove dust and sediment. • Water the loose material stockpiles, access roads and bare soils on an as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds). |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Drinking water | Untreated surface water is not suitable for drinking purposes due to presence of suspended solids and Ecoli. | <p>The Contractor Shall</p> <ul style="list-style-type: none"> • Provide the drinking water that meets SEQS standards. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time. |

ECP 4: Drainage Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Excavation and earth works, and construction yards | Lack of proper drainage for rainwater/liquid waste or wastewater owing to the construction activities harms environment in terms of water and soil contamination, and mosquito growth. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare drainage management procedures and submit them for supervision consultant approval. • Prepare a program to prevent/avoid standing waters, which supervision consultant will verify in advance and confirm during implementation. • Provide alternative drainage for rainwater if the construction works/earth-fillings cut the established drainage line. <p>Establish local drainage line with appropriate silt collector and silt screen for rainwater or wastewater connecting to the existing established drainage lines already there.</p> <ul style="list-style-type: none"> • Rehabilitate road drainage structures immediately if damaged by contractors' road transports. • Build new drainage lines as appropriate and required for wastewater from construction yards connecting to the available nearby recipient water bodies. Ensure wastewater quality conforms to SEQS, before it is being discharged into the recipient water bodies. • Ensure that there will be no water stagnation at the construction sites and camp. • Provide appropriate silt collector and silt screen at the inlet and manholes and |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <p>periodically clean the drainage system to avoid drainage congestion.</p> <ul style="list-style-type: none"> • Protect natural slopes of drainage channels to ensure adequate storm water drains. • Regularly inspect and maintain all drainage channels to assess and alleviate any drainage congestion problem. |
| Ponding of water | Health hazards due to mosquito breeding | <ul style="list-style-type: none"> • Do not allow ponding of water especially near the waste storage areas and construction camp. • Discard all the storage containers that are capable of storing of water, after use or store them in inverted position. |

ECP 5: Air Quality Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| Construction vehicular traffic | Air quality can be adversely affected by vehicle exhaust emissions and combustion of fuels. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare air quality management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in a fuel efficient manner. • Cover hauls vehicles carrying dusty materials moving outside the construction site. • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions. • Control the movement of construction traffic. • Water construction materials prior to loading and transport. • Service all vehicles regularly to minimize emissions. • Limit the idling time of vehicles not more than 2 minutes. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|--|
| Construction machinery | Air quality can be adversely affected by emissions from machinery and combustion of fuels. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof or maintenance register shall be required by the equipment suppliers and contractors/subcontractors. • Focus special attention on containing the emissions from generators. • Machinery causing excess pollution (e.g. visible smoke) will be banned from construction sites. • Service all equipment regularly to minimize emissions. • Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations. |
| Construction activities | Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard, and also can affect the local crops; | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Water the material stockpiles, access roads and bare soils on an as required basis to minimize the potential for environmental nuisance due to dust. Increase the watering frequency during periods of high risk (e.g. high winds). Stored materials such as gravel and sand shall be covered and confined to avoid their being wind-drifted. • Minimize the extent and period of exposure of the bare surfaces. • Restore disturbed areas as soon as practicable by vegetation/grass-turfing. • Store the cement in silos and minimize the emissions from silos by equipping them with filters. • Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <ul style="list-style-type: none"> • Not water as dust suppression on potentially contaminated areas so that a liquid waste stream will be generated. • Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems. • Not permit the burning of solid waste. |

ECP 6: Noise & Vibration Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| Construction vehicular traffic | Noise quality will be deteriorated due to vehicular traffic | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare a noise and vibration management plan (under the Pollution Prevention Plan) and submit the plan for supervision consultant approval. • Maintain all vehicles in order to keep it in good working order in accordance with manufactures maintenance procedures. • Make sure all drivers and operators will comply with the traffic codes concerning maximum speed limit, driving hours, etc. • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise on the work site. |
| Construction machinery | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Appropriately site all noise generating activities to avoid noise pollution to local residents. • Use the quietest available plant and equipment. • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures. Equipment suppliers and contractors shall present proof of maintenance register of their equipment. • Install acoustic enclosures around generators to reduce noise levels. • Fit high efficiency mufflers to appropriate construction equipment. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <ul style="list-style-type: none"> • Avoid the unnecessary use of alarms, horns and sirens. |
| Construction activity | Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Notify adjacent landholders prior any typical noise events outside of daylight hours. • Educate the operators of construction equipment on potential noise problems and the techniques to minimize noise emissions. • Employ best available work practices on-site to minimize occupational noise levels. • Install temporary noise control barriers where appropriate. • Notify affected people if major noisy activities will be undertaken, e.g. blasting. • Plan activities on site and deliveries to and from site to minimize impact. • Monitor and analyze noise and vibration results and adjust construction practices as required. • Avoid undertaking the noisiest activities, where possible, when working at night near the residential areas. |

ECP 7: Protection of Flora

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Vegetation clearance | Local flora are important to provide shelters for the birds, offer fruits and/or | The Contractor shall |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | <p>timber/fire wood, protect soil erosion and overall keep the environment very friendly to human-living. As such damage to flora has wide range of adverse environmental impacts.</p> | <ul style="list-style-type: none"> • Prepare a plan for protection of flora and submit the plan for supervision consultant approval. • Minimize disturbance to surrounding vegetation. • Use appropriate type and minimum size of machine to avoid disturbance to adjacent vegetation. • Get approval from supervision consultant for clearance of vegetation. • Make selective and careful pruning of trees where possible to reduce need of tree removal. • Control noxious weeds by disposing of at designated dump site or burn on site. • Clear only the vegetation that needs to be cleared in accordance with the engineering plans and designs. These measures are applicable to both the construction areas as well as to any associated activities such as sites for stockpiles, disposal of fill a, etc. • Not burn off cleared vegetation – where feasible, chip or mulch and reuse it for the rehabilitation of affected areas, temporary access tracks or landscaping. Mulch provides a seed source, can limit embankment erosion, retains soil moisture and nutrients, and encourages re-growth and protection from weeds. • Return topsoil and mulched vegetation (in areas of native vegetation) to approximately the same area of the roadside it came from. • Avoid work within the drip-line of trees to prevent damage to the tree roots and compacting the soil. • Minimize the length of time the ground is exposed or excavation left open by clearing and re-vegetate the area at the earliest practically possible. • Ensure excavation works occur progressively and re-vegetation done at the earliest • Provide adequate knowledge to the workers regarding nature protection and the need of avoid felling trees during construction • Supply appropriate fuel in the work camp to prevent fuel wood collection. |

ECP 8: Protection of Fauna

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|--|
| Construction activities | The location of construction activities can result in the loss of wild life habitat and habitat quality | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare a plan for protection of fauna and submit the plan for supervision consultant approval. • Limit the construction works within the designated sites allocated to the contractors. • check the site for animals trapped in, or in danger from site works and use a qualified person to relocate the animal. |
| Vegetation clearance | Impact on migratory birds, its habitat and its active nests | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Not be permitted to destruct active nests or eggs of migratory birds. • Minimize the tree removal during the bird breeding season. If works must be continued during the bird breeding season, a nest survey will be conducted by a qualified biologist prior to commence of works to identify and locate active nests. • If bird nests are located/ detected within the ledges and roadside embankments then those areas should be avoided. • Petroleum products should not come in contact with the natural and sensitive ecosystems. Contractor must minimize the release of oil, oil wastes or any other substances harmful to migratory birds' habitats, to any waters, wetlands or any areas frequented by migratory birds. |
| | Clearance of vegetation may impact shelter, feeding and/or breeding and/or physical destruction and severing of habitat areas | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Restrict the tree removal to the minimum numbers required. • Relocate hollows, where appropriate. • Fell the hollow bearing trees in a manner which reduces the potential for fauna mortality. Felled trees will be inspected after felling for fauna and if identified and readily accessible will be removed and relocated or rendered assistance if injured. After felling, hollow bearing trees will remain unmoved overnight to allow animals to move of their own volition. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Night time lighting | Lighting from construction sites and construction camp may affect the visibility of night time migratory birds that use the moon and stars for navigation during their migrations. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Use lower wattage flat lens fixtures that direct light down and reduce glare, thus reducing light pollution, • Avoid flood lights unless they are absolutely required. • Use motion sensitive lighting to minimize unneeded lighting. • Use, if possible, green lights that are considered as bird's friendly lighting instead of white or red colour lights. • Install light shades or plan the direction of lights to reduce light spilling outside the construction area. |
| Construction camp | Illegal poaching | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching. • Ensure that staff and Subcontractors are trained and empowered to identify, address and report potential environmental problems. |

ECP 9: Road Transport and Road Traffic Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| Construction vehicular traffic | Increased traffic use of road by construction vehicles will affect the movement of normal road traffics and the safety of the road-users. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare a traffic management plan and submit the plan for supervision consultant approval. • Strictly follow the Project's 'Traffic Management Plan' and work with close coordination with the Traffic Management Unit. • Prepare and submit additional traffic plan, if any of his traffic routes are not covered in the Project's Traffic Management Plan, and requires traffic diversion and management. • Include in the traffic plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges temporary |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | <p>diversions, necessary barricades, warning signs / lights, road signs etc.</p> <ul style="list-style-type: none"> • Provide signs at strategic locations of the roads complying with the schedules of signs contained in the Pakistan Traffic Regulations. |
| | Accidents and spillage of fuels and chemicals | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Restrict truck deliveries, where practicable, to day time working hours. • Restrict the transport of oversize loads. • Operate vehicles, if possible, to non-peak periods to minimize traffic disruptions. • Enforce on-site speed limit. |

ECP 10: Construction Camp Management

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Siting and Location of construction camp | Campsites for construction workers are the important locations that have significant impacts such as health and safety hazards on local resources and infrastructure of nearby communities. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare a construction camp management plan and submit the plan for supervision consultant's approval. • Locate the construction camp within the designed sites or at areas which are acceptable from environmental, cultural or social point of view; and approved by the supervision consultant. • Consider the location of construction camp away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camp on the surrounding communities. • Submit to the supervision consultant for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camp. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters. |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| Construction Camp Facilities | Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards. | <p>Contractor shall provide the following facilities in the Campsites</p> <ul style="list-style-type: none"> • Adequate housing for all workers. • Safe and reliable water supply, which should meet SEQS. Drinking water to be chlorinated at source, and ensure presence of residual chlorine 0.1 ~ 0.25 ppm as minimum after 30 minutes of chlorine contact time (World Health Organization -WHO guideline). • Hygienic sanitary facilities and sewerage system. The toilets and domestic waste water will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by location. The minimum number of toilet facilities required is one toilet for every ten persons. • Treatment facilities for sewerage of toilet and domestic wastes. • Storm water drainage facilities. • Paved internal roads. • Provide child crèches for women working construction site. The crèche should have facilities for dormitory, kitchen, indoor and outdoor play area. Schools should be attached to these crèches so that children are not deprived of education whose mothers are construction workers. • Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camp to be discouraged/prohibited to the extent possible. |
| Disposal of waste | Management of wastes is crucial to minimize impacts on the environment | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Ensure proper collection and disposal of solid wastes within the construction camp. • Insist waste separation by source; organic wastes in one container and inorganic wastes in another container at household level. • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Do not establish site specific landfill sites. All solid waste will be collected and removed from the work |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
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| | | camp and disposed in approval waste disposal sites. |
| Fuel supplies for cooking purposes | Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Provide fuel to the construction camp for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Made available alternative fuels like natural gas or kerosene on ration to the workforce to prevent them using biomass for cooking. • Conduct awareness campaigns to educate workers on preserving the protecting the biodiversity and wildlife of the Project area, and relevant government regulations and punishments on wildlife protection. |
| Health and Hygiene | <p>There will be a potential for diseases to be transmitted including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading Sexually Transmitted Infections (STIs) and Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS). In adequate safety facilities to the construction camp may create security problems and fire hazards</p> | <ul style="list-style-type: none"> • The Contractor shall • Provide adequate health care facilities within construction sites. • Provide first aid facility round the clock. Maintain stock of medicines in the facility and appoint fulltime designated first aider or nurse. • Provide ambulance facility for the labourers during emergency to be transported to nearest hospitals. • Initial health screening of the labourers coming from outside areas. • Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work. • Provide HIV awareness programming, including STIs and HIV information, education and communication for all workers on regular basis. • Provide adequate drainage facilities throughout the camp to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellent sprays during rainy season in offices and construction camp and yards. • Not dispose food waste openly as that will attract rats and stray dogs. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camp containing messages on best hygienic practices. <p>The Contractor shall</p> |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| | | <ul style="list-style-type: none"> • Provide appropriate security personnel (police or private security guards) and enclosures to prevent unauthorized entry in to the camp area. • Maintain register to keep a track on a head count of persons present in the camp at any given time. • Encourage use of flameproof material for the construction of labour housing / site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding wind storms/cyclones. • Provide appropriate type of firefighting equipment suitable for the construction camp • Display emergency contact numbers clearly and prominently at strategic places in camp. • Communicate the roles and responsibilities of labourers in case of emergency in the monthly meetings with contractors. |
| Site Restoration | Restoration of the construction camp to original condition requires demolition of construction camp | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Dismantle and remove from the site all facilities established within the construction camp including the perimeter fence and lockable gates at the completion of the construction work. • Dismantle camp in phases and as the work gets decreased and not wait for the entire work to be completed. • Give prior notice to the labourers before demolishing their camp/units. • Maintain the noise levels within the national standards during demolition activities. • Different contractors should be hired to demolish different structures to promote recycling or reuse of demolished material. • Reuse the demolition debris to a maximum extent. Dispose remaining debris at the designated waste disposal site. • Handover the construction camp with all built facilities as it is if agreement between both parties (contractor and land-owner) has been made so. • Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner. |

ECP 11: Worker Health and Safety

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|--|--|
| Best practices | <p>Construction works may pose health and safety risks to the construction workers and site visitors leading to severe injuries and deaths. The population in the proximity of the construction site and the construction workers will be exposed to a number of (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic.</p> | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Prepare an OHS plan and submit the plan for supervision consultant's approval. • Implement suitable safety standards for all workers and site visitors which should not be less than those laid down on the international standards (e.g. International Labour Office guideline on 'Safety and Health in Construction; WBG's 'Environmental Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with Pakistan standards. • Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas. • Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with the damaged ones. • Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job. • Appoint an EHS manager to look after the health and safety of the workers. • Inform the local authorities responsible for health, religious and security duly informed before commencement of civil works and establishment of construction camp so as to maintain effective surveillance over public health, social and security matters. |
| Child and pregnant labour accident | <p>Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims</p> | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Ensure health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations should be easily accessible throughout the place of work. • Document and report occupational accidents, diseases, and incidents. • Prevent accidents, injury, and disease arising from, associated with, or occurring in the |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| | | <p>course of work by minimizing, so far as reasonably practicable, the causes of hazards, in a manner consistent with good international industry practice.</p> <ul style="list-style-type: none"> • Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. • Provide awareness to the construction drivers and operators to strictly follow the driving rules. • Provide adequate lighting in the construction area, inside the tunnels, inside the powerhouse cavern and along the roads. |
| Construction Camp | Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities will increase pressure on the local services and generate substandard living standards and health hazards | <p>The Contractor shall provide the following facilities in the Campsites to improve health and hygienic conditions as mentioned in ECP 16 Construction Camp Management</p> <ul style="list-style-type: none"> • Adequate ventilation facilities • Safe and reliable water supply. • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities. • Recreational and social facilities • Safe storage facilities for petroleum and other chemicals in accordance with ECP 2 • Solid waste collection and disposal system in accordance with ECP1. • Arrangement for trainings • Paved internal roads. • Security fence at least 2 m height. • Sick bay and first aid facilities |
| Other ECPs | Potential risks on health and hygiene of construction workers and general public | <p>The Contractor shall follow the following ECPs to reduce health risks to the construction workers and nearby community</p> <ul style="list-style-type: none"> • ECP 2: Fuels and Hazardous Goods Management • ECP 4: Drainage Management • ECP 10: Air Quality Management |

| Project Activity/ Impact Source | Environmental Impacts | Mitigation Measures/ Management Guidelines |
|------------------------------------|---|---|
| | | <ul style="list-style-type: none"> • ECP 11: Noise and Vibration Management • ECP 13: Road Transport and Road Traffic Management . |
| Training | Lack of awareness and basic knowledge in health care among the construction workforce, make them susceptible to potential diseases. | <p>The Contractor shall</p> <ul style="list-style-type: none"> • Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of STIs HIV/AIDS). • Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training should consist of basic hazard awareness, site specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. • Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on on-going and regular basis. This should be complemented by easy access to condoms at the workplace as well as to voluntary counselling and testing. |

Annexure 7-2: Guidelines for the Preparation of Site-specific Plans and Procedures during Construction phase

Specific plans relevant to the ESMP are as follows:

Site Specific Environmental and Social Management Plan (SSESMP)

Project- specific Stakeholder Engagement Plan / Communication Plan

- 1. Occupational health and safety plan**
- 2. Community health and safety plan**
- 3. Emergency preparedness and response plan**
- 4. Workers camp management plan**
- 5. Site-specific compensatory tree plantation plan**
- 6. Waste management plan**
- 7. Traffic management plan**
- 8. Spill prevention and response plan**
- 9. Pollution prevention plan**
- 10. Material Transportation Plan**

1. Contractor's Construction Environmental and Social Action Plan (SSESMP)

The Contractor will develop a construction phase SSESMP in line with the ESMP. The Contractor will also be expected to have its own Environmental and Social Management System aligned to the principles of ISO 14001:2015 and OHSAS 45001 or equivalent. These plans will be formally approved by PIU-KWSSIP and CSC before any work occurs on site. The SSESMP will consist of the following as a minimum and be structured as follows:

a. Section 1: Master SSESMP Document

The master SSESMP document will clearly define the Contractor's ESHS commitments and requirements, including:

- ◆ Place a high emphasis on good housekeeping practices.
- ◆ ESHS policy, committing to compliance with the ESMP.
- ◆ Identification of all regulations, standards, and regulatory limits, and specify the means for maintaining compliance.
- ◆ Training plan outlining training and capacity building (covering both introductory sessions and technical training).
- ◆ Contractor's ESMS and H&S management system
- ◆ Organizational capacity and structure, roles and responsibilities, key resources

- ◆ Procedures, logistics and communication channels
- ◆ Monitoring, inspections, audits and evaluations
- ◆ Reporting
- ◆ Management of nonconformity procedures (including management and tracking)
- ◆ A permit register, with all permits required by the national requirements relating to the project, including timeframes and renewal dates and procedure
- ◆ An environmental, social, health and safety (ESHS) risk assessment register, to be maintained and updated monthly and discussed with PIU KWSSIP.
- ◆ Description of project areas, including the number, a map, key activities, opening and closing schedule, and access plans.
- ◆ A pre-construction plan, which outlines the pre-construction surveys planned to be carried out to record the existing baseline of each site, any changes to the baseline, and any additional measures (following the mitigation hierarchy) to avoid, minimize and mitigate. This will include detailed photographic and video footage for each specific work area

b. Section 2: SSESMP Sub-plans and Procedures

Development and implementation of specific sub-plans, which are detailed as follows shall be referenced under the SSESMP. **Table 7-1** outlines various sub-plans to be developed and implemented by the Contractor under its own SSESMP. All plans need to be developed in line with the applicable standards and GIIP. In addition to GIIP measures, the sub-plans will include the specific mitigation measures identified within the ESMP. The key mitigation measures identified in the ESMP shall require to be included in the relevant sub-plans. The plans will typically include a similar structure , such as:

- ◆ A standard introduction referencing the project, summarizing the project description, linkage of the plan to the SSESMP and other plans, the purpose and scope of the plan
- ◆ Requirements and standards
- ◆ Roles and responsibilities
- ◆ Impact and risk assessment
- ◆ Control measures
- ◆ Training requirements
- ◆ Monitoring and reporting procedures
- ◆ Other relevant details
- ◆ Document/record control

It is important to note that many plans have overlapping or cross-cutting measures that may need to be considered and included in multiple plans. All plans, when developed, will be reviewed and considered together by the Contractor as part of its overall system, to ensure that key environmental, social, health, safety and security measures are appropriately included, and there is no contradictions between plans.

Table A7-1: Sub-plans to be prepared by the Contractor and Summary of the Aspects to be Covered

| Plan | Objectives and Contents |
|--|---|
| Social and community | |
| Project- specific Stakeholder Engagement Plan / Communication Plan | <ul style="list-style-type: none"> ◆ Ensuring that the mechanism for information disclosure on purpose and nature of the construction activities, early notification of construction start date, scheduling and duration and potential impacts and health and safety measures/ mechanisms is in place ◆ Mechanism for issuance of notification to communities and sensitive receptors for any transport disruptions, construction activities, pedestrian accessibility, etc. is intact ◆ Feedback and grievance redress mechanism is followed ◆ Recruitment and Procurement, Employment of Local Workers details are clear to communities |
| Health and safety | |
| Occupational health and safety plan | To implement a safe working environment, procedures and culture during the construction phase. Further policies / procedures to be developed if need identified through site audits. |
| Community health and safety plan | To avoid, minimize and manage community health and safety risks. |
| Emergency preparedness and response plan | To cover potential emergencies during construction |
| Workers camp management plan | To ensure that all Project accommodation areas are designed, constructed and maintained as healthy, clean and pleasant locations for workers to live in. |
| Biodiversity | |
| Site-specific compensatory tree plantation plan | The plan will provide details on the contractor's role and step by step approach for managing and monitoring compensatory tree plantation. |
| Environmental | |
| Waste management plan | To identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods |
| Traffic management plan | To plan, coordinate and management all traffic and access risks in relation to the construction phase of the project. |
| Spill prevention and response plan | To prevent spills and plan for appropriate responses |
| Pollution prevention plan | To effectively control air, noise, water and wastewater pollution |

| Plan | Objectives and Contents |
|------------------------------|---|
| Material Transportation Plan | Construction material logistics planning entails managing materials and equipment both to and from construction sites. These two vital processes are inbound logistics and outbound logistics. Both of these equipment and material management activities require a detailed and thorough plan. |

1. Project- Specific Stakeholder Engagement Plan / Communication Plan

What is a Project- Specific stakeholder engagement / communication plan?

A project-specific stakeholder engagement plan—also known as a stakeholder management plan—is a subsidiary document that is often created alongside the main project plan for a given body of work. It is a written document that is formulated before a project begins, and which is kept on file and updated over the course of the project as necessary. Its purpose is to identify a project’s key stakeholders, and to outline a methodology and approach for how the project team will interact and communicate with those stakeholders.

What goes into a stakeholder engagement plan?

Stakeholder Identification

This section is used to identify all of the project’s stakeholders by name. At a minimum, the section also defines their roles and responsibilities as they relate to the project. In some cases, it can be much more extensive.

Planning to Interact with the Stakeholders

The next section is dedicated to actually determining how the project team will interact and engage with the stakeholders identified in the first portion of the plan. This will often involve a deeper assessment of each stakeholder, which will be used to inform the rest of the plan.

Stakeholder Engagement Activities

The final portion of the plan is essentially an outline of the various activities the project team will undertake to communicate with stakeholders, manage their expectations, and keep them engaged with the project. This includes activities such as pre-planned meetings with stakeholders or key reports. This section of the document will also typically outline the types of communications that will be used throughout the project—FGDs, pamphlets, media, periodic meetings etc.—and which each form of communication is best suited for.

Contractor shall follow the KWSSIP-2 Stakeholder Engagement Plan in principal for preparing the Project-specific SEP / Communication Plan. Indicative overview of contents to be covered is as follows:

◆ INTRODUCTION

- ✓ Background to Stakeholder Engagement
- ✓ Objectives of the Stakeholder Engagement Plan

- ✓ Structure of the Document
- ◆ **PROJECT DESCRIPTION**
- ✓ Project Overview
- ✓ Key Project Aspects
- ✓ Social Area of Influence
- ◆ **LEGAL FRAMEWORK**
- ✓ Local and WB Requirements for Stakeholder Engagement and Public Consultation
- ◆ **KEY PROJECT PRINCIPLES OF STAKEHOLDER ENGAGEMENT AND APPROACH**
- ✓ Stakeholder Identification and Analysis
- ✓ Methodology and Approach for Engaging Stakeholders
- ✓ Vulnerable Groups
- ◆ **STAKEHOLDER ENGAGEMENT**
- ✓ Stakeholder Engagement Activities according to National and International Requirements
- ✓ Stakeholder Engagement Activities within the Scope of ESMP Studies and KWSSIP-1 Stakeholders Requirements
- ✓ Summary of the Social Field Studies for the ESMP
- ✓ Tools for Communication Routine (E.g. Internet/Website, Public Media, FGDs etc.)
- ✓ Community Relations
- ✓ Notice Boards
- ◆ **STAKEHOLDER ENGAGEMENT PROGRAM**
- ✓ Pre-Construction Phase
- ✓ Construction Phase
- ◆ **GRIEVANCE MECHANISM**
- ✓ Public Grievance Mechanism
- ✓ Receipt of Grievances
- ✓ Acknowledgement and Record Keeping
- ✓ Investigation
- ✓ Response to Complainant
- ✓ Discussion of Resolution
- ✓ Worker Grievance Mechanism
- ◆ **EXTERNAL COMMUNICATIONS**
- ✓ Institutional Arrangements, Roles and Responsibilities

2. Occupational and Community Health & Safety Plan

Occupational and Community Health and Safety Plans (OHS / CHS Plans) are key document to address how OHS and CHS risks will be managed in a project. A Health & Safety Framework (Attached as **Annexure 5-1**) has been prepared by the World Bank E&S Safeguards Unit which is applicable on all

World Bank-financed projects in the South Asia Region (SAR). The framework provides guidelines not only to the proponent but also to the project Contractors to implement a practical approach to manage Occupational Health and Safety (OHS) and Community Health and Safety (CHS) impacts and risks in accordance with national/local regulatory framework, the World Bank Environmental and Social Standards and Environmental Health and Safety (EHS) Guidelines, ISO Standards, Good International Industry Practices (GIIP), etc. The framework also includes a template for OHS / CHS Plans which should be followed by the Contractor for making these plans.

Some key guidelines to be covered under the plan includes the following:

Specific Mitigation Guidelines for Dealing with OHS Hazards

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
|--------|--|--|
| 1. | <p>Trench Excavation</p> <p>Collapse of Excavation and falling of materials while working in excavations could result in workers injuries or fatalities. Workers could be at risk from:</p> <ul style="list-style-type: none"> ◆ Excavations collapsing and burying or injuring people working in them; ◆ Material falling from the sides into excavation; ◆ People or plant falling into excavations. ◆ Serious accidents could occur if buried services are damaged during excavation work. ◆ Excavation inside water stream or at dry areas during wet weather can cause many safety hazards including intrusion of water into excavation, slippery conditions for the drivers of equipment, causing the ground to be slippery and muddy thereby creating the possibility of slips and falls, and making the site work less stable. <p>(Ref: https://www.hse.gov.uk/construction/safetyto pics/excavations.htm)</p> | <p>Collapse of excavations:</p> <ul style="list-style-type: none"> a- Temporary support - Before digging any trench pit, or other excavations, Contractor shall decide what temporary support will be required and accordingly plan the precautions to be taken. b- Contractor shall make sure the equipment and precautions needed (trench sheets, props, baulks etc.) are available on site before work starts. c- Battering the excavation sides - Battering the excavation sides to a safe angle of repose may also make the excavation safer. d- In granular soils that may come across during trenching, the angle of slope should be less than the natural angle of repose of the material being excavated. In wet ground a considerably flatter slope will be required. <p>Falling or dislodging material:</p> <ul style="list-style-type: none"> a- Loose materials - may fall from spoil heaps into the excavation. Edge protection should include toe boards or other means, such as projecting trench sheets or box sides to protect against falling materials. Head protection should be worn. b- Effect of plant and vehicles - Do not park plant and vehicles close to the sides of excavations. The extra loadings can make the sides of excavations more likely to collapse. |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
|--------|--|---|
| | | <p>Falling into excavations</p> <p>a- Prevent people from falling – Contractor shall protect edges of excavations with substantial barriers where people are susceptible to fall into them.</p> <p>b- To achieve this, use of following options shall be made:</p> <ul style="list-style-type: none"> ◆ Guard rails and toe boards inserted into the ground immediately next to the supported excavation side; or fabricated guard rail assemblies that connect to the sides of the trench box ◆ The support system itself, e.g. using trench box extensions or trench sheets longer than the trench depth. <p>Inflow of surface or ground water</p> <p>a- Depending on the permeability of the ground, water may flow into any excavation below the natural groundwater level.</p> <p>b- The supports to the side of the excavation should be designed to control the entry of groundwater and the design should take any additional water loading into account.</p> <p>c- Particular attention should be given to areas close to lakes, rivers and the sea.</p> <p>d- Water entering the excavation needs to be channeled to sumps from where it can be pumped out; however, the effect of pumping from sumps on the stability of the excavation should be considered.</p> <p>Safety Measures for Excavation in Wet Weather</p> <p>a- Weather conditions needs to be checked before daily work to be aware of rain and storm possibilities.</p> <p>b- Inspection of trenches to be done every day before construction begins.</p> <p>c- Workers shall not be allowed to go near unprotected trenches.</p> <p>d- Heavy equipment shall be kept away from trench edges.</p> |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
|--------|--|---|
| | | <p>e- Workers shall be trained to have the skills needed to identify wet weather hazards and how to minimize risks.</p> <p>f- Protective equipment shall always be worn and in a correct manner.</p> <p>g- All power tools shall be correctly maintained and used properly.</p> <p>h- Protective systems including benching, sloping, shoring, and shielding shall be utilized.</p> <p>i- Planning and implementation of safety systems and inspections shall be used regularly on the construction sites.</p> <p>Other aspects of excavation safety</p> <p>a- Safe means of getting into and out of an excavation shall be provided. If a risk assessment identifies that ladders are a reasonable means of access and egress from an excavation, ladders with suitable length and of sufficient strength shall be provided for the purpose.</p> <p>b- Use of petrol or diesel engines in excavations shall be avoided without arranging for the fumes to be ducted safely away or through forced ventilation.</p> <p>Inspection</p> <p>a- A competent person who fully understands the dangers and necessary precautions shall inspect the excavation at the start of each shift.</p> <p>b- Excavations shall also be inspected after any event that may have affected their strength or stability, or after a fall of rock or earth.</p> <p>c- A record of the inspections shall be maintained and any faults that are found should be corrected immediately.</p> <p>d- A written report shall be made containing the following information:</p> <ul style="list-style-type: none"> ◆ Location and description of the place of work or work equipment inspected; ◆ Date and time of the inspection; ◆ details of: |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
|--------|--|--|
| | | <ul style="list-style-type: none"> ◆ Any matter identified that could give rise to a risk to the health or safety of any person; ◆ Any action taken as a result of any matter identified; ◆ Any further action considered necessary; and ◆ Name and position of the person making the report. |
| 2. | <p>Excavators</p> <p>Most fatal and serious injuries involving excavators occur when the excavator is:</p> <ul style="list-style-type: none"> ◆ Moving – and strikes a worker / pedestrian, particularly while reversing; ◆ Slewing – trapping a person between the excavator and a fixed structure or vehicle; or ◆ Working – when the moving bucket or other attachment strikes a worker or when the bucket inadvertently falls from the excavator. ◆ Most excavator related deaths involve a person working in the vicinity of the excavator rather than the driver. <p><i>(Ref: https://www.hse.gov.uk/construction/safetytopics/excavators.htm)</i></p> | <p>Controlling the risk</p> <p>It is important to select the right excavator for the job. There are five main precautions needed to control excavator hazards. These are:</p> <ul style="list-style-type: none"> a- Exclusion: People should be kept away from areas of excavator operation by the provision of suitable barriers. Bunting or fencing can be used to create and maintain a pedestrian exclusion area. b- Clearance: When slewing in a confined area the selection of plant with minimal tail swing is preferred. Clearance of over 0.5m needs to be maintained between any part of the machine, particularly the ballast weight, and the nearest obstruction. c- Visibility: Excavators with the best view around them directly from the driver position should be selected. Excavators should be equipped with adequate visibility aids to ensure drivers can see areas where people may be at risk from the operation of the machine. d- Plant and vehicle marshal/banksmen: A Plant and vehicle marshal/banksmen should be provided in a safe position to direct excavator operation and any pedestrian movements. e- Bucket attachment: Quick hitches can be used to secure buckets to the excavator arm. <p>Training and competence</p> <p>There are three categories of people who must be trained and made competent regarding the excavator hazards and precautions:</p> |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | | <p>a- Drivers: should be trained, competent and authorized to operate the specific excavator. Training certificates from recognized schemes help demonstrate competence and certificates should be checked for validity;</p> <p>b- Plant and vehicle marshal: should be trained, competent and authorized to direct excavator movements and, where possible, provided with a protected position from which they can work in safety; and</p> <p>c- Pedestrians: should be instructed in safe pedestrian routes on site and the procedure for making drivers aware of their presence through sign boards and on-site instructions.</p> <p>Inspection and maintenance</p> <p>a- A program of daily visual checks, regular inspections and servicing schedules shall be established in accordance with the manufacturer's instructions and the risks associated with each vehicle.</p> <p>b- Drivers shall be advised to report defects or problems. Reported problems shall be put right quickly and the excavator taken out of service if the item is safety critical.</p> |
| 3. | <p>Lifting Operations (Cranes)</p> <ul style="list-style-type: none"> ◆ Collapse of the Crane – such incidents present significant potential for multiple fatal injuries, both on and off-site; ◆ Falling of the Load – these events also present a significant potential for death and major injury. <p><i>(Ref: https://www.hse.gov.uk/construction/safetytopics/lifting-operations.htm)</i></p> | <p>Pre-requisite:</p> <p>a- Cranes and lifting accessories such as slings shall be of adequate strength, tested and subject to the required examinations and inspections.</p> <p>b- All crane operators, and people involved in slinging loads and directing lifting operations, shall be trained and competent.</p> <p>Planning lifting operations</p> <p>a- All lifting operations shall be planned so they are carried out safely with foreseeable risks taken into account.</p> <p>b- The person appointed to plan the lifting operation shall have adequate practical and theoretical knowledge and experience of the lifts being undertaken.</p> |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | | <p>c- The plan will need to address the risks identified by a risk assessment, the resources required, procedures and the responsibilities so that any lifting operation is carried out safely.</p> <p>d- The plan shall ensure that the lifting equipment remains safe for the range of lifting operations for which the equipment might be used.</p> <p>Supervision of lifting</p> <p>a- The right level of supervision shall be in place for lifting operations, reflecting the degree of risk and personnel involved in the particular lifting operation.</p> <p>b- The crane supervisor shall direct and supervise the lifting operation to make sure it is carried out in accordance with the method statement.</p> <p>c- The crane supervisor shall be competent and suitably trained and should have sufficient experience to carry out all relevant duties and authority to stop the lifting operation if it is judged dangerous to proceed.</p> <p>Thorough examination</p> <p>a- Lifting equipment shall be thoroughly examined at the prescribed intervals. This shall be a detailed and specialized examination by a competent person.</p> <p>b- Records of thorough examinations and tests shall be: made readily available to the relevant authorities; secured; and capable of being reproduced in written form.</p> |
| 4. | <p>Heat Stress / Heat Stroke</p> <ul style="list-style-type: none"> ◆ Workers who are exposed to extreme heat may be at risk of heat stress. ◆ Exposure to extreme heat can result in occupational illnesses and injuries. ◆ Heat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. | <p>Control of Heat Stress</p> <p>Work practice recommendations include the following:</p> <ul style="list-style-type: none"> a- Limit time in the heat and/or increase recovery time spent in a cool area. b- Use tools intended to minimize manual strain. c- Increase the number of workers per task. d- Train supervisors and workers about heat stress. |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | <ul style="list-style-type: none"> ◆ Burns may also occur as a result of accidental contact with hot surfaces. <p>(Ref: https://www.cdc.gov/niosh/topics/heatstress/recommendations.html)</p> | <ul style="list-style-type: none"> e- Use a buddy system where workers observe each other for signs of heat-related illnesses. f- Require workers to conduct self-monitoring and create a work group (i.e., workers, a paramedic, and a safety manager) to make decisions on self-monitoring options and standard operating procedures. g- Provide adequate amounts of cool, potable water near the work area and encourage workers to drink often. h- Use a heat alert program whenever the weather service forecasts a heat wave. i- Institute a heat acclimatization plan and encourage increased physical fitness. <p>Training</p> <p>Contractor shall implement a heat stress training program for all workers and supervisors which will cover the following:</p> <ul style="list-style-type: none"> a- Training of workers before hot outdoor work begins. b- Recognition of the signs and symptoms of heat-related illnesses and administration of first aid. c- Causes of heat-related illnesses and steps to reduce the risk. These include drinking enough water and monitoring the color and amount of urine output. d- Proper care and use of heat-protective clothing and equipment and the added heat load caused by exertion, clothing, and personal protective equipment. e- Effects of other factors (drugs, obesity, etc.) on tolerance to occupational heat stress. f- The importance of acclimatization. g- The importance of immediately reporting any symptoms or signs of heat-related illness in themselves or in co-workers to the supervisor. h- Procedures for responding to symptoms of possible heat-related illness and for contacting emergency medical services. |













| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | | <p>Supervisors shall also be trained on the following:</p> <ul style="list-style-type: none"> a- Implementing appropriate acclimatization plan. b- Procedures to follow when a worker has symptoms of heat-related illness, including emergency response procedures. c- Monitoring weather reports. d- Responding to hot weather advisories. e- Monitoring and encouraging adequate fluid intake and rest breaks. <p>Hydration</p> <p>The Contractor shall provide the means for appropriate hydration of workers and ensure that:</p> <ul style="list-style-type: none"> a- Water should be potable, <15°C (59°F), and made accessible near the work area. b- Estimate how much water will be needed and decide who will get and check on water supplies. c- Provide individual drinking cups for each worker. d- Encourage workers to hydrate themselves. e- Workers should drink an appropriate amount to stay hydrated. f- For moderate activities in the heat that last less than 2 hours, drink 1 cup (8 oz.) of water every 15–20 minutes. g- If sweating lasts for several hours, drink sports drinks containing balanced electrolytes. h- Avoid alcohol and drinks with high caffeine or sugar. i- Generally, fluid intake should not exceed 6 cups per hour. |
| 5. | <p>Confined Space Working</p> <p>The most likely hazards related to confined spaces include:</p> <ul style="list-style-type: none"> ◆ A risk of fire or explosion can arise flammable substances and oxygen enrichment. ◆ Hot conditions can lead to a dangerous rise in core body | <p>Work in confined spaces</p> <ul style="list-style-type: none"> a- No person at work shall enter a confined space to carry out work for any purpose unless it is not reasonably practicable to achieve that purpose without such entry. b- A site specific method statement shall be produced by the Contractor and all workers |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | <p>temperature and this can be made worse by wearing PPE, highly physical or strenuous work.</p> <ul style="list-style-type: none"> ◆ The presence of toxic gas, fume or vapour can lead to asphyxia or unconsciousness ◆ A lack of oxygen in the atmosphere may also lead to asphyxia or unconsciousness. <p>(Ref: https://www.hse.gov.uk/pubns/priced/l101.pdf)</p> | <p>shall adhere to the method statement instructions before the work is carried out.</p> <ul style="list-style-type: none"> c- It shall be ensured that there is suitable ventilation within the workplace. d- Damaging any underground utilities shall be avoided. e- It shall be ensured that workers are provided with the following: <ul style="list-style-type: none"> ◆ Head, hand and foot protection ◆ Eye and hearing protection ◆ Waterproof and thermal clothing ◆ Respirators and breathing apparatus ◆ Appropriate safety harnesses. f- It shall be ensured that Emergency arrangements such as First aid procedures, arrangements for the safety of rescuers and mechanism of liaison with emergency services are in place before any work starts to make sure that the workers can be rescued safely if required. g- Those who are identified as rescuers need to be: <ul style="list-style-type: none"> ◆ Ready at hand ◆ Properly trained ◆ Fit to carry out their task ◆ Protected against the cause of the emergency ◆ Capable of using any equipment provided for rescue, for example breathing apparatus, lifelines and fire-fighting equipment. h- Training is critical in all work with confined spaces. The Contractor shall ensure that all workers are given suitable and appropriate training to carry out the workplace task. This will include trainings on; emergency procedures and use of breathing apparatus. |
| 6. | <p>Welding Safety</p> <p>There are a variety of welding methods available, all of which have inherent safety and health hazards associated with them, such as:</p> | <p>Safety Measures</p> <p>The Contractor shall ensure the following:</p> <ul style="list-style-type: none"> a- Welders, bystanders and work space are properly protected. b- Use of local exhaust ventilation, such as an exhaust trunk, while performing welding |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | <p>a- Metal fumes are formed when a metal is heated above its boiling point and its vapors condense into very fine particles. Health effects can range from short-term illnesses such as metal fume fever with flu-like symptoms to longer-term issues such as lung damage or neurological disorders.</p> <p>b- Burns may be caused by contact with hot surfaces or hot flying particles.</p> <p>c- Eye injuries can result from exposure to ultraviolet and infrared radiation created from the arc or from particulates or spattering.</p> <p>d- Electric shock may occur due to improper grounding and/or contact with current through damp clothing, wet floors and other humid conditions. Even if the shock itself is not fatal, the jolt may still cause welders to fall from their work positions. In addition, stray welding current may cause extensive damage to equipment, buildings and electrical circuits.</p> <p>e- Fire caused by heat, sparks, slag or flames contacting combustible or flammable materials in the welding area.</p> <p>f- Improper use and storage of oxygen and acetylene may result in fire or explosion</p> <p>g- Strains, neck and lower back injuries resulting from repetitive motions and work orientation.</p> <p>h- Lacerations resulting from accidental contact with sharp edges and burrs.</p> <p><i>(Ref: https://www.hse.gov.uk/welding/index.htm)</i></p> | <p>activities whenever possible to minimize exposures to welding fume.</p> <p>c- Use of respiratory protection below the recommended air quality levels.</p> <p>d- Protecting worker's exposures to UV and infrared radiation by providing a properly fitted welding helmet, with proper grade of filter plate while ensuring that it must be worn. An auto-darkening welding helmet is highly recommended as these helmets do not need to be raised to check welds and can be kept in the lowered position all the time, reducing fume exposure. These helmets also reduce the urge to use the neck muscle to flip the helmet to the "up" position, which can cause significant neck discomfort and possible injury.</p> <p>e- Safety glasses should also be worn under the welding helmet to provide impact protection and to protect eyes from particulates when hoods are lifted.</p> <p>f- Pant cuffs and rolled up sleeves should be avoided.</p> <p>g- Workers shall be trained to protect their body from spatter and arc flash with flame-resistant gloves and apron or jacket, flame-resistant natural fiber clothing (such as wool or cotton) and leather boots etc.</p> <p>h- Any combustible or flammable materials shall be put away from the welding area to prevent fires.</p> <p>i- A clear egress path shall be maintained out of the welding area as well as to the nearest emergency equipment such as fire extinguisher, emergency eyewash and emergency shower.</p> <p>j- Check welding equipment and personal protective equipment (PPE) for defects and damage before beginning work. Ensure PPE is properly stored and maintained when not in use.</p> <p>k- Position welding curtains as needed to protect others in the area from splatter, flash and glare.</p> |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | | <ul style="list-style-type: none"> l- Setting up any signs or safety cones as needed. m- Prevent lacerations by identifying sharp edges and burrs, wearing appropriate gloves, deburring, and proper storage methods. n- Ensure good insulation from work surfaces, the electrode, the electrode holder and grounding surfaces is obtained and maintained. o- Practice good lifting techniques by workers and considering ergonomics when setting up the work and minimizing awkward postures. p- Workers shall be trained on the safe use, transportation and storage of compressed gases prior to use. |
| 7. | <p>Construction Dust</p> <ul style="list-style-type: none"> a- Drilling, cutting, sanding and driving over dusty areas can pose risks for the workers involved. b- Dust that can enter the nose and mouth during breathing is referred to as 'total inhalable dust'. Some dust may consist of larger or heavier particles that tend to get trapped in the nose, mouth, throat or upper respiratory tract where they can cause damage. c- Chronic effects of dust in the lungs are usually permanent and may be disabling, so prevention of the onset of disease should be given the highest priority. <p><i>(Ref: https://www.hse.gov.uk/construction/healthrisks/hazardous-substances/construction-dust.htm)</i></p> | <p>Control Measures</p> <ul style="list-style-type: none"> a- Contractor shall ensure that workers are protected from excessive exposure to dust. b- Keep construction areas shall be kept as clean as possible. c- Workers shall be provided with clothing that resists dust and essential PPEs. d- Working shifts shall be rotated to limit inhalation of polluted air by workers specially the potentially dusty work sites. e- Dust shall be suppressed and dampen at project sites by sprinkling water. f- Construction vehicles shall be driven at slow speeds to keep dust emissions limited. g- Contractor shall provide construction workers with information / training about potential dust hazards and instructions on how to avoid them. h- Workers shall be trained to wet the tools before cutting into any materials as it can reduce dust accumulation. |
| 8. | <p>Construction Noise</p> <ul style="list-style-type: none"> a- Exposure to high levels of noise can cause permanent hearing loss. | <p>Control Measures</p> <ul style="list-style-type: none"> a- As a first step, the Contractor shall choose quieter equipment and machinery to save |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | <p>b- Loud noise can create physical and psychological stress, reduce productivity, interfere with communication and concentration, and contribute to workplace accidents and injuries by making it difficult to hear warning signals.</p> <p>(Ref: https://www.hse.gov.uk/noise/hearingprotection.htm)</p> | <p>the cost of introducing noise-reduction measures and providing hearing protection, health surveillance and associated trainings etc.</p> <p>b- Hearing protection shall be issued to employees:</p> <ul style="list-style-type: none"> ◆ where extra protection is needed above what has been achieved using noise control ◆ as a short-term measure while other methods of controlling noise are being developed. <p>c- Contractor shall make sure that the protectors give enough protection - at least to get below 85 dB at the ear.</p> <p>d- Use of protectors to the noisy tasks and jobs in a working day shall be made mandatory.</p> <p>e- No employee should be exposed to a noise level greater than 85 dB (A) for a duration of more than 8 hours per day without hearing protection.</p> <p>f- Periodic medical hearing checks shall be performed on workers exposed to high noise levels.</p> |
| 9. | <p>Fire Safety</p> <p>a- Fire at a construction site can endanger the lives of workers and others who happen to be on the site.</p> <p>b- A fire during the course of construction also can result in severe structural damage; destruction of machinery, equipment or materials; and untimely delay in project completion.</p> | <p>Control Measures</p> <p>a- The Contractor shall develop an effective fire prevention and extinguishing plan before the onset of construction. The plan shall be put into practice as soon as construction operations begin and shall be closely followed throughout the course of construction.</p> <p>b- Contractor shall ensure that fire safety and firefighting trainings are provided to selected workers from each worker groups so that they can handle the localized fires.</p> <p>c- Contractor shall ensure the availability of right fire extinguishers at project construction and Campsites to deal with different types of fires in accordance with the following chart:</p> |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | <p style="text-align: center;">Fire Extinguisher Chart</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Extinguisher</th> <th colspan="5">Type of Fire</th> </tr> <tr> <th>Colour</th> <th>Type</th> <th>Solids (wood, paper, cloth, etc)</th> <th>Flammable Liquids</th> <th>Flammable Gases</th> <th>Electrical Equipment</th> <th>Cooking Oil & Fats</th> </tr> </thead> <tbody> <tr> <td></td> <td>Water</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✗ No</td> </tr> <tr> <td></td> <td>Foam</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✓ Yes</td> </tr> <tr> <td></td> <td>Dry Powder</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✗ No</td> </tr> <tr> <td></td> <td>Carbon Dioxide (CO2)</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✗ No</td> <td style="text-align: center;">✓ Yes</td> <td style="text-align: center;">✓ Yes</td> </tr> </tbody> </table> <p>d- The local fire department shall be made aware of construction plans and kept up to date during the course of construction regarding items such as access to the sites during both working and non-working hours; and the location of fuel storage, power and fuel shutoffs, power generators, and fixed-fire extinguishing systems.</p> <p>e- The project requires considerable works related to welding. Cutting and welding sparks cause more construction fires than any other ignition source. The personnel responsible for fire safety shall ensure that adequate precautions are taken during welding works and adequate numbers of fire extinguishers are present in proximity to the work areas.</p> <p>f- Suitable fire extinguishers are Carbon Dioxide or Dry Powder because of the risk of electrical fires in the welding area, whereas use of water based extinguisher shall be avoided.</p> <p>g- Fuel gas and oxygen cylinders shall be placed upright and secured at safe locations, protected from high temperatures and adequately separated from each other.</p> <p>h- Typical Fire Safety Checklist is attached as Annexure 5-2: which shall be followed</p> | Extinguisher | | Type of Fire | | | | | Colour | Type | Solids (wood, paper, cloth, etc) | Flammable Liquids | Flammable Gases | Electrical Equipment | Cooking Oil & Fats |  | Water | ✓ Yes | ✗ No | ✗ No | ✗ No | ✗ No |  | Foam | ✓ Yes | ✓ Yes | ✗ No | ✗ No | ✓ Yes |  | Dry Powder | ✓ Yes | ✓ Yes | ✓ Yes | ✓ Yes | ✗ No |  | Carbon Dioxide (CO2) | ✗ No | ✓ Yes | ✗ No | ✓ Yes | ✓ Yes |
| Extinguisher | | Type of Fire | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Colour | Type | Solids (wood, paper, cloth, etc) | Flammable Liquids | Flammable Gases | Electrical Equipment | Cooking Oil & Fats | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Water | ✓ Yes | ✗ No | ✗ No | ✗ No | ✗ No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Foam | ✓ Yes | ✓ Yes | ✗ No | ✗ No | ✓ Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Dry Powder | ✓ Yes | ✓ Yes | ✓ Yes | ✓ Yes | ✗ No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | Carbon Dioxide (CO2) | ✗ No | ✓ Yes | ✗ No | ✓ Yes | ✓ Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| S. No. | Work Activities and Associated Hazards | Mitigation Guidelines |
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| | | by the Contractor during construction phase. |

3. Emergency Preparedness and Response Plan (EPRP)

The Contractor will be responsible for ensuring adequate emergency preparedness and response planning for the construction phase of the project. Following Table presents the contents to be covered under EPRP.

| Impact to be addressed | Management/Mitigation/ Enhancement to be included in plan | KPI |
|---|--|---|
| Construction phase emergency preparedness and response plan, including flooding, medical emergencies etc. | <ul style="list-style-type: none"> ◆ Develop and implement a regularly updated EPRP so that project staff, relevant local authorities and emergency services are prepared to respond to accidental and emergency situations in a manner that prevents and mitigates harm to people and the environment. The EPRP will include: ◆ Identification of accidents and emergency situations and the communities and individuals that may potentially be impacted. ◆ Identification of response procedures, provision of equipment and resources, designation of responsibilities, communication systems and channels and periodic response training ◆ Routine inspection of work sites ◆ Maintenance of plant, equipment, supplies and materials required for preventative measures and emergency responses ◆ Clearly defined evacuation procedures ◆ Training requirements for staff and managers, including details on who provides training ◆ Identification of relationship to and integration with other plans ◆ Identification of revision timeframe and process ◆ Template for incident reporting forms ◆ Identify a set of procedures to assist in rapid and early identification and | <ul style="list-style-type: none"> ◆ Records of training drills ◆ Disclosure of EPRP to affected communities, emergency services and operations workers ◆ Type, duration and adequacy of emergency response in specific situations |

| Impact to be addressed | Management/Mitigation/ Enhancement to be included in plan | KPI |
|------------------------|--|-----|
| | <p>responses to potential and occurring emergencies relevant to the construction phase. These are likely to include categories such as:</p> <ul style="list-style-type: none"> ◆ Flooding ◆ Equipment failure or malfunctioning ◆ Seismic activity ◆ Terrorism ◆ Address specific situations such as emergencies occurring: <ul style="list-style-type: none"> ◆ In the dark: with extra attention on emergency power sources, backup lighting systems, mobile lighting for response teams ◆ In adverse weather: with extra attention placed on emergency shelter and clothing for responders, and shelter for evacuees ◆ Produce detailed information on internal and external equipment, personnel, facilities, funding, expert knowledge and material that will facilitate appropriate responses to specific types of emergencies ◆ Identify procedures for using, inspecting, testing and maintaining emergency response equipment, which may include equipment under the control of third parties (such as local fire brigades or emergency medical teams) ◆ Produce inundation maps that will be provided to aid evacuation plans and be distributed to local authorities ◆ Develop a rescue and relief plan to cover actions required in the event of a flood. This will include details on: <ul style="list-style-type: none"> ◆ Support for evacuees to provide food, fuel and shelter ◆ Securing potable water supplies to affected areas ◆ Identification of buildings for use as relief camp ◆ Identification of health facilities and contact details of key personnel | |

4. Workers Camp Management Plan

Contents to be covered in the plan by the Contractor include the following:

| Impact to be addressed | Management/Mitigation/ Enhancement to be included in plan | KPI |
|--|--|--|
| <p>Construction worker well-being in accommodation facilities Community, health, safety and security and relations/conflict between workers and host communities</p> | <ul style="list-style-type: none"> ◆ Describe the minimum national legislative requirements plus the applicable international requirements relevant to the facility standards and management of labour accommodation – these are aligned with the WBG guidance note on workers accommodation. ◆ Describe standards to be met that will avoid safety hazards and protect workers from disease, illness, exposure to natural hazards, including but not limited to ◆ Types and materials of living facilities ◆ Provision of minimum amounts of space for each worker ◆ Adequate drainage, dormitories, bed and storage ◆ Provision of sanitary, laundry, cooking and medical facilities and potable water ◆ Location of accommodation in relation to the workplace ◆ Any health, fire, safety or other hazards or disturbances and local facilities ◆ Provision of first aid and medical facilities ◆ Heating and ventilation ◆ Workers freedom of movement to and from the employer-provided accommodation will not be unduly restricted ◆ Include an accommodation code of conduct with rights, rules and regulations for workers' accommodation ◆ Identify a grievance and maintenance response mechanism for the accommodation facilities and services | <ul style="list-style-type: none"> ◆ Worker accommodation plan compliant with the WBG guidance note on workers' accommodation ◆ Types of accommodation (on site, offsite) ◆ Number of accommodated employees and rooms ◆ Ratio of facilities to workers ◆ Accommodation inspections ◆ Worker and community grievances ◆ Disease type / incidence, and lost time impacts ◆ Water / food quality inspections test results ◆ Waste segregation and appropriate disposal monitoring results ◆ Hygiene inspection results |

5. Site-specific Compensatory Tree Plantation Plan

A Compensatory Tree Plantation Plan has been prepared for the project and attached as **Annexure 4-4**. This will be followed by the Contractor for the development of Site-specific Compensatory Tree Plantation Plan. The Contractor will develop this plan in consultation with the PIU, Sindh Forest Department and any other departments which will provide land for compensatory plantation.

Compensatory planting shall involve replacement, planting or making available of a number of trees as a replacement for a damaged or uprooted tree. The aim of this plan shall be to address the conditions that shall be observed when carrying out compensatory planting with respect to uprooted or damaged trees in accordance with the PIU and Forest Department Guidelines.

General Principles to be Followed for Compensatory Plantation

- a- Wherever removal of existing trees is justified and permitted, the Contractor shall be required to carry out compensatory planting in accordance with the PIU and Forest Department Guidelines.
- b- Whilst compensatory planting is a compulsory requirement for all trees, the Contractor shall also compensate uprooting / clearance of shrubs, through planting ornamental shrubs at locations to be identified by the PIU.
- c- Compensatory planting may also apply in cases in which severe pruning is carried out and severely mutilates or damages the tree. The criteria for compensatory planting are to be approved by the PIU and Forest Department prior to authorizing interventions on trees.
- d- The quality of trees and site targeted for replacement should meet certain specifications to ensure as much as possible equivalence to offset the adverse impact on the environment, landscape, general amenity and ensure conditions for the survival of newly planted species.
- e- Ratio of compensatory plantations shall be 10 trees in place of every affected tree.
- f- In order to prevent monocultures, where compensation would involve the planting of a considerable number of trees, species composition should not be limited to the species for which compensation is being carried out. A diversity of species shall require to be planted to compensate for the tree, such as reflecting the natural diversity at the site earmarked for planting.
- g- Non-indigenous species are to be replaced by indigenous species.
- h- Indigenous trees for planting purposes shall be insofar as reasonably possible from local stock.
- i- Unless prevented by the conditions on the site chosen for compensatory planting, replacement trees shall be at least of medium-standard trees, that is, the overall height exceeding 1 m and stem diameter exceeding 5 cm, with a well-balanced branching head.
- j- Replacement trees shall be planted in accordance with good practices, ensuring distance between individual trees and built structures are appropriate for growth of mature trees specimens. In certain contexts, this requirement may need to be reconciled with other specifications (e.g. denser planting, clustering) that may need to be pursued for the purpose of improved blending into surrounding landscape, improved screening of structures or for mimicking the natural distribution of trees within a particular natural habitat.

6. Waste Management Plan

The waste management plan will identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods. Contents to be covered in waste management plan by the Contractor include the following:

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
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| General waste management plan requirements | <ul style="list-style-type: none"> ◆ Identify predicted waste streams, appropriate handling, reuse and recycle opportunities and, as a last resort, disposal methods. ◆ Prepare in accordance local waste regulations and the WBG EHS Guidelines for Construction Materials Extraction (2007), the WBG General EHS guidelines ◆ Cover all waste streams from the project (solid, liquid, hazardous, non-hazardous), for all activities, including construction works and worker facilities and accommodation. ◆ Develop a waste management system reflected in the plan that addresses issues linked to waste minimisation, generation, transport, disposal, and monitoring including: ◆ Contractor training requirements with respect to waste handling procedures ◆ Waste generation data collection for each waste stream by volume. This will include the proportion of each waste stream going for reuse, recycling or disposal. Any unusual waste volumes will be investigated ◆ An audit schedule which details the frequency of waste management audits and those responsible for undertaking them ◆ Procedure for reporting any environmental incidents related to waste ◆ The specific regulatory licensing and reporting requirements as they relate to waste. | <p>Waste record completion Recycling rates Amount of waste generated by stream</p> |

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
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| | <ul style="list-style-type: none"> ◆ A map showing each temporary waste storage location for the Project ◆ Strict conditions on handling and storage of fuel, explosives, and chemicals will be imposed on the Contractor and suppliers to prevent accidental pollution and injury. ◆ Procedures for, and identification of, licensed contractors to collect, transport and dispose of waste ◆ If any waste facilities are developed detailed management plans would be required following national and international standards. | |
| Waste segregation | <ul style="list-style-type: none"> ◆ Segregate wastes in designated storage areas, such that hazardous and non-hazardous wastes are not mixed and to allow for recycling and reuse where appropriate ◆ Segregate hazardous waste (such as oils, lubricants, batteries, chemicals and medical waste) from other waste types to avoid cross contamination ◆ Label waste streams for identification and warning purposes | No non- compliances of waste being mixed identified in inspections |
| Storage requirements | <ul style="list-style-type: none"> ◆ Correctly identify wastes and stored pending collection/transfer for reuse, recovery, recycling or disposal in an environmentally sound manner ◆ Locate waste storage areas on areas of impermeable hard standing to prevent leaching of any contaminants should spillage or leakage occur ◆ Identify a suitable method to cover all skips ◆ Store liquid wastes/oil/chemicals in tanks or drums located in bunded areas which can hold 110% of the capacity of the largest tank or drum or, for multiple drum storage, 25% of the total volume of material stored ◆ Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site | <ul style="list-style-type: none"> ◆ No non- compliances with management measures identified ◆ No spillages resulting from chemical storage in bunded areas. |

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|-----------------------------|--|--|
| | <ul style="list-style-type: none"> ◆ Store hazardous waste in closed containers away from direct sunlight, wind and rain in designated storage areas. Limit access to hazardous waste to those who have received training. ◆ Provide adequate ventilation where volatile wastes are stored, safety datasheets. ◆ Have spill management equipment (spill kits, eyewash stations, PPE) and readily available information on chemical compatibility for workers including labelling each container, demarcation of the area (e.g. on a facility map/site plan) ◆ Include visual and emissions management measures implemented as appropriate (e.g. screening) | |
| Handling and transportation | <ul style="list-style-type: none"> ◆ Train staff to carry out handling and storage ◆ Make available and maintain spill response equipment in areas where hazardous wastes may be spilt ◆ Train an appropriate number of site personnel in spill response techniques ◆ Prepare and implement spill prevention and response plan and emergency preparedness and response plan to address any accidental release and leakage ◆ Assign each waste shipment a unique waste consignment number. The Contractor is responsible for ensuring that a register is kept at site recording all waste shipments leaving the site and their disposal destination ◆ Ensure a waste transfer note accompanies all waste consignments from the construction site to the disposal destination ◆ Confirm that contractors handling, treating, and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international | <ul style="list-style-type: none"> ◆ All staff involved with waste management trained on waste management and materials handling ◆ No spills |

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|-----------------------|--|---|
| | <p>industry practice for the waste being handled</p> <ul style="list-style-type: none"> ◆ Design transportation of waste to minimise and prevent spills releases or exposures to workers, the public or the environment. ◆ Secure and label waste containers designated for off-site shipment with the contents and associated hazards ◆ Confirm that the waste containers are correctly loaded on the transport vehicles before leaving the site, and that they are accompanied by relevant documentation that describes the load and its associated hazards, consistent with the reference framework. | |
| Recycling and reuse | <ul style="list-style-type: none"> ◆ Evaluate waste production processes and identify potentially recyclable materials ◆ Investigate external markets for recycling ◆ Establish recycling objectives and formal tracking of waste generation and recycling rates ◆ Provide training and incentives to employees | Recycling targets included in plan and audited against. |
| Disposal | <ul style="list-style-type: none"> ◆ Use offsite waste treatment or disposal facilities appropriately permitted, or if not available based on the most suitable site in consultation with authorities ◆ Do not release the waste if there is concern about the standard of transport or destination of the waste ◆ Dispose of any medical waste at licensed facilities ◆ Do not permit burning of waste | <ul style="list-style-type: none"> ◆ Permits held for waste treatment and disposal sites ◆ Medical waste licensed facilities records kept |
| Wastewater management | <ul style="list-style-type: none"> ◆ Establish wastewater management system for worker and facilities wastewater. Treated water discharged in line with WBG and national limits, or tankered off site to appropriate licensed treatment facility or Include appropriate capacity of septic tank ◆ Include the importance of using project toilets and related procedures in site induction procedures. | <ul style="list-style-type: none"> ◆ Wastewater treated in line with relevant standards ◆ No effluent not meeting standards discharged. |

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|---------------------------------|---|---|
| Contaminated materials or areas | <ul style="list-style-type: none"> ◆ Develop procedure to identify, manage and remove any identified contaminated land as part of construction areas | <ul style="list-style-type: none"> ◆ Any contaminated soils or ground managed in line with national and international requirements. ◆ Minimisation of pollution to ground and surface water resources |

7. Traffic Management Plan

4. The TMP shall ensure the following:

- ◆ Providing a safe environment for all road users;
- ◆ Providing protection to the general public from traffic hazards that may arise as a result of the construction vehicles movement;
- ◆ Minimizing disruption, congestion and delays to all road users;
- ◆ Ensuring access to adjacent private/commercial premises maintained at all times.
- ◆ Ensure whenever possible, that a sufficient number of traffic lanes to accommodate vehicle traffic volumes are provided.
- ◆ Ensure that delays and traffic congestion are kept to a minimum and within acceptable levels.
- ◆ Ensure that appropriate/sufficient warning and information signs are installed and that adequate guidance is provided to delineate the travel paths through the event site.
- ◆ Ensure that the roads are free of hazards

Contents to be covered in traffic management plan by the Contractor include the following:

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|--|---|---|
| Reduced road safety and impacts upon communities | <ul style="list-style-type: none"> ◆ Undertake a road safety awareness programme along the main site access routes in coordination with PIU ◆ Provide information regarding construction activities and activities to stakeholders ◆ Plan and coordinate transport timings to minimise bottlenecks | <ul style="list-style-type: none"> ◆ Implementation of road safety awareness program along main site routes ◆ Provision of construction information to communities / stakeholders regarding construction activities. ◆ Quarterly stakeholder consultation meetings |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------|--|---|
| | <p>and avoid peak high-risk periods (e.g. school runs).</p> | |
| Reduced road safety | <ul style="list-style-type: none"> ◆ Train drivers fully in road safety and appropriately licensed certified and medically fit to operate the class of vehicle and for the vehicle's operation on and off site. ◆ Implement a no tolerance policy to alcohol and drugs including testing of drivers. ◆ Prohibit hand-held cell phones and radios while driving | <ul style="list-style-type: none"> ◆ Inspect contractor's licences ◆ Inspect transportation contractors for knowledge and compliance with the traffic management plan |
| | <ul style="list-style-type: none"> ◆ Ensure all vehicles are road worthy, drivers made aware of the potential risks as part of training. ◆ Include fatigue management as part of training ◆ Review likelihood of local workers using motorcycles as means of transportation to and from work or during off hours and decide whether such use is permitted and conditions for doing so, in particular use of helmets and possibly other protective gear. | <ul style="list-style-type: none"> ◆ Vehicle inspections undertaken monthly |
| | <ul style="list-style-type: none"> ◆ Undertake routine vehicle inspections and monitoring on an on-going basis ◆ Use hazard identification and risk assessment for vehicles on a regular basis ◆ Prohibit vehicles will be prohibited from being overloaded ◆ Utilize low emissions vehicles for the transportation of materials (wherever practicable) | |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------|--|---|
| | <ul style="list-style-type: none"> ◆ Install seat belts and require they are worn by all occupants | |
| | <ul style="list-style-type: none"> ◆ Use licensed contractors for waste and fuel transportation ◆ Undertake due diligence of subcontractors (e.g. those bringing equipment to site), and adequately brief them on the traffic management plan. ◆ Include clauses related to traffic management plan implementation and use of qualified drivers in contracts. | <ul style="list-style-type: none"> ◆ Inspect contractor's licences ◆ Inspect transportation contractors for knowledge and compliance with the traffic management plan |
| | <ul style="list-style-type: none"> ◆ Require adherence to all national and specific area speed limits ◆ Impose and monitor speed restrictions for project traffic ◆ Organize delivery schedules are reasonable and achievable to prevent speeding by drivers | <ul style="list-style-type: none"> ◆ Monitor vehicle speeding and driver's schedules |
| | <ul style="list-style-type: none"> ◆ Designate crossing points along the access roads based on consultation with local communities | <p>Designated crossing points implemented.</p> |
| | <ul style="list-style-type: none"> ◆ Erect road signs to i. clearly indicate the route of construction traffic and speed limits, ii. identify where the road is single carriageway about the dangers of overtaking and iii. be in accordance with local laws and rules | <ul style="list-style-type: none"> ◆ Erect traffic and road safety signs along project routes in-line with local laws ◆ Flag staff at intersections. ◆ Illuminated / flashing signs at crossing points |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------|---|---|
| | <ul style="list-style-type: none"> ◆ Appoint and locate flag staff at intersections in the case of intensive traffic ◆ Where the access roads join the main road, erect illuminated and flashing signs to warn road users of the crossing points ◆ Restrict night-time use of road for large vehicles | |
| | <ul style="list-style-type: none"> ◆ Put in place an action plan in case of an accident ◆ Communicate the action plan to all drivers ◆ Report and investigate all accidents and incidents/ | <ul style="list-style-type: none"> ◆ Action plan in place and training provided. ◆ Any incidents/accidents responded to rapidly and in line with GIIP including investigations undertaken and measures to prevent reoccurrence identified and implemented within short timeframes |
| | <ul style="list-style-type: none"> ◆ Implement no-driving policy at night except for exceptional circumstances ◆ Prohibit traffic movements during extreme weather conditions such as heavy rainfall, to avoid potential road accidents associated with driver's visibility and road hazards ◆ Require all loads to be secured ◆ If road crossing is required, schedule movements to ensure that vehicles arrive and leave at the same time (two-way movement) ◆ Fit vehicles with warning alarms for reversing ◆ Maintain site vehicles in accordance with the manufacturer's instruction, with catalytic convertors installed and | <ul style="list-style-type: none"> ◆ No road traffic incidents at night ◆ No road traffic incidents in extreme weather ◆ No complaints about vehicle emissions |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------|--|-----|
| | <p>maintained. Older construction vehicles to be replaced with more fuel-efficient ones.</p> <ul style="list-style-type: none"> ◆ Enforce a 'no-idling' policy ◆ Do not allow parking outside of site areas (e.g. along local roads) | |

8. Spill Prevention and Response Plan

Contents to be covered in Spill Prevention and Response Plan by the Contractor include the following:

| Topic to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------------------|---|---------------------|
| Spill prevention and response plan | <ul style="list-style-type: none"> ◆ Develop a spill prevention and response plan to follow GIIP and include: ◆ Procedures for immediate spill response actions specified for all relevant scenarios relating to hazardous materials used in the construction processes. ◆ Complete list of equipment available for use in emergency situations. ◆ Procedures for immediate information to authorities in case of discharges and standards for reporting irregular events. ◆ Programme for training of key staff in emergency responses. The training is to be based on various emergency scenarios. | No pollution events |

9. Pollution Prevention Plan

Contents to be covered in Pollution Prevention Plan by the Contractor include the following:

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------|---|--|
| Dust | Use covers and/or control equipment such as water suppressors | <p>No excessive dust levels reported in visual inspections</p> <p>No dust related grievances</p> |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|--|---|--|
| Dust resuspension on unpaved roads | Implement dust suppression techniques on unpaved roads, such as applying water or non-toxic chemicals to minimise dust from vehicle movements Compact and periodically grade and maintain all construction roads Enforce a speed limit for heavy goods vehicles (HGVs) on-site at 20km per hour | No excessive dust levels reported in visual inspections. No dust related grievances No reports of speeding |
| Dust from open area sources, including storage piles | Use control measures such as installing enclosures and covers, and increasing moisture content Use vegetation on exposed surfaces of stockpiled materials | All stockpiles are enclosed or covered. No non-compliance recorded in visual inspections |
| Emissions from burning materials | Prohibit bonfires and burning of waste materials | No burning of waste materials |
| Emissions from generators | Consider the location and height of exhaust pipes to ensure proper dispersion of pollutants Use generators of a modern design and keep them well maintained | Generators of modern design and in good working order |
| Dust emissions from cement batching plant | Contain and arrest the dusty processes Suppress dust using water or proprietary suppressants that are fitted with a low-level water supply alarm. Protect external sources, such as stockpiles and external conveyors, from wind whipping by dampening or covering during the delivery, storage, and handling of crushed rock/sand/coarse aggregate | All stockpiles are enclosed or covered. No dust related grievances. |
| Emissions from construction vehicles | Implement the manufacturer recommended engine maintenance programs regardless of the size or type of vehicle Instruct drivers on the benefits of driving practices that reduce both the risk of accidents and fuel consumption, including measured acceleration and driving within safe speed limits Enforce a 'no-idling' policy | Maintain records of the engine maintenance programmes for all vehicles Records of driver training maintained No idling vehicles noted during site inspections Newer more fuel-efficient vehicles recommended onsite |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|--|---|---|
| | <p>Replace old construction vehicles with newer more fuel-efficient alternatives where possible</p> <p>Convert high use vehicles to cleaner fuels where possible</p> <p>Install and maintain emission control devices such as catalytic converters</p> | |
| <p>Noise and vibration due to construction traffic on existing roads</p> | <p>Manage project vehicles to not wait or queue up with engines running at the entrance to the site access or on the public roads</p> <p>Maintain vehicles</p> <p>Restrict deliveries to be within working hours of the site minimising significant movements during sensitive times</p> <p>Use adjustable or directional audible vehicle-reversing alarms or use alternative warning systems, e.g. white noise alarms (including arrangements to minimise the need to perform reversing manoeuvres)</p> <p>Avoid unnecessary revving of engines, reducing speed of vehicle movement and maintaining the condition of the road surface to avoid body slap from empty lorries, designing and maintaining access routes to minimise vehicle noise.</p> <p>Explain and train drivers to minimise vehicular noise impacts</p> | <p>Construction traffic use identified routes</p> <p>No community grievances raised with respect to construction traffic-related noise</p> |
| <p>Noise complaints</p> | <p>Investigate noise and vibration complaints raised using the project grievance mechanism</p> | <p>Complaints are satisfactorily resolved in line with timeframes given in the grievance mechanism</p> <p>No further complaints regarding previous resolved issues are received</p> |

| Impact to be addressed | Management / mitigation/ enhancement to be included in plan | KPI |
|------------------------------------|---|---|
| Noise from construction activities | Restrict access of the general public to the site access road and transmission line construction zone | No incidents of members of the public accessing the restricted zone |
| Noise from construction works | Use site terrain, material stockpiles and suitable work locations to screen work locations and maximise the distance between work activities and nearest noise sensitive receptors. | Noise levels to not exceed threshold values |
| Noise from construction activities | Where feasible, prioritise noisy activities to be undertaken in the daytime (i.e. avoid night working) | Night-time noise levels do not exceed threshold values |

10. Material Transportation Plan

Aspects to be covered under this plan includes the following:

Inbound transportation logistics: Inbound transportation is highly sensitive to a reciprocal relationship between cost and time. Products and machinery have to be available exactly when needed. Delayed deliveries can stop production while early arrivals can make material and equipment management stressful.

Outbound transportation logistics: No matter how detailed the logistics plan is, there will always be some excess material that needs returning. Rented construction equipment also has to go back to the dealer promptly to avoid unnecessary costs. Part of outbound transportation logistics also includes waste disposal.

Construction material logistics: Different construction materials arrive at different milestones throughout the project, requiring skilled coordination to ensure a smooth workflow. Good material logistics also account for the true costs involved in transporting materials, such as truck rental fees, operating costs and fuel expenses. Included in material logistics is also the cost associated with loading and offloading.

Construction equipment logistics: Having a construction material logistics plan starts with knowing what machinery and attachments are required for specific tasks. Equipment logistic plans also identify timeframes when vital tools have to be sourced, transported, used and returned.

Site management logistics: Construction manager has to prepare sites to accept deliveries as they arrive and have the resources present to efficiently deal with removing items from trucks, securely storing them and having them available precisely when needed. Any break in logistical chain links could result in lost time. Good site management plans account for every logistical step required for smooth trucking to and from construction sites.

Communication logistics: Clear and concise communications are the key to successfully executing construction material and equipment logistic plans. Everyone involved in the supply chain needs to know what their role is and when they're required to fulfill it.

Regulation logistics: Good logistic plans account for regulatory compliance both on and off the road. Safety should be the number one concern for all construction managers who develop logistic plans. Failing to safely transport construction materials can have devastating consequences. However, tragic accidents can be prevented by knowing all transportation regulations and building strict compliance into a logistics plan.

Annexure 7-3: Environmental & Social Field Monitoring Report Template

Environmental & Social Field Monitoring Report

Note: This template will be updated by the contractor as per site specific mitigation measures/impacts that will have to be monitored. The checklist will be reviewed and approved by the ESC.

Project Name

Reporting Period: Week / Month

Prepared by: Contractor Name

Abbreviations

Notes

Table of Content

- A. INTRODUCTION
- B. OVERALL CONSTRUCTION AND ESMP IMPLEMENTATION STATUS
- C. IMPLEMENTATION STATUS OF ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES
- D. IMPLEMENTATION OF E&S MONITORING PLAN
- E. IMPLEMENTATION OF GRIEVANCE REDRESS MECHANISM
- F. CORRECTIVE ACTION PLAN
- G. CONCLUSION

Annex I: Environmental & Social Monitoring Checklist Format

Annexure II: Construction Progress Photographs

Annexure III: E&S Non-Compliance and Compliance Photographs

Annexure IV: GRM Status and Details

A. INTRODUCTION

To be filled.

B. OVERALL CONSTRUCTION AND ESMP IMPLEMENTATION STATUS

To be filled.

Table 1: Progress Status

| S.N. | Project Site Name / Section | Construction Progress Status | Environmental and Social Safeguard Status |
|------|-----------------------------|------------------------------|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |

C. IMPLEMENTATION STATUS OF ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES

1. Has ESMP been incorporated into the bidding and contract documents? Provide details here.
2. Have E&S Monitoring Checklists been filled during this reporting period? Provide details here. Sample E&S monitoring checklist is attached in **Annexure I** (Contractor will have to extend / revise the checklist keeping in view the project/site requirements and attach the filled checklists as Annexure I). Attach Construction Progress Photographs as **Annexure II** and E&S Non-Compliance and Compliance Photographs as **Annexure III**.

1. Summary of the environmental compliances are presented below.

I. Air, Noise and Water pollution

1. Have mitigation measures for air, noise and water pollution been adopted according to ESMP? Provide details here.

II. Stockpiling of Construction Materials

1. Have the materials such as aggregates, sand, cement, steel etc. stockpiled near to the work sites and kept safely at designated places with proper coverage to avoid surface runoffs? Provide details here.

III. Excavated Material Management

1. Excavation of the ground will be required for trenching / laying of pipes and related civil works which will result in generation of excavated material. Have mitigation measures for excavated material management been adopted according to ESMP? Provide details here.

IV. Occupational / Community Health and Safety

1. Provide details on the implementation of occupational & community health and safety measures which have been followed on the construction sites.
2. Have the workers been adequately provided with safety gears like jackets, helmet, goggle, facemasks, boots, ear plugs etc.?
3. Are workers utilizing those PPEs?
4. Have the excavated areas been barricaded to ensure public safety?
5. Status of construction traffic speed?
6. Are work hours being regulated?

V. Employment Opportunity

1. Have the local communities been employed at construction sites for working as unskilled / skilled labor in line with ESMP requirements? Provide details here.

VI. Camp Site Management

1. Status of Camp Management Plan and ESMP Camp / Labor Management Measures implementation.

VII. Training and Awareness Program

1. Include here the project specific training plan and provide status on implementation of ESMP trainings requirements.

VIII. Public Consultation

1. Provide status of Stakeholders Engagement Status against the ESMP Stakeholders Engagement requirements.

D. IMPLEMENTATION OF E&S MONITORING PLAN

1. Provide here the status of implementation for ESMP's E&S Monitoring Plan and attach the Monitoring Results / Reports / Actions Taken or Planned for controlling any parameters not meeting the WBG / SEPA standards.

E. IMPLEMENTATION OF GRIEVANCE REDRESS MECHANISM

1. Grievance Redress Mechanism (GRM) has been established to receive and facilitate the resolution of affected people's concerns, complaints, and grievances on various environmental / social management and other construction related issues. The GRM is willing to be proactive and accessible to all donors to address their concerns grievances and issues effectively and swiftly, in accordance with WB Guidelines. Provide here the status on receipt and resolution of complaints under GRM. Also attach as **Annexure – II**, the GRM Meeting Attendance Sheets / Minutes / List of Register Complaints / Details of Decided Actions for their Resolution.

F. CORRECTIVE ACTION PLAN

1. Provide here a detailed corrective action plan (CAP) finalized in consultation and agreement to the PIU / CSC with details of Active E&S Issues, Corrective Actions for the resolution of these issues, Responsible entity for the resolution of the issues and Deadlines for resolution.

G. CONCLUSION

1. Provide here a brief conclusion and way forwards for the next reporting period.

Annex I: Environmental & Social Monitoring Checklist Format

Dhabeji Rising Main No. 05 Rehabilitation Project

Environmental & Social Monitoring Checklist

Date:

| SN | Activity | Details | Remarks |
|-----------|---|---------|---------|
| 1. | Employment generation | | |
| a. | Number of local labour employed during construction | | |
| b. | Number of construction workers hired from outside | | |
| c. | Number of child workers involved (if any) | | |
| d. | Number of women employed during construction phase | | |
| 2. | Training and awareness program | | |
| a. | Participants on awareness program on electrocution, health and safety | | |
| b. | Participants on awareness program on environment management | | |
| c. | Participants on income generating training (if any) | | |

| SN | Activity | Details | Remarks |
|-----------|---|---------|---------|
| 3. | Occupational health and safety measures | | |
| a. | First aid facility and emergency services provided at work sites | | |
| b. | Protective gears provided to workers and using helmet, facemasks, gloves, muffle, boots, jacket, goggles etc. | | |
| c. | Sexual Exploitation, GBV / SH / HIV/AIDS awareness provided to workers | | |
| d. | Number and types of accident occurred | | |
| e. | Accidental insurance for worker | | |
| f. | Information, sign, signboard used at construction sites | | |
| 4. | Camp site management | | |
| a. | Clean drinking water supply at camp site | | |
| b. | Temporary pit latrine at campsite | | |
| c. | Kitchen waste management at camp site | | |
| d. | First aid facilities available at camp sites | | |
| e. | Types of fuel used for cooking (kerosene/LPG gas/firewood) | | |
| 5. | Vegetation Removal and Compensatory Plantation | | |

| SN | Activity | Details | Remarks |
|------------|--|---------|---------|
| a. | Number of trees cut | | |
| b. | Compensatory plantation land allocation status | | |
| c. | Compensatory plantation status | | |
| 6. | Spoil management | | |
| a. | Quantities of excavated materials generated | | |
| b. | Reuse status of excavated materials | | |
| 7. | Air, water and noise quality | | |
| a. | Dust generation from construction sites | | |
| b. | Noise generation from construction sites | | |
| c. | Drinking water quality at campsite | | |
| 8. | Safe disposal of construction waste | | |
| 9. | Grievance received in last month | | |
| 10. | Establishment of safeguard unit | | |

Annexure II: Construction Progress Photographs

Annexure III: E&S Non-Compliance and Compliance Photographs

Annexure IV: GRM Status and Details

Annexure 9-1: Attendance Sheets of Socio-Economic Baseline Participants

Female Participants

| Participants List - Yaqoobabad - Dhabeji | | |
|--|-----------------|----------------------|
| S. No. | Name | Settlement |
| 1. | Shaheen | Yaqoobabad - Dhabeji |
| 2. | Rubina Shabbir | |
| 3. | Aneela Irfan | |
| 4. | Haseena Shakeel | |
| 5. | Saeedha | |
| 6. | Saima Irfan | |
| 7. | Nazia Waheed | |
| 8. | Asia Batool | |
| 9. | Maafia Batool | |
| 10. | Sehrish | |

| Participants List - KWSB Colony - Dhabeji | | |
|---|-----------------|----------------------------|
| S. No. | Name | Settlement |
| 1. | Haleema | KWSB Colony School Dhabeji |
| 2. | Shahida Perveen | |
| 3. | Mahjabeen | |
| 4. | Yasmeen | |
| 5. | Rubina naz | |
| 6. | Shameem | |
| 7. | Naila | |
| 8. | Shameem Akhtar | |
| 9. | Qamar Jahan | |
| 10. | Maryam Fazal | |
| 11. | Euram Amir | |
| 12. | Fahmida Mohsin | |
| 13. | Shahida Parveen | |

Male Participants

| Participants List - Yaqoobabad - Dhabeji | | |
|--|----------------|----------------------|
| S. No. | Name | Settlement |
| 1. | Ali Akber | Yaqoobabad - Dhabeji |
| 2. | Malik Ghulam | |
| 3. | Abdul Samad | |
| 4. | Asif Ali | |
| 5. | Sadam | |
| 6. | Rayaz | |
| 7. | Dawood | |
| 8. | Sheriyar | |
| 9. | Saddat Hussain | |

| Participants List – KWSB Colony Dhabeji | | |
|---|----------------------|-----------------------|
| S. No. | Name | Settlement |
| 1. | Ibrahim | KWSB Colony - Dhabeji |
| 2. | Mehmood Khan | |
| 3. | Rustam Khan | |
| 4. | Shabir Ahmed | |
| 5. | Syed Paryal Ali Shah | |
| 6. | Abdul Sattar | |
| 7. | Mudsir Bhatti | |
| 8. | Raja Obed Rehman | |
| 9. | Ramesh | |
| 10. | Maqsood Bhatti | |
| 11. | Mashooq Ali | |

Annexure 9-2: Social Baseline Photographs



Yaqoobabad



Yaqoobabad

Institutional Consultations



Consultation at Dhabeji



Women development Department

Annexure 9-3: Stakeholder Consultation list of the Participants



**Stakeholder Consultation Workshop – Environmental & Social Assessment Studies
SOP 02 Projects for Karachi Water & Sewerage Services Improvement Project (KWSSIP)**

28th July 2022

| S. No. | Name | Designation / Department | Signature |
|--------|-----------------------|------------------------------------|-----------|
| 1. | Muhammad Tariq | ASE | |
| 2. | Talib Zafar | KWSSIP | |
| 3. | Sibtain Noorhadi | Joint Director Urban | |
| 4. | Dr. Abdul Ghaffar | Env. Engg. Dept - NED University | |
| 5. | Mr. Shoaib Qureshi | Act. Director SEPA | |
| 6. | Ali Larosh | Sr. Project officer WWF - Pakistan | |
| 7. | Farooq/Bhutto | K Electric | |
| 8. | Yasir Muhammad Tazfar | Dept. 110 | |
| 9. | Aamir Haleem | Safeguard Specialist | |
| 10. | Zahid Farooq | Joint Director WRC | |

107:PD1.01 (Stakeholder Consultation Workshop – Attendance List)





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| S. No. | Name | Designation / Department | Signature |
|--------|---------------------------|------------------------------------|-----------|
| 11. | UZAIR HAMEED KHAN | MANAGER LOW OPS PTCL | |
| 12. | MUHTASHEEN AHMED SVP | COORDINATOR PROTOCOL NRL | |
| 13. | CDR Rehman Saif | Sr. Mgr Admin/strat | |
| 14. | KHALED M. SADDIQI | Member (Services) PED Board GOS | |
| 15. | STEED ALI NAUMAN | CHIEF ENGINEER, K.D.A. | |
| 16. | Kamran Akbar | Sr. Social Div SP | |
| 17. | SARFARAZ | KWSSIP | |
| 18. | Maghar Ali Shaikh | Director Karachi Abadi KWSSIP | |
| 19. | Ibadur Rehman | WB | |
| 20. | Engr: M. Usman Mansoor | S.E.T.C (BWSB). PK: Steel. | |



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| S. No. | Name | Designation / Department | Signature |
|--------|-----------------------|----------------------------------|-----------|
| 21. | KAMRAN Umar | EE / KDA | |
| 22. | Khuram Shous | SDS / KWSSIP | |
| 23. | Syed Waqar Hussain | ES / KWSSIP | |
| 24. | ARSLAN ASYHAR | PRINCIPAL ENVIRONMENTALIST - PK | |
| 25. | AJeeb Ahmed Maggi | SA. Int. Engineer in C | |
| 26. | Muhammad Sagib Siddiq | Sr. Social & Resettlement Spaci. | |
| 27. | Muhammad Nayman | Junior Engineer WAPDA K-4 | |
| 28. | Muhammad Yaqoob | Manager (LAND) PSM | |
| 29. | Moghar Abbas | Assist. Manager (PSM) | |
| 30. | Intekhab A Rajput | Chief Engineer (ESM) KWSSIP | |



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| S. No. | Name | Designation / Department | Signature |
|--------|------------------|---|-----------|
| 31. | Tuba Noman | GIS Specialist | |
| 32. | Muhammad Sijal | Resistant Expert NESPAK | |
| 33. | M.A. Shishanul | MMP | |
| 34. | M. Shauqy Ahmed | Nespak Lhr (PM-CA) | |
| 35. | Fahad Saleem | Nespak (Env. spec.) | |
| 36. | OMAR ARIF | EMC Pakistan | |
| 37. | Talal Ahmed | MMP | |
| 38. | Rameez ul Islam | MMP | |
| 39. | SUL MIR KHAN | Chief Eng (T&E) CIV ¹²⁰¹ ₃₀ | |
| 40. | Hajeeb-ur-Rehman | Manager PTL N/WDP | |





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| S. No. | Name | Designation / Department | Signature |
|--------|-----------------------|--|--------------------|
| 41. | Dr. Amir Alamgir | Assistant Professor / Institute of Environmental Studies UoA | <i>[Signature]</i> |
| 42. | Ghulam Kibri | Energy update | <i>[Signature]</i> |
| 43. | Wg. Cdr DARYA KHAN | OC Admin / PAF SWEEP, Korangi | <i>[Signature]</i> |
| 44. | Muhammad Nawaz | Social Safeguard Specialist | <i>[Signature]</i> |
| 45. | Zulfiqar Laghari | Sr. Social Development Specialist | <i>[Signature]</i> |
| 46. | Muhammad Zafer Jaffer | Resettlement MMP Specialist | <i>[Signature]</i> |
| 47. | Muhammad Rahn Jaffer | M.M.P. | <i>[Signature]</i> |
| 48. | A. Rehman | UWSB | <i>[Signature]</i> |
| 49. | Nasreen Baloch | Assistant Director Social welfare | <i>[Signature]</i> |
| 50. | Jawed Shami | Team leader, LAMP | <i>[Signature]</i> |



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| S. No. | Name | Designation / Department | Signature |
|--------|------------------|--|-----------|
| 51. | Masood og Rehman | Sr. Environmentalist - I | |
| 52. | Nadson Alchatar | Pakistan Refinery Sr Manager Constructi | |
| 53. | Khuram Shehzad | CE-Civil PIO | |
| 54. | Aamir Wagar | SE (Civil) PIO. | |
| 55. | Syed Babar Ali | Social specialist click consultant | |
| 56. | Rehan Zahir | Survey Officer | |
| 57. | Syed Wajid | Sub Eng. | |
| 58. | Hanada Kaleen | Order specialist | |
| 59. | Jamshed Zaidi | CMES | |
| 60. | Mussawir Qureshi | PIO SWEEP | |



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| S. No. | Name | Designation / Department | Signature |
|--------|--------------------|---|-----------|
| 61. | Hania Hamdani | Design Engineer | |
| 62. | Imad Moksin | Civil Engineer | |
| 63. | Sinela | SCPA | |
| 64. | Faran Yamin Khan | Consultant WBCG | |
| 65. | Muhammad Yousaf | Consultant | |
| 66. | Azizullah Chaudhry | Assistant Professor Env. Eng. M.C.I.T., S- | |
| 67. | Salman Manji | consultant | |
| 68. | Syed Haseeb R. | Acting Manager | |
| 69. | Ziad Chandio | Sn. Engr (G-03) | |
| 70. | Jawad Ahmed | C.P.O | |

Annexure 9-4: Pictorial views of Stakeholder Consultation Workshop



The Welcome address given by Syed Salahuddin (Project Director)



Khurram Shams Khan and Syed Waqar Hussain Shah present the objectives of the workshop to the audience



Participants in Stakeholder Consultation meeting



Question from the stakeholder



Group photo after the successful completion of stakeholder meeting