Supplementary Environmental & Social Impact Assessment (ESIA) for Almaty Railroad Bypass Project, Kazakhstan

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Construction Environmental Social Management System (ESMS) Manual

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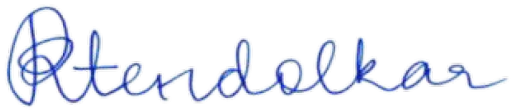

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ACRONYMS AND ABBREVIATIONS

Acronyms	Description
AIDS	Acquired Immunodeficiency Syndrome
AIIB	Asian Infrastructure Investment Bank
AMP	Aggregate Management Plan
AoI	Area of Influence
AZhK JSC	Alatau Zharyk Kompaniyasy
CAP	Corrective Action Plan
CFP	Chance Finds Procedure
CLO	Community Liaison Officer
CO	Carbon monoxide
DG	Diesel Generator
EBRD	European Bank for Reconstruction and Development
E&S	Environmental and Social
EHS	Environmental, Health & Safety
EHS&S	Environmental, Health & Safety, and Social
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Engineering, Procurement, and Construction
ERM	Environmental Resources Management
ERT	Emergency Response Team
ESAP	Environmental and Social Action Plan
ESIA	Environmental and Social Impact Assessment
ESMS	Environmental and Social Management System
GBV	Gender-based Violence
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
H&S	Health and Safety
HIV	Human Immunodeficiency Virus
IAS	Invasive Alien Species
ICSC	International Chemical Safety Card
IFC	International Finance Corporation
Integra	Integra Construction KZ LLP
Intergas Central Asia	Joint Stock Company Intergas Central Asia
IR	Inferred Light
ISIS	Integrates System for Industrial Safety

Acronyms	Description
JSA	Job Safety Analysis
JSC	Joint Stock Company
KEGOC	Kazakhstan Electricity Grid Operating Company
km	kilometres
kmph	Kilometres per hour
KTZ	Kazakhstan Temir Zholy Joint Stock Company
kV	Kilo-Volts
m	metre
m^2	metre square
m^3	metre cube
MCP	Management of Change Process
MMR	Monthly Monitoring Report
MSDS	Material Safety Data Sheet
NC	National Company
NGO	Non-governmental Organisation
NO	Nitrogen monoxide
NO_2	Nitrogen dioxide
NOC	No Objection Certificate
OHS	Occupational Health and Safety
PDCA	Plan-Do-Check-Act
PE	Project Enterprise
PM	Particulate Matter
Poligram	Poligram LLP
PPE	Personal Protective Equipment
PS	Performance Standard
PTW	Permit to Work
Q	Quarter
RoK	Republic of Kazakhstan
RoW	Right of Way
SIA	Social Impact Assessment
STDs	Sexually Transmitted Diseases
USFTA	United States Federal Transit Administration
UXO	Unexploded ordnance

1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE

This Construction Environmental and Social Management System (CESMS) has been developed to ensure effective management of environmental and social (E&S) risks during the construction phase associated with the Almaty Railroad Bypass Project. The CESMS aligns with national regulations and international best practices, providing a structured framework for identifying, assessing, and mitigating E&S impacts throughout the project lifecycle is further supported by the subsidiary annexes, which provides the detailed procedural guidance, reinforcing its implementation and ensuring comprehensive risk mitigation.

The National Company Kazakhstan Temir Zholy Joint Stock Company (KTZ, also referred to as the Project Enterprise or PE) is a wholly state-owned, vertically integrated group operating through 13 subsidiaries, 11 of which are fully owned. It is owned via Samruk-Kazyna JSC, Kazakhstan's Sovereign Wealth Fund. KTZ manages the entire state railway network, inherited from the Soviet era, which spans a total operational length of 16,000 km. It is also the country's largest owner of locomotives, freight wagons, and passenger carriages. KTZ is currently constructing the Almaty Railroad Bypass, a line connecting Zhetygen to Kazybek Bek, designed to alleviate congestion at the Almaty railway junction (hereby referred as the Project).

The Project is seeking financing from the International Finance Corporation (IFC) and the Asian Infrastructure Investment Bank (AIIB), and hence will comply with the Environmental and Social Standards as prescribed by IFC (**Section 3**).

This Construction Environmental and Social Management System (CESMS) Manual outlines KTZ's environmental, health & safety and social plans and procedures specific to the construction of the Project.

Additionally, this ESMS integrates findings from relevant MIGA (Multilateral Investment Guarantee Agency) assessments conducted as part of the KTZ Railway Project. The Environmental and Social Action Plan (ESAP), developed to ensure compliance with MIGA Performance Standards (PS), has been reviewed and incorporated into this ESMS where applicable. Key elements of the ESAP are reflected in the following sections of the ESMS:

- Occupational Health and Safety (OHS) Management (**Section 5.3.4**) – Includes requirements for contractor OHS plans, traffic safety measures, and emergency response procedures, in alignment with MIGA PS 1 and PS 2.
- Stakeholder Engagement and Grievance Mechanism (**Section 5.3.1**) – Incorporates elements from the Stakeholder Engagement Plan (SEP) as required under MIGA PS 1.
- Pollution Prevention and Waste Management (**Section 5.3.6**) – Reflects measures for asbestos management, wastewater treatment, and waste handling.
- Community Health and Safety (**Section 5.3.5**) – Addresses measures to ensure public safety and minimise project-related risks to communities, in line with MIGA PS 4.

1.2 OBJECTIVE AND SCOPE OF ESMS

The objective of this CESMS is to document the identification, assessment, and management of potential environmental and social (E&S) risks and impacts associated with the construction phase of the Project. The CESMS is designed to establish measures that prevent, mitigate, and manage adverse effects on both the natural environment and surrounding communities, thereby ensuring compliance with national regulations and the Environmental and Social Standards of IFC.

The scope of the CESMS encompasses all activities related to the construction of the Project. It applies to all individuals and entities engaged in the project, including KTZ employees, contractors, subcontractors, and other relevant stakeholders. The ESMS provides a comprehensive framework to guide contractor management, stakeholder engagement environmental, health, safety, and social performance during the construction phase. Since construction has commenced before the development of this CESMS, it should serve as an addition to the existing E&S safeguard measures. And the annexes ensure consistency and clarity in the execution of CESMS requirements, helping to align project activities with national regulations and international best practices. . Additionally, the CESMS consolidates the mitigation measures outlined in the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP), ensuring consistency in risk management across project phases.

Specifically, the CESMS aims to:

- Ensure Regulatory Compliance: Adhere to all applicable environmental, health, safety, and social laws and regulations in Kazakhstan, as well as the standards required by IFC.
- Mitigate E&S Risks: Identify potential risks and implement measures to avoid, minimise, or mitigate negative impacts.
- Enhance Positive Outcomes: Promote practices that maximize social and environmental benefits for local communities and ecosystems.
- Accountability: Establish clear roles and responsibilities for all parties involved in implementing the CESMS.
- Promote Stakeholder Engagement: Facilitate effective communication with stakeholders to address concerns and integrate feedback into project planning and implementation.
- Monitor and Improve Performance: Provide mechanisms for monitoring, reporting, and continuous improvement of E&S performance.
- The integration of annexes into the CESMS enhances its effectiveness by providing in-depth procedural guidance and structured implementation mechanisms.
- A structured consistency check is conducted to ensure that all mitigation measures outlined in the ESIA and ESMP are fully incorporated into the CESMS framework by tracking key performance indicators, and support continuous improvement

1.3 ASSET-SPECIFIC RELEVANCE

This ESMS applies to the construction of the entire Project, spanning four districts—Karasay, Zhambyl, Iliy, and Talgar—covering 130 km of railway track. The scope includes related

infrastructure such as railway stations, borrow areas, quarries, bridges, substations, and transmission lines.

KTZ's corporate-level policies and procedures will continue to operate alongside this ESMS, including:

- Environmental Management System Policies.
- Occupational Safety and Environmental Risk Management Procedures.
- Waste Management Rules.
- Collective Agreement (2024–2026).
- Anti-Harassment and Non-Discrimination Policy.
- Human Rights Policy.
- Health and Safety Management Guidelines.
- Contractor Safety Management Procedures.

1.4 IMPLEMENTATION RESPONSIBILITIES

The CESMS is a "live" document e.g., Environmental, Health & Safety (EHS) and Social policies and management programs identified in this document will continue to be developed and updated further in response to changes in any activities, regulatory and other requirements, local conditions and the outcomes of ongoing stakeholder engagement. This CESMS will be implemented throughout the construction phase. The Directorate for the Implementation of Large Projects with the support of the HSE Officer and Project Engineer, will be responsible for CESMS implementation. KTZ will also coordinate the implementation through the contractors engaged for all activities and suppliers as relevant to their scope. This document will be reviewed every six (6) months by KTZ Manager of the Branch of NC KTZ JSC – Directorate for the Implementation of Large Projects to ensure it remains fit-for-purpose and continues to align with international good practices.

1.5 LIMITATION OF CIRCULAR

This CESMS Manual is strictly controlled for any form of circulation and amendment. The hard "controlled copies" of either this manual or the working procedures shall be marked as "Controlled Copy". The photocopies or the like of any of these controlled documents shall be treated as uncontrolled copies and shall not be covered under the documented management systems as defined in this CESMS manual. Only the latest revision number shall be valid for circulation and use. The authorized personnel shall control all amendments, revisions, issues and circulation of this ESMS manual. "Controlled copies" may also be accessible through the intranet or other electronic media. Do note that this section shall be reviewed and updated as necessary if there is a disclosure by IFC/AIIB.

1.6 ESMS REVIEW AND UPDATE

The CESMS is a dynamic system that is reviewed and updated accordingly every 6 months or in the event of changes in the construction of the Project or its external environment (e.g., business or internal requirements, applicable laws and regulations, applicable standards etc.), whichever is earlier.

New and/or improved measures should be implemented to ensure that the construction of the Project continues to meet environmental and social management objectives and relevant policy requirements. Any changes made will be acknowledged and agreed by the signatory of the E&S policies of KTZ.

1.7 COMMUNICATION AND DISCLOSURE

Communications are carried out through correspondence, direct contacts, meetings, publications, electronic channels and mobile applications, telephone communications and other means of communication, both on paper and electronic media.

KTZ has also established vertical and horizontal corporate communications aimed at openly informing employees and sub-contractors on health and safety issues. Vertical exchange of information makes it possible to bring goals and objectives to the attention of employees and sub-contractors and provides opportunities for feedback on the components of this construction ESMS. Horizontal exchange of information is aimed at coordinating the interaction of employees and subcontractors involved in the construction of the Project and subsidiaries of the Company in the field of environmental, social and health and safety.

Internal and external communications are carried out through the following communications: printed publications on paper and electronic media (bulletins and incident reports, news (information) bulletins on industrial safety, safety minutes), training sessions and videos, publications in industry publications and the media (information stands and corners), correspondence, direct and telephone contacts, meetings and meetings for collective discussion of environmental and social incidents/accidents, as well as ways to prevent them, round table with business partners (contractors). KTZ has also developed a HSE mobile application[1] designed to enhance safety and operational efficiency within the workplace.

Availability to Contractors

The HSE Mobile Application is available to all KTZ employees. As per the KTZ website the Contractors and subcontractors should have access to the application.

HSE Mobile Application enhances their workplace safety in the following ways:

1. **Safety Alerts and Notifications** – Critical safety updates and emergency alerts are shared with contractors through designated KTZ safety officers and site managers.
2. **Incident Reporting** – While contractors cannot report incidents directly through the app, they are required to report all safety incidents to KTZ supervisors, who will log them into the application.
3. **Training and Safety Guidelines** – KTZ safety officers use the application's training resources and guidelines to educate contractors on HSE protocols.
4. **Regulatory Compliance** – The application ensures that KTZ employees uphold safety measures, creating a safer work environment for all, including contractors.
5. **Communication and Coordination** – Safety briefings and toolbox talks conducted by KTZ supervisors incorporate key insights from the HSE Mobile Application.

[1] KTZ HSE ISPB - APK Download for Android | Aptoide

Future Access Considerations

To enhance contractor engagement with HSE protocols, KTZ is evaluating potential options for limited contractor access to the application. Possible solutions include:

- A dedicated contractor login with restricted features.
- A separate portal for safety document access.
- Periodic distribution of key safety updates via email or SMS alerts.

For further clarification or updates regarding HSE Mobile Application access, contractors are encouraged to consult with their assigned KTZ EHS representatives.

KTZ is committed to respond to complaints, claims of interested parties, appeals of individuals and legal entities on issues related to the construction of the Project and considers them in accordance with the procedure established by the legislation of the Republic of Kazakhstan. Feedback on health and safety issues can be provided both through the specified channels and through the helplines listed on the Company's website.

2. OVERVIEW

2.1 DESCRIPTION OF THE PROJECT

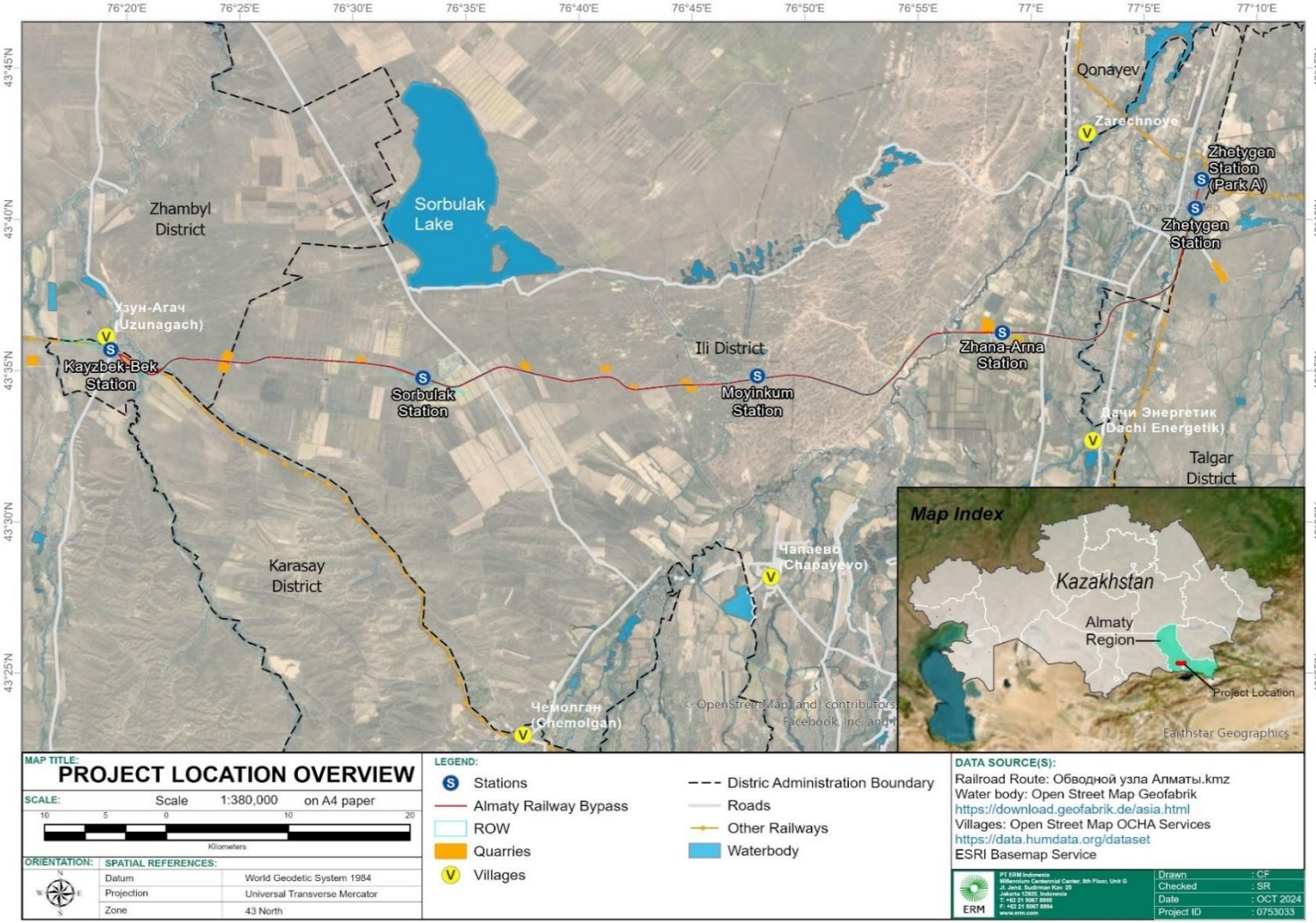
The Almaty Railroad Bypass Project involves the construction of a 130 km rail line connecting Žhetygen to Kazybek Bek to reduce congestion at the Almaty railway junction. This bypass will enhance freight and passenger transport efficiency, contributing to economic growth and reducing logistical bottlenecks. The project spans four districts – Karasay, Zhambyl, Iliy, and Talgar – and encompasses infrastructure such as railway stations, borrow areas, transmission lines and substations.

The bypass is critical for reducing congestion at Almaty's railway hub by diverting traffic away from heavily used lines, improving the overall operational efficiency of Kazakhstan's rail network. The project is expected to reduce transit times for freight and improve logistical integration across the national rail system.

The construction phase of the bypass involves significant land clearing, excavation, and material transport. KTZ has commenced enabling works in November 2023. It is estimated that a total of 918.66 hectares of land is required for the development of the Project, across four districts: Karasay, Zhambyl, Ilyisky, Talgar. KTZ has engaged Integra Construction KZ LLP (Integra) as the EPC Contractor. Sub-contractors will be engaged through the EPC Contractor.

The ground clearance and earthworks have been ongoing from Q2 2024 and are expected to be completed by the end of the year (2024). The installation and commissioning of the railway infrastructure and associated facilities is planned for 2025. The overall construction duration is estimated to be two (2) years. The project map is presented in **Figure 2-1**.

FIGURE 2-1: OVERVIEW OF THE RAIL ALIGNMENT



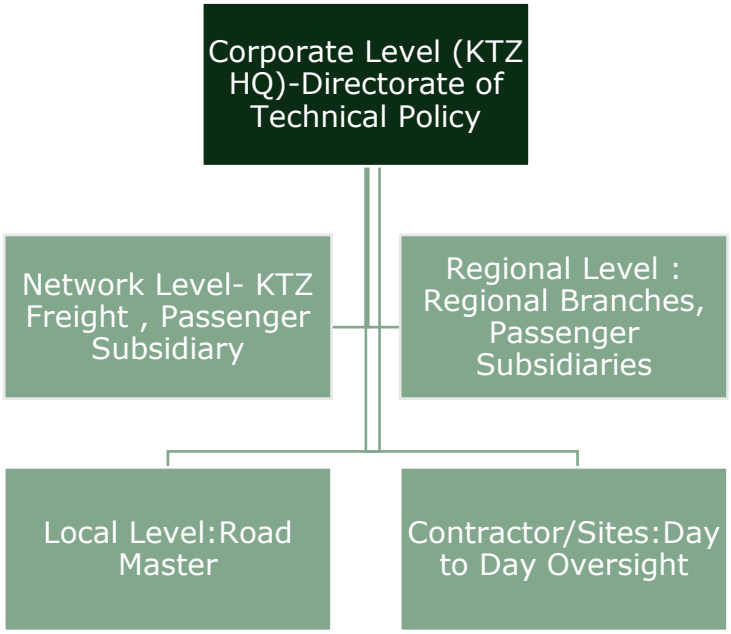
2.2 OVERARCHING E&S GOVERNANCE AT KTZ

KTZ Group has developed an Environmental and Social (E&S) governance framework to manage environmental, health, safety, and social risks across all levels of the organization (**Figure 2-2**). The framework aims to ensure that E&S considerations are integrated into decision-making, operational activities, and contractor oversight throughout different project lifecycles.

At the corporate level, governance is led by the Directorate of Technical Policy at KTZ headquarters in Astana. This department is responsible for developing policies, managing risks, and ensuring compliance with national regulations and international standards, including MIGA Performance Standards. KTZ subsidiaries, such as KTZ-Freight Transportation and KTZ-Passenger Transportation, apply corporate policies to manage risks within their operational scope. Regional branches oversee implementation at the network level, conducting inspections and monitoring performance.

Local-level E&S governance is managed by road masters and site supervisors responsible for day-to-day oversight of railway sections and construction sites. These teams ensure that contractor activities align with established E&S protocols to minimise environmental impacts and promote worker safety.

FIGURE 2-2: KTZ GROUP OVERARCHING E&S GOVERNANCE FRAMEWORK



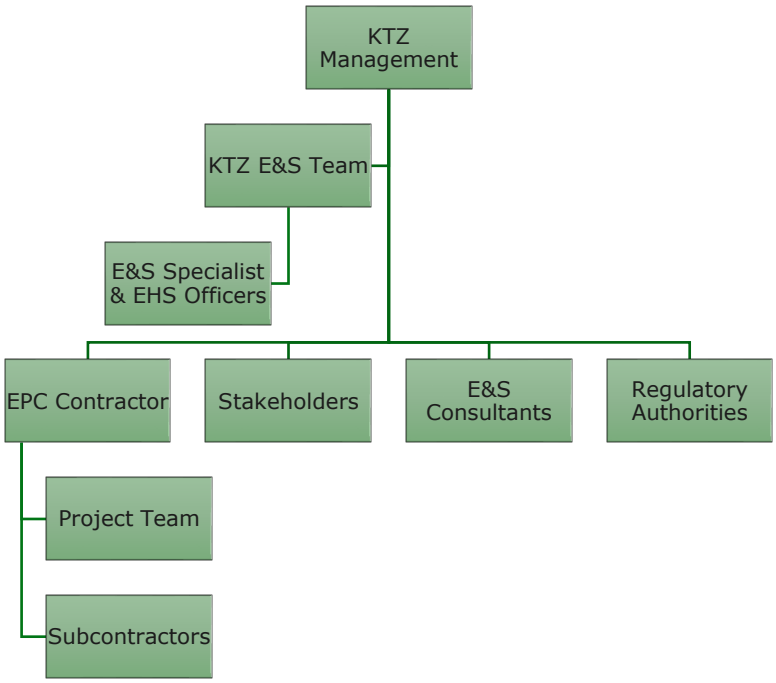
2.2.1 RACI MATRIX FOR SECTION 2.2: OVERARCHING E&S GOVERNANCE AT KTZ

Activity /Task	KTZ E&S Team	KTZ Management	EPC Contractor	Regulatory Authorities	E&S consultants	Stakeholders	All Employees
Development of E&S governance framework	R	A	C		C	I	
Compliance with national & international standards	A	R		A	C		I
Oversight of contractor activities		A	R				
Implementation of risk mitigation measures			R				
Monitoring and reporting of E&S performance	R	A	C				
Stakeholder engagement & grievance handling		A	C			R	

RACI Definitions:

- *R (Responsible): Person(s) who perform the task or activity.*
- *A (Accountable): The decision-maker who takes ownership and ensures completion.*
- *C (Consulted): Person(s) whose input is required before action is taken.*
- *I (Informed): Person(s) who are kept up to date on progress and outcomes.*

2.2.2 ORGANOGRAM FOR CESMS GOVERNANCE STRUCTURE



2.2.3 CORPORATE ENVIRONMENTAL AND SOCIAL (E&S) SAFEGUARDS FRAMEWORK AT KTZ

KTZ's E&S safeguards framework applies consistently across all assets and projects, supporting alignment with Kazakhstan's regulations and international standards, including MIGA Performance Standards. This asset-agnostic approach helps to apply uniform risk management and operational consistency across the organisation.

2.2.3.1 KEY E&S POLICIES AND MANUALS

Occupational Health and Safety (OHS) Policy:

KTZ has developed and is implementing an OHS Policy that focuses on preventing accidents and incidents across all operations. This policy ensures that all activities align with Kazakhstan's legal requirements and international standards, promoting a safe working environment for employees and contractors.

Environmental Policy:

KTZ's Environmental Policy reflects its commitment to minimising environmental impacts and promoting sustainable resource use. The policy emphasises adherence to environmental regulations and international best practices to ensure responsible environmental management across all operational areas.

Corporate Ideology and Philosophy (November 2017):

This document outlines KTZ's guiding principles and values, reinforcing corporate responsibility, ethical conduct, and social engagement. It provides a foundation for strategic planning and operational decision-making, ensuring that E&S considerations are integrated into the corporate governance framework.

Health and Safety Management System Manual (November 2020):

KTZ's Health and Safety Management System Manual provides a structured approach to managing health and safety risks. It defines responsibilities, outlines procedures, and establishes protocols to ensure consistent implementation and continuous improvement of health and safety practices across the organisation.

Risk Management and Monitoring Systems

In addition to these core policies and manuals, KTZ has developed procedures for identifying and managing E&S risks and impacts, in alignment with MIGA Performance Standard 1. These procedures include regular inspections, risk assessments, and the application of corrective actions to address identified risks. KTZ also monitors industrial safety and E&S performance through the Integrated System for Industrial Safety (ISIS). This system tracks compliance with safety standards and records E&S activities, allowing for continuous oversight and timely intervention where necessary.

Performance and Accountability Mechanisms

E&S and OHS indicators are incorporated into employee Key Performance Indicators (KPIs) at all levels, reinforcing accountability and ensuring that environmental and safety objectives are consistently prioritised. The integration of E&S metrics into performance evaluations supports ongoing evaluation of the typical key E&S risks for construction phase and ensuring compliance with regulatory and international standards while promoting a culture of continuous improvement.

2.3 KEY ENVIRONMENTAL AND SOCIAL (E&S) RISKS AND MITIGATION MEASURES DURING CONSTRUCTION

The construction phase of the Almaty Railroad Bypass Project introduces specific environmental and social risks that necessitate proactive mitigation to prevent long-term adverse impacts on the environment, workforce, and surrounding communities. These risks were systematically identified through the Supplementary Environmental and Social Impact Assessment (ESIA) and translated into actionable measures within the Environmental and Social Management Plan (ESMP).

To ensure effective management, this Environmental and Social Management System (ESMS) translates thr Supplementary ESIA outcomes into construction-phase actions by providing a structured framework for mitigation, monitoring, and corrective measures. The CESMS functions as a dynamic tool that operationalizes the ESMP by embedding mitigation measures directly into construction activities. It ensures that contractors, subcontractors, and KTZ personnel follow the procedures outlined to minimise environmental and social impacts. **Section 2.4** below outlines the implementation framework for the ESMS.

Table 2-1 categories the primary environmental, social, occupational health and safety (OHS), labour, and cultural heritage risks identified during the Supplementary ESIA. Each identified risk is aligned with corresponding mitigation measures and procedural components outlined in **Section 5** to ensure structured and effective management throughout the construction phase.

TABLE 2-1: KEY E&S RISKS IDENTIFIED FOR THE CONSTRUCTION OF THE ALMATY RAILROAD BYPASS

Aspect	Key Risks Identified	Mitigation Measures	Link to ESMS Procedures	Responsible Party	Monitoring and Reporting
Air Quality	Dust generated from construction activities.	Implement dust suppression measures, including regular watering of construction sites and covering materials during transport.	Refer to Pollution Prevention Plan – Air Emissions Management	EPC Contractor, monitored by KTZ	Weekly inspections, semi-annual audits, and quarterly reporting.
Noise and Vibration	Noise impact on sensitive receptors; vibration affecting structural integrity.	Limit noisy activities to daytime hours; install noise barriers around sensitive receptors.	Refer to Pollution Prevention Plan - Noise and Vibration Management Plan.	EPC Contractor	Continuous noise monitoring during peak construction phases; grievance mechanism for noise complaints.
Soil and Groundwater	Contamination from hazardous materials and imported fill.	Prevent contamination by using designated storage for hazardous materials and testing imported fill material for contamination	Refer to Pollution Prevention Plan – Water and Wastewater Management	EPC Contractor	Regular soil and groundwater quality monitoring at designated points; bi-annual compliance audits.
Surface Water Quality	Sediment runoff into nearby water bodies; improper stormwater management.	Install silt fences and sediment traps to prevent runoff; ensure proper stormwater drainage.	Refer to Pollution Prevention Plan - Water and Wastewater Management Plan.	EPC Contractor	Weekly visual inspections; monthly water quality sampling upstream and downstream of the construction site.

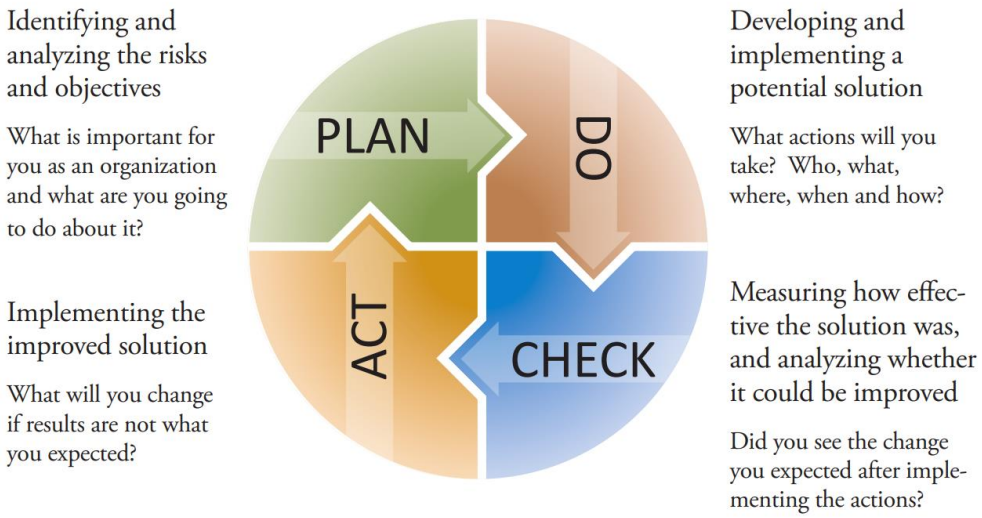
Aspect	Key Risks Identified	Mitigation Measures	Link to ESMS Procedures	Responsible Party	Monitoring and Reporting
Biodiversity	Habitat disruption and species displacement during site clearing; introduction of alien species	Minimise habitat disruption; conduct pre-construction ecological surveys to relocate affected species.	Biodiversity Management Plan.	EPC Contractor, supervised by KTZ	Monthly reporting on biodiversity surveys and species relocation; quarterly monitoring reports on habitat restoration success.
Community Health & Safety	Increased traffic accidents and hazards around construction zones.	Implement Traffic Management Plans, establish secure fencing around hazardous areas, and conduct regular community consultations.	Community Health and Safety Management Plan	KTZ and EPC Contractor	Bi-weekly reports on traffic safety incidents; community feedback documented through the grievance redress mechanism (GRM)
Stakeholder Engagement	Lack of community participation and misinformation about project impacts.	Conduct regular engagement sessions; provide timely disclosure of project impacts and progress to affected communities	Stakeholder Engagement Plan (SEP).	KTZ and EPC Contractor	Quarterly reports summarizing engagement activities; periodic community satisfaction surveys
Grievance Management	Complaints related to construction impacts not being addressed timely.	Ensure a functional grievance mechanism is in place with timely resolution protocols for complaints from workers and communities	Grievance Redress Mechanism (GRM) Procedures.	KTZ and EPC Contractor	Monthly summaries of grievances received and resolved; annual independent reviews to evaluate the effectiveness of the GRM.

Aspect	Key Risks Identified	Mitigation Measures	Link to ESMS Procedures	Responsible Party	Monitoring and Reporting
Monitoring and Reporting	Inadequate tracking of ESMP compliance and lack of transparency in reporting outcomes.	Conduct regular audits and provide transparent updates on ESMP implementation and compliance with applicable standards.	ESMS Monitoring and Reporting Procedures.	EP Contractor KTZ to review	Bi-annual public disclosure of monitoring results; annual performance review of the ESMP with stakeholder feedback incorporated.

2.4 KEY COMPONENTS OF ESMS IMPLEMENTATION

The ESMS is designed to provide a structured framework for managing EHS risks during the construction phase. This section highlights the main elements that promote oversight, engagement, and compliance with national regulations and international best practices during the construction phase of the project to ensure accountability at all levels and that mitigation strategies are applied consistently during construction phase. To ensure effective management in the construction stage, the ESMS adopts the Plan-Do-Check-Act (PDCA) cycle (**Figure 2-3**), focusing on continuous improvement and adaptive risk management. By embedding ongoing risk assessment into the PDCA cycle, the ESMS ensures dynamic and proactive management of risks throughout the construction phase, addressing both anticipated and unforeseen challenges.

FIGURE 2-3: PLAN-DO-CHECK-ACT CYCLE



1. **Plan**

Although initial planning has been completed, ongoing adjustments are necessary to address emerging risks and changing conditions during construction. This includes:

- Utilising tools like Job Hazard Analysis (JHA) to identify hazards in real time.
- Applying the mitigation hierarchy to prioritise avoiding impacts where feasible, followed by minimising, mitigating, or compensating for residual risks.
- Establish and refining clear guidelines to ensure that contractors and subcontractors meet the ESMS requirements throughout the construction phase.

2. **Do**

- Execute the ESMS through active monitoring of contractor activities, stakeholder engagement, and implementation of mitigation measures.
- Ensure compliance with environmental, social, and safety standards through periodic training and effective communication with all involved parties.

- Conduct stakeholder consultations and grievance mechanisms address community concerns and integrate feedback during the consultation phase.

3. Check

- Conduct regular inspections, audits, and performance reviews to evaluate the effectiveness of risk management and mitigation measures. Reporting to KTZ Project Manager will enable ongoing assessment and support timely responses to any deviations from ESMP guidelines.
- Update risk assessments based on findings, ensuring that mitigation strategies remain relevant and effective in the evolving construction context.

4. Act

- Implement root cause analysis and corrective actions where gaps or non-compliance are identified.
- Refine and adapt risk mitigation measures, incorporating lessons learned and feedback from monitoring activities and stakeholder consultations to avoid recurring incidents and enhance overall project management.

Integrating ESIA-ESMP Mitigation Measures into CESMS

- A consistency check is needed to ensure that all risk mitigation strategies, environmental controls, and safety requirements from the Supplementary ESIA/ESMP are reflected in the CESMS.
- Ensure all ESIA/ESMP obligations are linked to relevant CESMS sections. Integrate project-specific risk mitigation (air quality, noise, biodiversity, cultural heritage, waste management, community safety).Ensure social safeguards (worker rights, land use, stakeholder engagement) are included. Include clear monitoring and reporting responsibilities for each measure.
- The EPC Contractor is responsible for integrating these mitigation measures into their Construction Management Plans (CMPs).
- The Environmental & Social (E&S) Team will conduct quarterly audits to ensure compliance.
- A non-compliance reporting mechanism will be in place, and corrective actions must be implemented within 30 days of issue identification.

TABLE 2-2: CROSS-REFERENCE OF ESIA-ESMP MITIGATION MEASURES IN CESMS

ESIA/ESMP Mitigation Measure	Relevant CESMS Section	Description of Controls in CESMS
Air Quality Management	Section 5.2.3 – Dust Control	Water spraying, emission limits, air monitoring requirements

ESIA/ESMP Mitigation Measure	Relevant CESMS Section	Description of Controls in CESMS
Noise and Vibration Control	Section 5.2.4 – Noise & Vibration	Equipment restrictions, noise barriers, community impact reduction
Water Resource Protection	Section 5.3.6.3 – Stormwater Control	Drainage systems, erosion control, wastewater disposal procedures
Biodiversity Protection	Section 5.3.7 – Ecological Management	Wildlife monitoring, habitat protection, work area restrictions
Hazardous Waste Management	Section 6.4 – Waste Handling	Safe storage, disposal protocols, contractor compliance
Community Safety & Stakeholder Engagement	Section 7.1 – Stakeholder Engagement	Grievance mechanism, risk communication, public awareness programs

The cross-reference table will be reviewed annually to account for any project changes or regulatory updates.

3. APPLICABLE REFERENCE FRAMEWORK

KTZ shall comply with the applicable local laws and regulations and applicable international standards, together with the company specific policies and guidelines. Where both local and international standards exist, the most stringent standards shall be applied.

3.1 KTZ CORPORATE COMMITMENT

KTZ has publicly committed to aligning its operations with international standards in quality management, environmental responsibility, occupational health and safety, and energy management. This commitment is reflected in various initiatives and policies aimed at enhancing operational efficiency, sustainability, and stakeholder trust.

KTZ is responsible for the implementation of all environmental and social plans in the ESMS and ensuring the implementation of related mitigation measures and management controls by consultants / contractors. KTZ is also obligated to ensure the necessary institutional capacity and resource allocation for implementing the relevant plans under its responsibility, as well as to provide capabilities in procurement and contract supervision to ensure compliance by its contractors and consultants.

In line with the implementation of the ESMS, which has been prepared in accordance with the Republic of Kazakhstan's legislation and international standards, it will be acted in accordance with the Project standards, and in case of any inconsistency, necessary measures will be taken.

3.2 APPLICABLE KAZAKHSTAN LEGAL REGULATORY REQUIREMENTS

Table 3-1 below provides a summary of the Republic of Kazakhstan (RoK) legislation relevant to this Project that has been considered in the Supplementary ESIA Report. Specific laws and regulations on the various E&S topics shall be identified and included in the Legal Register Template (**Annex A**).

TABLE 3-1: REPUBLIC OF KAZAKHSTAN GENERAL LEGISLATION

Title	Year
Law	
The Republic of Kazakhstan Constitution	2022
Forest Code of the Republic of Kazakhstan	2003
Water Code of the Republic of Kazakhstan	2003
On Civil Protection. The Law of the Republic of Kazakhstan	2014
On Public Health and Health Care System. Code of the Republic of Kazakhstan	2020
Environmental Code of the Republic of Kazakhstan	2021
Labour Code of the Republic of Kazakhstan	2015
Law on State Property (#413-IV LRK adopted on 1 March 2011, last amendment dated 21 May 2024 to be enforced on 22 July 2024)	2024
The Land Code (RK Code #442-II, adopted June 20, 2003, with last amendment on May 21, 2024)	2024

Title	Year
Labor Code (№ 414-V, adopted on 23 November 2015, last amendment dated 15 April 2024 to be enforced on 16 June 2024)	2024
The Law of the Republic of Kazakhstan on architectural, urban planning and construction activities in the Republic of Kazakhstan (#242-II adopted on 16 July 2001, last amendment 21 May 2024 to be enforced on 22 July 2024)	2024
Law on Protection and Use of Objects of Historical and Cultural Heritage of the Republic of Kazakhstan No. 1488-XII (1992, as amended by No. 288-VI, 2019)	2019
Treaties	
Kyoto Protocol to the United Nations Framework Convention on Climate Change	2009
International Plant Protection Convention	2010
International Covenant on Economic, Social and Cultural Rights	2006
United Nations Framework Convention on Climate Change	1995
Convention on Biological Diversity	1994
Convention concerning the Protection of the World Cultural and Natural Heritage	1994
Convention for the Safeguarding of the Intangible Cultural Heritage	2012

3.3 IFC PERFORMANCE STANDARDS FRAMEWORK 2012

The IFC Performance Standards (PSs) are international guidelines for identifying and managing E&S risks and impacts and has been adopted by several organisations as a key component of their environmental and social risk management.

- **Performance Standard 1 – Assessment and Management of Environmental and Social Risks and Impacts**
    - To identify and evaluate E&S risks and impacts of the Project's construction activities;
    - To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and where residual impacts remain, compensate, or offset for risks and impacts to workers, Affected Communities, and the environment;
    - To promote improved E&S performance through the effective use of management systems;
    - To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately; and
    - To promote and provide a means of adequate engagement with Affected Communities throughout the construction phase on issues that could potentially affect them and to ensure that the relevant E&S information is disclosed and communicated.
- **Performance Standard 2 – Labour and Working Conditions**
    - To promote the fair treatment, non-discrimination, and equal opportunity of workers;

  - To establish, maintain, and improve the worker-management relationship;
  - To promote compliance with national employment and labour laws;
  - To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged my third-parties, and workers in the supply chain;
  - To promote safe and healthy working conditions, and the health of workers; and
  - To avoid the use of forced labour.
- **Performance Standard 3 – Resource Efficiency and Pollution Prevention**
  - To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from construction activities;
  - To promote more sustainable use of resources, including energy and water; and
  - To reduce project-related greenhouse gas emissions.
- **Performance Standard 4 – Community Health, Safety and Security**
  - To anticipate and avoid adverse impacts on the health and safety of the Affected Community during any project lifecycle from both routine and non-routine circumstances; and
  - To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimises risks to the Affected Communities.
- **Performance Standard 5 – Land Acquisition and Involuntary Resettlement**
  - To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs;
  - To avoid forced eviction;
  - To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by providing compensation for loss of assets at replacement cost, or ensure that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected;
  - To improve, or restore, the livelihood and standards of living of displaced persons; and
  - To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.
- **Performance Standard 6 – Biodiversity Conservation and Sustainable Management of Living Natural Resources**
  - To protect and conserve biodiversity;
  - To maintain the benefits from ecosystem services; and
  - To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.

- **Performance Standard 7 – Indigenous Peoples**
  - To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples;
  - To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimise and/or compensate for such impacts;
  - To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner;
  - To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout any project's life-cycle;
  - To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present; and
  - To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.
- **Performance Standard 8 – Cultural Heritage**
  - To protect cultural heritage from the adverse impacts of project activities and support its preservation; and
  - To promote the equitable sharing of benefits from the use of cultural heritage.

3.4 THE WORLD BANK GROUP GENERAL EHS GUIDELINES

The World Bank Group General Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). The guideline included a section dedicated to construction activities, outlining best practices and performance levels that should be adhered to effectively manage environmental and social risks during the construction phase. Key components related to construction within the EHS Guidelines include:

- **Environmental Management**
  - Site Management: Establish measures to manage construction sites in a way that minimises environmental impacts, including proper site layout, waste management, and control of contamination.
  - Soil Erosion and Sediment Control: Implement measures to prevent soil erosion and manage sediment runoff, particularly in sensitive areas.
  - Air Quality Management: Control emissions of particulates and gases generated by construction activities, including the use of dust suppression techniques (e.g., water spraying) and maintaining equipment to meet emissions standards.
  - Noise and Vibration Management: Identify noise and vibration sources and implement noise reduction and control strategies where applicable, such as using

noise barriers, scheduling work during less sensitive hours, and using quieter construction equipment.

- **Pollution Prevention**
    - Waste Management: Establish procedures for waste management that prioritise the reduction, reuse, and recycling of materials. Ensure proper disposal of hazardous materials.
    - Wastewater Management: Implement measures to prevent contamination of water bodies from construction runoff.
- **Resource Efficiency**
    - Sustainable Resource Use: Encourage the use of sustainable materials, such as recycled or locally sourced products, and optimize energy use during construction activities.
    - Construction Waste Management: Develop a waste reduction strategy that includes on-site sorting and recycling of construction waste, minimising transport to landfills.
- **Emergency Preparedness**
    - Emergency Response Plans: Create and implement emergency response plans that outline procedures for various incidents such as accidents, hazardous material spills, and natural disasters. Regularly train staff on these procedures.
    - The Contractor shall provide the Emergency Contact List.
    - This list shall include 24-hour contact information for key project personnel. The Contractor shall maintain this list throughout the duration of the contract, and provide a revised copy to all parties when made necessary by changes to personnel or their contact information
- **Occupational Health and Safety**
    - Risk Assessment: Conduct comprehensive risk assessments to identify hazards associated with construction activities and implement control measures to mitigate them.
    - Personal Protective Equipment (PPE): Ensure that workers are provided with and required to wear appropriate PPE to minimise health and safety risks (e.g., helmets, goggles, hearing protection).
    - Training and Awareness: Provide training for workers on health and safety practices relevant to their tasks, including emergency procedures and first aid.
- **Community Health and Safety**
    - Disease Prevention: Conduct health impact assessments, implement preventive health programs such as vaccinations and hygiene education, and engage local communities to mitigate risks related to project activities
    - Traffic Management: Develop a traffic management plan to ensure the safety of both construction workers and the surrounding community, particularly when construction activities may affect public roads or pedestrian pathways.

- Public Engagement: Communicate with local communities about construction activities, timelines, and potential hazards, and implement grievance mechanisms to address concerns.
- Cultural Heritage Protection: Identify and protect cultural heritage sites that may be affected by construction activities, ensuring that necessary permits and consultations are conducted.

3.5 THE WORLD BANK GROUP EHS GUIDELINES FOR RAILWAYS

The EHS Guidelines for Railways are applicable to activities typically conducted by rail infrastructure operators dedicated to passenger and freight transport. The guideline is organised into two main areas, namely rail operations, covering construction and maintenance of rail infrastructure as well as operation of rolling stock, such as locomotives and rail cars; and, locomotive maintenance activities, including engine services, and other mechanical repair and maintenance of locomotives and railcars. The key components related to construction of the railroad bypass within the guidelines include:

- **Timing Restrictions:** Construction activities should be avoided during sensitive periods, such as breeding seasons for wildlife, to minimise ecological impact, especially where critically endangered or endangered species are concerned.
- **Habitat Protection:** It is crucial to avoid fragmentation or destruction of critical terrestrial and aquatic habitats. When feasible, railways should be sited to avoid these areas or utilise existing transport corridors.
- **Wildlife Crossings:** In situations where habitat fragmentation is unavoidable, measures should be taken to enhance wildlife movement, such as incorporating animal crossings (e.g., bridges or culverts).
- **Watercourse Management:** When railways cross watercourses, maintaining natural water flow and fish access is essential. Methods like clear-span bridges or open-bottom culverts should be employed to minimise disturbance to habitats.
- **Vegetation Management:** Clearing of riparian vegetation should be minimised during construction to protect surrounding ecosystems.
- **Erosion and Sediment Control:** Construction activities must control sediment and erosion, particularly to prevent increased turbidity in surface waters caused by stormwater runoff.
- **Noise and Vibration:** Depending on the location of noise-sensitive areas, noise and vibration should be considered, and noise reduction or prevention measures should be implemented.

These guidelines emphasise the need for careful planning and execution of construction activities to protect the environment, biodiversity, and community safety during railway developments.

3.6 THE WORLD BANK GROUP EHS GUIDELINES FOR CONSTRUCTION MATERIALS EXTRACTION

The EHS Guidelines for Construction Materials Extraction includes information relevant to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, quartzite, as well as extraction of dimension stone. The key components related to the Project within the guidelines include:

- **Air Emissions:**
    - Ensure adequate pollution prevention and control techniques are implemented with regards to dust emissions.
    - Ensure toxic and nontoxic gases generated by blasting activities are minimised or carried out with adequate safety measures in place.
- **Noise and Vibrations:** Ensure noise and vibration are adequately addressed via control and minimisation techniques, including the installation of proper sound barriers, implementation of ground vibration and overpressure control with appropriate drilling grids.
- **Water:**
    - Adopt techniques to prevent, minimise or control impacts the hydrologic regime caused by extraction activities.
    - Prevent or minimise the suspended sediments in discharge waters.
- **Waste:** Reduce waste production and ensure waste generated are properly managed via the development of hazardous and non-hazardous waste management plans. Topsoil, overburden, and low-quality materials should be properly removed, stockpiled near the site, and preserved for rehabilitation.
- **Land Conversion:** Ensure land conversion impacts are minimised through various techniques and measures such as selection of appropriate low-impact extraction, establishment of buffer zones from the edge of extraction areas etc.
- **Occupational Health and Safety:**
    - Ensure adequate PPE are provided to workers and safeguard measures are in place for those who are exposure to dust and fine particulates, and excessive noise levels.
    - Ensure prevention and control measures are implemented to reduce the exposure of occupational health and safety risks, including installing natural barriers, temporary railing, danger signals, providing specific trainings etc.
- **Community Health and Safety:**
    - Geological and geotechnical control programs or geotechnical monitoring should be implemented to prevent community risks to land instability.
    - Construction material extraction operators should understand the nature and extent of community use of water resources, and potential impacts to its quality and availability as a result of dewatering or other hydraulic diversion activities.

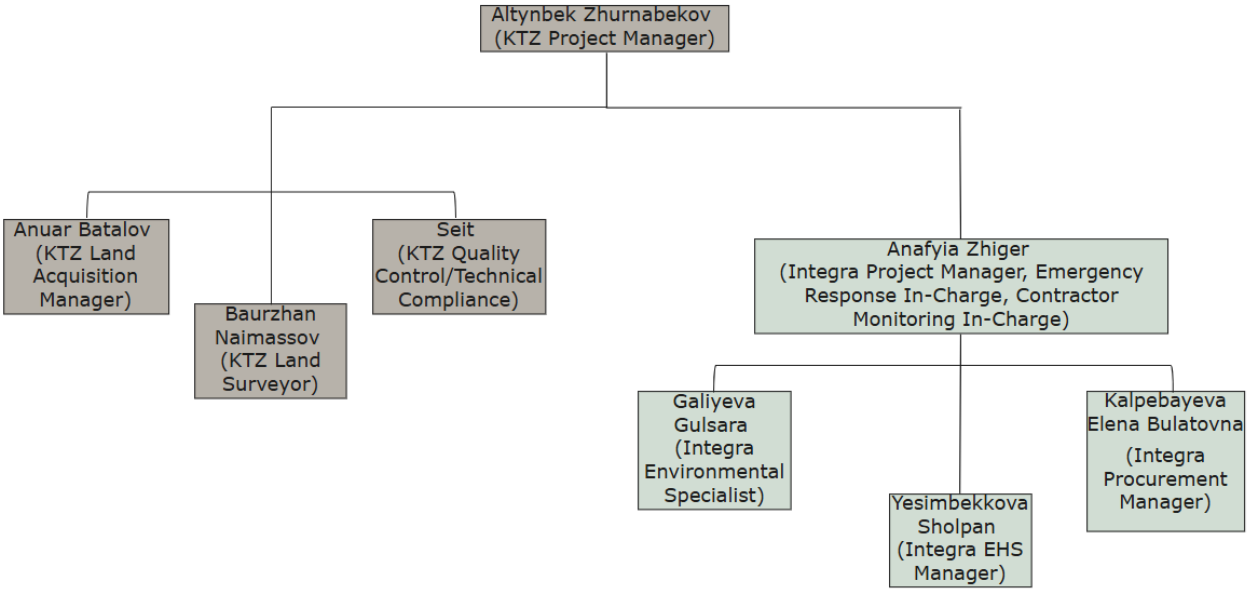
- Additional measures, community awareness and emergency preparedness and response planning should be undertaken regarding explosive safety from blasting activities.
- Extraction site reclamation and closure activities should be considered as early in the planning and design stages as possible. Reclamation and closure plan that considers factors such as production phasing and overall site life should be developed, but all sites will need to engage in some form of progressive restoration during operations. Plans should include contingencies for temporary suspension of activities and permanent early closure and achieve physical, chemical and ecological habitat integrity.

4. ROLES AND RESPONSIBILITIES FOR EFFECTIVE ESMS IMPLEMENTATION

4.1 CURRENT ROLES AND RESPONSIBILITIES

KTZ and the EPC Contractor has identified and appointed the following personnels for the construction of the Almaty Railroad Bypass project (**Figure 4-1**).

FIGURE 4-1: CURRENT ORGANISATION STRUCTURE FOR CONSTRUCTION PHASE



4.1.1 KTZ ROLES AND RESPONSIBILITIES

4.1.1.1 KTZ PROJECT MANAGER

KTZ Project Manager is the KTZ overall in-charge for the construction of the Almaty Railroad Bypass project. KTZ Project Manager oversees both KTZ's and EPC contractor's construction teams and reports to KTZ's upper management. The key responsibilities include:

- Ensure the normative and technical base for design and construction incorporates up-to-date E&S standards.
- Ensure the tracking, implementation, and reporting of E&S measures during design and construction phases.
- Maintain compliance with internal and external E&S requirements and contribute to continuous improvement in processes.
- Ensure the EPC Contractor and their subcontractors comply with the project's EHS policies and guidelines, including their adherence to EHS requirements in contracts.
- Conduct regular inspections and audits of EPC Contractor activities to ensure alignment with EHS standards.

4.1.1.2 KTZ LAND ACQUISITION MANAGER

KTZ Land Acquisition Manager is responsible for identifying land to be acquired and managing the processes related to land acquisition. The key environmental and social responsibilities include:

- Liaise with the district Akimats as a representative of KTZ on matters relating to land acquisition.

4.1.1.3 KTZ LAND SURVEYOR

KTZ Land Surveyor is responsible for the measuring and demarcation of boundaries related to the construction of the project. The key environmental and social responsibilities include:

- Ensure boundaries are demarcated in consideration of the design and environmental receptors (in compliance with the law).
- Collaborates with the design consultant (Poligram) to survey lands and provide feedback to optimise the project design.
- Oversee the preparation of land prior to construction activities.
- Ensure environmental safeguards are in place prior and during construction activities.

4.1.1.4 KTZ QUALITY CONTROL/TECHNICAL COMPLIANCE

KTZ Quality Control/Technical Compliance is in charge of ensuring construction activities are compliant with local regulations and international best practices. Key responsibilities include:

- Ensure all construction activities comply with environmental laws, regulations, and permits applicable to the Almaty Railroad Bypass project.
- Oversee environmental monitoring programs, including air quality, water quality, noise levels, waste management, and biodiversity protection, ensuring adherence to approved thresholds and local regulations (e.g. Environmental Code, Land Code, Water Code, Forest Code, among others)
- Establish and enforce strict adherence to safety protocols to prevent workplace accidents, injuries, and fatalities during construction.
- Conduct regular risk assessments and hazard identification for all construction activities, ensuring preventive measures are in place.
- Oversee the reporting and investigation of accidents, incidents, and near-misses.
- Maintain records of all health and safety incidents.

4.1.2 EPC CONTRACTOR ROLES AND RESPONSIBILITIES

4.1.2.1 INTEGRA PROJECT MANAGER

Integra Project Manager is the EPC Contractor overall in charge of the construction of the Almaty Railroad Bypass project. Integra Project Manager reports directly to KTZ Project Manager. Integra Project Manager is also charge of the project's emergency response and monitoring of contractors in ensure their compliance to the relevant EHS laws and regulations.

- Ensure all construction activities comply with national environmental laws, local regulations, and the project's EMP.

- Obtain and maintain environmental permits and approvals required for the construction phase.
- Develop and enforce safety protocols to address construction-related hazards, ensuring the use of personal protective equipment (PPE).
- Conduct briefings and instructions on EHS-related topics (safe work procedures, environmental safeguard procedures) to all workers and contractors before commencing work.
- Prepare and submit detailed environmental performance reports to KTZ and regulatory authorities
- Implement corrective actions and maintain records to prevent recurrences.
- Ensure the contractors comply with the project's EHS policies and guidelines, including their adherence to EHS requirements in contracts.
- Escalate unresolved issues to KTZ Project Manager.

4.1.2.2 INTEGRA ENVIRONMENTAL SPECIALIST

Integra Environmental Specialist is responsible for identifying environmental risks during the construction phase and ensuring necessary safeguards and mitigation measures are in place. Integra Environmental Specialist is also part of the control team to regulate the subcontractors, to monitor the quality of work, the alignment with technical (equipment) regulations, technological regulations and conduct EHS checks. The key responsibilities include:

- Escalate environmental issues identified during the site monitoring to Integra Project Manager.
- Monitor air quality, noise, water quality, waste management, and soil protection measures to ensure compliance with environmental standards.
- Conduct regular environmental inspections and monitoring to assess adherence to the EMP as part of the control team who check on the quality of work along the alignment.
- Maintain accurate records of monitoring data and inspection findings.
- Escalate unresolved environmental issues to Integra Project Manager.

4.1.2.3 INTEGRA EHS MANAGER

Integra EHS Manager is responsible for overseeing and managing all EHS aspects during the construction phase of the project. The responsibilities include:

- Ensure all construction activities comply with national environmental and labour laws, local regulations, and the project's ESMP.
- Provide induction (in the form of briefings) for new hires.
- Implement all mitigation and safeguard measures identified in the ESIA.
- Participate in meetings and inspections to ensure consistent application of EHS standards across the project.
- Ensure prompt reporting, documentation, and investigation of all accidents, incidents, and near-misses.
- Ensure the development of appropriate emergency response plans.

4.1.2.4 INTEGRA PROCUREMENT MANAGER

Integra Procurement Manager is responsible for overseeing and managing procurement activities including engaging contractors and supply chain. The key environmental and social responsibilities include:

- Conduct EHS screening of contractors and supply chain vendors.
- Ensure contractors and supply chain vendors engaged are compliant to national environment and labour laws, local regulations and the project's ESMP.

4.2 ADDITIONAL ROLES AND RESPONSIBILITIES TO BE APPOINTED

4.2.1 ADDITIONAL KTZ ROLES AND RESPONSIBILITIES

4.2.1.1 KTZ QUALITY CONTROL/TECHNICAL COMPLIANCE

In addition to the current roles and responsibilities outlined in **Section 4.1.1.4**, KTZ Quality Control/Technical Compliance shall also be responsible for:

- Implement and monitor environmental impact mitigation measures outlined in the ESIA and Environmental Management Plan (EMP)
- For each accident, incident, and near-miss reported, ensure root cause analysis are performed and corrective measures are implemented.
- Ensure sharing sessions are conducted with the project team and workers on past accidents/incidents/near-misses reported to prevent recurrences.

4.2.1.2 KTZ COMMUNITY LIASION OFFICER

KTZ shall appoint a Community Liaison Officer (CLO) to ensure grievances from the affected parties, including those affected from the land acquisition, and relevant stakeholders are addressed. The CLO is also crucial in ensuring social safeguards are in place. Key responsibilities include:

- Ensure social safeguards are in place prior and during construction activities.
- Together with Integra CLO, conduct continuous follow-up with district Akimats to ensure concerns raised by key stakeholders and affected parties before and after land acquisition are adequately addressed.
- Ensure proper record keeping on land acquired are kept by the district Akimats.

4.2.1.3 KTZ HUMAN RESOURCES MANAGER

KTZ shall appoint a Human Resources (HR) Manager to ensure compliance with the labour laws and human rights. Key responsibilities include:

- Ensure compliance (including compliance from contractors and subcontractors) with labour laws and human rights obligations.
- Perform regular checks on contractors and subcontractors regarding labor practices, including but not limited to timely wage payments, accurate wage calculations, inclusion of overtime pay, and proper maintenance of workers' accommodations.

4.2.2 ADDITIONAL EPC CONTRACTOR ROLES AND RESPONSIBILITIES

4.2.2.1 INTEGRA PROJECT MANAGER

In addition to the current roles and responsibilities outlined in **Section 4.1.2.1**, Integra Project Manager shall also be responsible for:

- Conduct safety induction programs and periodic training for all workers and contractors.
- Develop and maintain an emergency response plan to address potential incidents, including fire, spills, and accidents.
- Conduct emergency drills to ensure readiness among workers and contractors.
- Ensure prompt reporting, documentation, and investigation of all accidents, incidents, and near-misses.

4.2.2.2 INTEGRA ENVIRONMENTAL SPECIALIST

In addition to the current roles and responsibilities outlined in **Section 4.1.2.2**, Integra Environmental Specialist shall also be responsible for:

- Execute mitigation measures identified in the EIA to minimise environmental impacts.
- Monitor and ensure mitigation measures identified in the EIA are implemented during site monitoring.
- Implement corrective measures and continuous actions to safeguard the environment.

4.2.2.3 INTEGRA EHS MANAGER

In addition to the current roles and responsibilities outlined in **Section 4.1.2.3**, Integra EHS Manager shall also be responsible for:

- Conduct EHS risk assessments for all construction activities/ activities to be engaged in.
- Ensure EHS risk assessments are reviewed periodically (every 6 months) and updated when required (e.g., after every accident/incident reported).

4.2.2.4 INTEGRA COMMUNITY LIAISON OFFICER

Integra Community Liaison Officer (CLO) plays a vital role in managing communication and engagement between the EPC Contractor and local communities during the construction phase of the Project. The responsibilities focus on ensuring transparent dialogue, addressing concerns, and minimising potential social impacts of construction activities.

- Serve as the primary point of contact between the EPC Contractor, KTZ Project team and the local communities.
- Facilitate regular meetings with community representatives to provide updates on project activities and address concerns.
- Communicate relevant project information, including timelines, potential impacts, and mitigation measures, to local communities in an accessible manner.
- Provide advance notice of construction activities that may affect communities, such as road closures, increased traffic, or noise.
- Manage the GRM by receiving, documenting, and addressing complaints or concerns from community members.

- Ensure grievances are resolved in a timely and transparent manner and maintain records of all cases for reporting purposes.
- Act as a mediator to resolve conflicts between the project team and local communities, ensuring fair and equitable outcomes.
- Escalate unresolved conflicts to the appropriate project personnel or KTZ.
- Prepare and submit regular reports on community engagement activities, grievances, and resolutions to the EPC Contractor's management and project owner.
- Maintain accurate records of interactions with communities and any actions taken.

4.2.2.5 INTEGRA HUMAN RESOURCES & ADMIN OFFICER

Integra Human Resources (HR) & Admin Officer is responsible for managing human resource and administrative functions to ensure compliance with labour laws, project requirements, and organizational policies. Their role focuses on managing workforce-related matters, maintaining labour rights, and ensuring the well-being of employees involved in the project.

- Ensure that all required labour licenses, permits, and registrations are obtained and maintained in compliance with local labour laws and regulations.
- Coordinate with relevant authorities to address any issues related to labour licensing and workforce permits.
- HR is responsible for workforce skills development, under the guidance of EHS for safety-related aspects.
- Ensure that the workforce management complies with applicable labour laws, including those related to working hours, leave policies, and benefits.
- Monitor adherence to regulations regarding the hiring of local and migrant workers as required by project commitments and local laws.
- Ensure that all workers, including contractors and subcontractors, are paid at least the minimum wage as per local laws and project standards.
- Conduct periodic audits to verify compliance with wage payment requirements.
- Monitor overtime work to ensure compliance with labour laws and that workers are compensated at the prescribed overtime rates.
- Maintain records of working hours and overtime to ensure transparency and legal compliance.
- Act as the focal point for addressing grievances and disputes related to labour and working conditions.
- Ensure that grievances are resolved promptly and fairly, in alignment with the Project's GRM.
- Regularly supervise subcontractors to ensure their adherence to labour, wage, and overtime regulations as well as project policies.
- Conduct periodic inspections and audits of subcontractor records, including employment contracts, payroll, and working conditions.
- Collaborate with the EHS team to ensure alignment between labour rights and health and safety practices.

- Provide subcontractors with guidance on labour law compliance, ensuring their alignment with the EPC Contractor's standards.
- Address non-compliance issues with subcontractors and implement corrective actions as necessary.

Prepare and submit regular reports on workforce management, including labour license status, compliance with wage and overtime regulations, and any workforce-related grievances.

4.3 RACI MATRIX FOR SECTION 4.2: ADDITIONAL ROLES AND RESPONSIBILITIES FOR CESMS IMPLEMENTATION

Task/Activity	KTZ Project Manager	KTZ Quality Control	KTZ Community Liaison Officer	KTZ HR Manager	EPC Project Manager	EPC Environ -mental Specialist	EPC EHS Manager	EPC Community Liaison Officer	EPC HR & Admin Officer
Oversight of ESMS Implementation	A	R	C	I	R	I	I	I	I
Quality Control and Technical Compliance	R	A	I	I	C	R	C	I	I
Community Grievance Management	C	I	A	C	C	I	I	R	I
Labour Compliance and HR Oversight	C	I	C	A	C	I	I	C	R
Environmental Safeguard Monitoring	C	R	I	I	R	A	C	I	I
OHS Risk Assessment & Compliance	C	C	I	I	C	C	A	I	I

Task/Activity	KTZ Project Manager	KTZ Quality Control	KTZ Community Liaison Officer	KTZ HR Manager	EPC Project Manager	EPC Environ -mental Specialist	EPC EHS Manager	EPC Community Liaison Officer	EPC HR & Admin Officer
Training and Capacity Building	R	C	C	A	C	R	R	C	C
Emergency Preparedness & Response	C	C	I	I	C	C	A	I	I
Monitoring & Reporting on ESMS Compliance	A	R	C	C	R	C	C	C	C

RACI Definitions:

- *R (Responsible): Person(s) who perform the task or activity.*
- *A (Accountable): The decision-maker who takes ownership and ensures completion.*
- *C (Consulted): Person(s) whose input is required before action is taken.*
- *I (Informed): Person(s) who are kept up to date on progress and outcomes.*

5. IMPLEMENTATION OF ENVIRONMENT AND SOCIAL MANAGEMENT PROCEDURES

The implementation of Environmental and Social Management Procedures builds on the frameworks introduced in earlier sections of the ESMS. This chapter outlines the practical steps necessary to apply the ESMP during the construction phase of the Almaty Railroad Bypass Project. The procedures address key environmental and social risks identified in **Section 2.3** and align with the Supplementary Environmental and Social Impact Assessment (ESIA), regulatory frameworks in **Section 3**, and international standards, including the IFC Performance Standards and World Bank EHS Guidelines.

The table below presents the procedural components incorporated into this ESMS, each focusing on specific risks and contributing to sustainable and responsible project execution (**Table 5-1**). These procedures ensure alignment with national regulations, international benchmarks, and evolving project needs.

TABLE 5-1: PROCEDURAL COMPONENTS INCORPORATED INTO THE ESMS

No	Procedural Component	Objective
1.	Contractor Management Procedures	Ensure contractors and subcontractors comply with ESMS requirements during construction through proper engagement and oversight.
2.	Procurement and Supplier Management Plan	Reduce potential E&S risk associated with suppliers/procured goods and ensure suppliers are compliant with statutory and E&S requirements.
3.	Stakeholder Engagement & Community Grievance Mechanism	Foster ongoing communication with affected communities and manage grievances effectively to minimise social risks.
4.	Labour Management	Promote fair labor practices, prevent child/forced labour, and ensure worker grievances are addressed.
5.	Construction Camp & Workers' Accommodation	Ensure workers' accommodation meets international labour standards, providing safe and adequate housing, sanitation, and facilities.
6.	Occupational Health and Safety (OHS) Plan (including Emergency Preparedness and Response Plan)	Protect worker health and safety by enforcing safety protocols, providing PPE, and monitoring workplace conditions. Develop protocols for responding to emergencies such as spills, fires, and accidents at construction sites.
7.	Community Health and Safety Management Plan	Protect community health and safety by mitigating risks from project activities, including traffic, pollution, and site access.
8.	Pollution Prevention Plan	Implement measures to control air, water, and soil pollution resulting from construction activities.
9.	Waste Management Plan	Ensure proper segregation, handling, and disposal of construction waste.

No	Procedural Component	Objective
10.	Quarry Site Restoration Plan	Ensure that all quarry sites utilized for sand and stone procurement for this project are adequately restored after completion.
11.	Incident and Accident Handling Plan	Ensure proper documentation, investigation, and reporting of workplace incidents to prevent recurrence.
12.	Traffic (Transportation) Management Plan	Manage project-related traffic to prevent accidents and ensure the safety of workers and local communities.
13.	Security Management Plan	Manage site security while ensuring alignment with human rights policies and preventing unauthorized access.
14.	Biodiversity Management Plan	Mitigate impacts on biodiversity by protecting local ecosystems and implementing habitat restoration measures.
15.	Cultural Heritage Management Plan	Safeguard cultural heritage by managing impacts and addressing chance finds and recorded kurgan sites during construction.
16.	Management of Change (MCP) Process	Establish a process to manage design or operational changes that may impact environmental or social performance.
17.	Monitoring and Reporting Mechanism	Track and report environmental and social performance through audits, compliance checks, and legal monitoring.
18.	Training and Capacity Building	Equip staff and contractors with necessary skills to implement E&S policies and procedures effectively
19.	Tools and Checklists	Monitoring checklists, and templates to ensure consistent implementation and compliance during construction.
20.	Occupational Health Center (OHC) Facilities	ensure worker health and safety through medical check-ups, emergency care, and occupational disease prevention. It also supports compliance with national labor health standards and international OHS guidelines.

5.1 CONTRACTOR MANAGEMENT PROCEDURES

KTZ and the EPC Contractor engage contractors for a variety of services, including construction, housekeeping, routine works, transport, and labor & all contractors, subcontractors, and suppliers engaged in the project must adhere to the policies and procedures outlined in the CESMS. This section defines the requirements for contractor selection, compliance monitoring, performance evaluation, corrective actions, and training to ensure alignment with both national and international best practices.

Since contractors have already been appointed and construction activities are underway, this section focuses on the ongoing management, oversight, and performance evaluation of contractors. KTZ and the EPC Contractor will apply the screening process retrospectively to

ensure alignment across all contractors engaged (**Annex B**). Any gaps identified during the screening will be communicated to the contractor for resolution.

The key requirements of the Contractor Management Procedure are summarized below, which are applicable to both KTZ and the EPC Contractor.

5.1.1 ONGOING OVERSIGHT OF CONTRACTORS/SUBCONTRACTORS

For contractors engaged by KTZ throughout the construction phase, the oversight and engagement of contractors is overseen by KTZ Project Manager. KTZ Procurement Team manages contractual agreements, while KTZ Finance Team oversees financial terms. For contractors hired by the EPC Contractor, the KTZ Project Manager remains ultimately responsible, while the Integra Procurement Manager and Integra Project Manager ensure compliance with ESMS requirements by the engaged contractors.

Pre-Engagement Compliance Assessment:

- Before onboarding, contractors must demonstrate that their internal Environmental, Health, Safety, and Social (EHS&S) management system meets or exceeds CESMS requirements.
- Contractors with inadequate systems must either adopt the CESMS framework in full or implement corrective actions before engagement.

If a contractor's CESMS is found to be considerably lacking, they must adopt the project CESMS in full or implement corrective actions to meet project standards. A **Contractor Compliance Certification Process** shall be established, requiring contractors to submit documentation verifying that their EHS&S management system meets CESMS standards.

All contractors engaged either by KTZ or the EPC Contractor are required to provide require detailed contractor OHS plans that align with CESMS guidelines and undergo periodic reviews. valid licenses (e.g., labor, transport), insurance policies, and other relevant documentation, which will be maintained at both the project site and corporate office. KTZ will prepare checklists to ensure that necessary documents are collected. Contractors lacking EHS management systems will adhere to KTZ's E&S policies outlined in this ESMS.

During the pre-assessment history of safety violations, penalties, and legal actions. Contractors will be rated based on compliance, and only those meeting the CESMS standards will be engaged.

5.1.2 ENGAGEMENT OF SUBSEQUENT CONTRACTOR/ SUB-CONTRACTOR

Any further selection of contractors during the construction phase by KTZ will be overseen by KTZ Project Manager. Once a contractor has been selected and approved, KTZ will be responsible for formal engagement. The Procurement Team will primarily handle the formulation and finalisation of the work order, while the Finance Team may provide oversight to ensure the financial terms of the contract are finalised appropriately.

Regarding the selection of additional contractors during the construction phase by the EPC Contractor, this process will be overseen by the Integra Procurement Manager and Integra Project Manager. Integra Project Manager is responsible for reporting back to KTZ Project Manager on such engagements.

A copy of all relevant licenses (e.g., contract labor license, transport license) and supporting documents (e.g., insurance policies) must be collected from the contractor and maintained at both the project office and corporate office. It is recommended that a checklist of required documents from contractors and suppliers be prepared for easy reference.

Further details regarding the contractor's Health, Safety, and Environment (HSE) Policy and Management Systems, based on the nature of their work on site, should also be collected and retained by KTZ and the EPC Contractor. In cases where contractors lack such systems, they will be required to adhere to KTZ's Environmental and Social (E&S) Policy and relevant Environmental, Health, Safety, and Social (EHSS) requirements as outlined in the ESMS, which will be attached to the contract (**Annex C**).

KTZ and the EPC Contractor will ensure that contractors designate suitable EHS representatives who are knowledgeable about all relevant EHS requirements.

Recommended Qualifications for EHS Representatives:

1. **Educational Background:**

   A bachelor's degree in environmental science, occupational health and safety, engineering, or a related field is typically preferred. Engineering and technical personnel involved in construction must obtain certification to verify their qualifications. This process ensures that individuals possess the necessary knowledge and skills to uphold safety and technical standards.

2. **Professional Certifications:**

   Certifications such as the NEBOSH International General Certificate or equivalent credentials can be suitable for EHS representative.

3. **Experience:**

   Prior experience in construction safety or environmental management, that the project complies with national standards.

4. **Knowledge of Local Regulations:**

A thorough understanding of Kazakhstan's environmental, health, and safety regulations is essential to ensure full compliance with national standards. This includes knowledge of occupational safety laws, construction safety requirements, and environmental protection guidelines to mitigate risks and uphold legal obligations throughout the project

Conduct and competency

The conduct and performance of the contractor's HSE personnel shall be closely monitored by the KTZ Team, ES, and Integra Project Team. Any deficiencies or non-compliance may result in penalties or immediate replacement of HSE personnel. The contractor must ensure that all personnel are competent to carry out their assigned tasks. If the contractor cannot demonstrate the competency of any individual whose activities directly impact HSE performance, KTZ, ES, and the Integra Project Team reserve the right to remove that person from the site without prior procedural formalities.

The contractor must recruit replacement personnel and fill vacancies within seven days. All personnel assigned to HSE roles must submit their credentials to the KTZ & ES team for review

and approval before commencing work. Approval from KTZ & ES is mandatory for personnel authorization. Any personnel departures must be promptly reported to KTZ & ES & Interga Project team

Employment status for the HSE personal

The primary contractor is solely responsible for ensuring the availability of adequate HSE manpower for all work performed by themselves and their subcontractors. The required HSE workforce, as stipulated by KTZ & ES, includes coverage for subcontractors' activities. The main contractor must ensure compliance by incorporating necessary provisions in all subcontract agreements.

Reporting of HSE personnel

All HSE personnel must report to the Chief HSE Manager at the site, who, in turn, reports directly to the Chief Project Manager. KTZ & ES will continuously monitor compliance with this reporting structure. Any failure to adhere to these procedures may result in penalties as outlined in the relevant clause.

Prohibition of performance of the duties

HSE personnel shall not be assigned any tasks unrelated to their designated responsibilities. Their duties must align strictly with their respective roles in health, safety, and environmental management. The contractor must provide HSE personnel with the necessary facilities, equipment, and information to effectively perform their duties

CONTRACTOR'S PROJECT MANAGER- HSE RESPONSIBILITIES

The Project Manager is responsible for establishing and implementing the Project HSE Plan, aligning with Engineering Services policies and Client HSE procedures. With support from other managers and the HSE Manager, the Project Manager shall:

- Oversee the overall execution and management of the work.
- Approve project-related documents.
- Assume full responsibility for HSE activities and liaise with regulatory authorities.
- Ensure compliance with the HSE management system, contract requirements, and applicable regulatory frameworks.
- Set HSE objectives and targets while monitoring their implementation.
- Investigate and address all accidents, occupational illnesses, and environmental incidents to prevent recurrence.
- Organize and chair HSE Committee meetings.
- Enforce disciplinary measures against personnel who consistently violate HSE norms or undermine safety culture.
- Review risk assessments and emergency plans for project activities.
- Serve as a key decision-maker during emergencies.
- Ensure adherence to local laws and company HSE policies at all times.

CONTRACTOR'S HSE MANAGER RESPONSIBILITIES

The contractors HSE managers are also responsible for securing that all are aware of this manual and its content. Managers are expected to carry out the necessary assessments of health and safety competence of both co-workers and consultants and contractors or to hire a specialist safety consultant who has the necessary expertise, and the specific responsibility to carry out such assessments.

The Contractor's HSE Manager is responsible for ensuring awareness of the HSE manual and its contents among all personnel. Key duties include:

- Coordinating and managing all HSE activities throughout the project.
- Implementing the HSE Plan, Construction Method Statements (CMS), and other specialized procedures.
- Assessing and addressing HSE competency requirements for all project personnel.
- Reviewing and improving method statements related to HSE aspects before work begins.
- Monitoring construction activities to ensure proper risk control measures are implemented.
- Acting as the primary liaison between regulatory authorities and the project on HSE matters.
- Overseeing HSE training for site personnel and subcontractors.
- Managing the HSE monitoring program, including assessments of noise, vibration, and dust.
- Conducting HSE audits of subcontractors and suppliers.
- Serving as secretary and participant in all HSE committee meetings, including subcontractor reviews.

Contractor's HSE Officer / Engineer responsibilities

- Reports to the HSE Manager.
- Inspects emergency services and provides compliance reports to relevant departments.
- Coordinates Client HSE inspections and walkabout sessions.
- Acts as liaison on HSE matters across all departments.
- Conducts initial HSE inductions for workers and visitors.
- Performs routine site inspections to maintain housekeeping and safe practices.
- Assists supervisors in conducting toolbox meetings.
- Ensures compliance with work permit safety requirements.
- Conducts on-site HSE meetings with supervisors and work leaders.
- Leads incident/accident investigations alongside work supervisors and submits reports.
- Prepares and submits monthly HSE statistics to management and clients.
- Investigates all accidents and recommends corrective measures.
- Communicates project HSE requirements to subcontractors and ensures compliance.
- Reviews risk assessments and emergency plans developed by the execution team.

CONTRACTOR'S CONSTRUCTION SUPERVISOR' HSE RESPONSIBILITIES

Construction Supervisors play a key role in implementing and maintaining an effective jobsite HSE program. Their responsibilities include:

- Reporting to the Section In-Charge.
- Conducting daily supervision and reporting to the HSE Manager.
- Leading toolbox meetings to inform work crews of potential hazards and safety controls.
- Ensuring workers receive and wear necessary personal protective equipment (PPE).
- Monitoring work crews for adherence to safety practices and raising awareness of HSE standards.
- Performing daily checks on tools and equipment to ensure they are in safe working condition.
- Verifying that all employees under their supervision have received initial HSE training and understand safety regulations.
- Maintaining housekeeping in their designated work areas.
- Reporting all accidents, near misses, and unsafe conditions immediately.
- Assisting the HSE Officer in accident and incident investigations.
- Enforcing compliance with the HSE manual and all related safety regulations.
- Keeping risk assessments and job safety analyses at the worksite and providing feedback to workers under their supervision.

SUB-CONTRACTOR'S RESPONSIBILITIES

- Attend both client and company HSE induction briefings.
- Be fully equipped with the necessary Personal Protective Equipment (PPE) while working on-site.
- Ensure that all workers are supervised by a full-time, competent supervisor approved by the construction manager.
- Obtain approval for a permit to work before commencing any activity within the client's premises.
- Take all necessary precautions to prevent any impact on fellow workers or third parties at the work site.
- Assume full responsibility for the health, safety, and environmental welfare of employees during all site operations.
- Arrange and bear the cost of accident prevention tools and insurance coverage.
- Employ skilled and competent personnel for tasks such as operating heavy earth-moving equipment, LMV & HMV driving, and working with high and low-tension electrical lines.
- Conduct pre-employment medical check-ups for all employees and maintain comprehensive records.
- Inform employees about both visible and hidden hazards associated with their respective tasks.

- Nominate an HSE coordinator from the workforce and appoint members for HSE committees.
- Ensure that PPE is available at all times and strictly used by employees without exception.
- Provide necessary first-aid equipment at the site.
- Ensure that all lifting machines, tools, and tackles—including wire ropes, slings, chains, shackles, cranes, and pulley blocks—are in good condition and tested by a competent person.
- Comply with all legal requirements for workers under local laws and relevant international standards.

CONTRACTOR EMPLOYEE'S HSE RESPONSIBILITIES

A dedicated team or committee shall be established to implement HSE requirements. Their duties shall include, but are not limited to:

- Reporting to the Line Supervisor.
- Performing job responsibilities safely while ensuring their own safety and that of their coworkers.
- Following supervisors' instructions and complying with the health, safety, and environmental regulations.
- Maintaining tools and equipment in proper working condition and promptly reporting any defects to the supervisor.
- Obtaining necessary work permits from supervisors and following the prescribed guidelines.
- Anticipating potential HSE issues and planning appropriate mitigation measures.
- Monitoring various HSE parameters to ensure compliance.
- Inspecting, investigating, and auditing work methodologies with respect to HSE controls.
- Conducting audits and preparing reports, including weekly and monthly updates on site HSE conditions.

HSE RESOURCES

- The contractor must outline the HSE resources dedicated to the project.
- Management shall ensure adequate support and resources for effective training, with supervisors allocating time for such training.
- Contractor personnel must be qualified (trained, certified, and experienced) for all project activities, including but not limited to:
    - Demolition, excavations, and temporary electrical work.
    - High-voltage electrical operations and welding.
    - Scaffolding, respiratory protection, and first aid.
    - Fall protection, aerial lifts, forklifts, rigging, and crane operations.
- The contractor must identify all qualified personnel and provide documentation as proof of certification.

- Contractor 's safety department should have adequate budget to manage project health and safety,

GENERAL CONTRACTOR'S SAFETY DEPARTMENT RESOURCES

To efficiently manage project health and safety, the contractor's safety department must have adequate resources, including:

1. Office and conference room facilities.
2. Essential stationery and office equipment (e.g., computers, projectors, signage materials, digital cameras, printers, filing cabinets, etc.).
3. Safety training materials in both digital and hard-copy formats.
4. Access to national and local HSE regulations.
5. Inspection tools for safety assessments (e.g., multimeters, noise meters, light meters, wind speed meters, speakers, flashlights, measuring tapes, walkie-talkies, etc.).
6. Medical service resources to address workplace injuries and emergencies.
7. Availability of PPE to ensure compliance with safety protocols.

5.1.2.1 EXECUTION OF CONTRACT

The formal contract between KTZ/EPC Contractor and contractor will outline the terms of engagement along with the following provisions (at a minimum):

- Compliance to statutory requirement.
- Compliance requirements pertaining to labour wages, overtime, etc. are maintained at site.
- Compliance to the EHSS requirements.
- Prohibition on engagement of child labour, forced labour and bonded labour.
- Prevention of sexual harassment.
- Ensuring provisioning of adequate PPEs, first aid, medicines.
- Maintenance of records as per statutory requirements.
- An exit clause as well as a penalty clause will be inserted in the contract, depending on the degree of non-compliance of the contractor to the statutory and CESMS requirements.

Stoppage of work

The KTZ & ES / Integra Project team reserves the right to halt work at their sole discretion if they determine that ongoing activities pose a risk of accidents or endanger the safety of personnel, property, or equipment. In such instances, the contractor will be notified in writing about the identified hazards and potential risks of injury or accidents. Work shall not resume until all safety concerns have been addressed to the satisfaction of the KTZ & ES / Integra Project team.The contractor shall not be eligible for any compensation or damages resulting from work stoppages due to safety concerns. Additionally, the duration of such stoppages will not be considered as an extension of the project completion timeline, nor will it exempt the contractor from potentially liquidated damages.

5.1.2.2 EHS INDUCTION AND ESMS INDUCTION TRAINING

An mandatory induction training on CESMS requirements will be provided to the EPC Contractor and all the contract workers, visitor, including those engaged by the EPC Contractor, once the ESMS has been approved. This training will need to be provided by personnel who are well versed with the ESMS along with KTZ Project Manager. The intent of this training will be to familiarise the contractor and workers of the requirements of the ESMS and their responsibilities thereunder.

Additionally, as part of the induction training, KTZ HR Manager together with Integra HR & Admin Officer shall ensure that contractors' EHS representatives are familiar with both legal and EHSS compliance requirements with provide training on the HR policy and procedures (such as those covering grievance management, anti-sexual harassment, training and disciplinary procedures) as well as the duties and rights of the contractor as well as contract workers if not already done so prior to the initiation of work. The contractor shall be informed of the compliance requirements (even though the contractor may have the requisite compliance records) under the ESMS.

EHS training will also be provided to the contractor and contract workers to familiarise them with the environmental and OHS procedures followed by KTZ and the EPC Contractor if not already done so prior to the initiation of work. A fire safety and emergency preparedness and response training shall also be provided. These trainings shall be provided by Integra Project Manager. Job specific H&S trainings shall be provided, if required. KTZ Project Manager with the assistance from Integra Project Manager shall be responsible in issuing all the contractors and contract workers that have passed these trainings a Contractor Safety Card and ID number to print as proof of successful induction/EHS training completion.

A documentary proof of these induction/EHS trainings shall be maintained by KTZ and the EPC Contractor, outlining the duly signed list of participants, training covered and the minutes thereunder.

5.1.2.3 MONITORING OF CONTRACTOR'S REGULATORY AND ESMS COMPLIANCE

Monitoring of the regulatory compliance of the contractors engaged by the EPC Contractor will be undertaken by Integra Procurement Manager and Integra Project Manager as per the timeline provided in **Annex D**.

A **Contractor Compliance Monitoring System** shall be implemented, requiring:

- **Monthly contractor compliance reports** detailing adherence to CESMS requirements.
- **Quarterly independent audits** conducted by KTZ's Environmental and Social (E&S) team to verify compliance.
- **Unannounced site inspections** to assess real-time compliance and identify potential hazards.
- Leading indicators help measure proactive safety efforts, focusing on prevention and risk reduction.
- Lagging indicators evaluate the effectiveness of those efforts by measuring incident outcomes and regulatory compliance.

- A balanced approach using both sets of indicators ensures continuous safety improvement and compliance with project and regulatory standards.

TABLE 5-2: LEADING & LAGGING INDICATORS FOR EHS PERFORMANCE MONITORING

Indicator Type	Indicator	Description	Purpose
Near Miss Reports	Number of near misses reported and investigated	Identifies and mitigates hazards before incidents occur	Proactive risk reduction
Safety Training Completion Rate	Percentage of workers completing mandatory safety training sessions	Ensures workforce is well-trained to prevent incidents	Enhances competency
Safety Observations	Number of safety concerns reported by workers	Engages workers in hazard identification	Strengthens safety culture
Safety Inspections Conducted	Number of workplace inspections performed per month	Identifies hazards before incidents occur	Reduces risks proactively
Preventative Maintenance Actions	Number of scheduled maintenance tasks completed on equipment	Prevents mechanical failures leading to accidents	Ensures equipment safety

Lagging Indicators (Reactive - Measure Incident Outcomes)	Description	Purpose
Injuries & Illnesses	Number of reported workplace injuries or illnesses	Helps identify trends in worker health and safety issues
Lost Time Injury Frequency Rate (LTIFR)	Number of injuries causing time away from work	Measures severity of workplace injuries
Fatalities	Number of work-related deaths	Highlights critical risks and safety failures
Environmental Spills	Number of reported spills of hazardous materials	Assesses effectiveness of environmental controls
Safety Violations	Number of times safety rules were broken	Identifies gaps in enforcement and training
Regulatory Non-Compliance Citations	Number of legal violations or fines received	Ensures continuous regulatory compliance

Scenario 1

- Near Misses Observed: 8
- Safe Behaviors Observed: 20
- Unsafe Behaviors Observed: 15
- Hazards Observed: 10
- Completed HRAs Observed%: 40
- Leader Field Walks Observed: 1

- Total Hours Worked: 8,000

Calculation

- Near Misses: ((8 *100)/ 8000) * 60 = **6**
- Safe Behaviors: 3 - ((20*10 / 8000) * 3) = **2.9**
- Unsafe Behaviors: ((15*100) / 8000) * 25 = **4.7**
- Hazards: ((10*100) / 8000) * 10 = **1.3**
- Completed HRAs: 1 - ((40*100 / 8000) * 1) = **0.5**
- Leader Field Walks: 1 - ((1*100 / 8000) * 1) = **1.0**

Total Risk Score: 16.4

In case of non-compliance, a **Contractor Corrective Action Plan (CAP)** will be enforced, which includes:

- A structured timeline for resolving deficiencies.
- Immediate penalties for severe breaches (e.g., safety violations, environmental harm).
- Potential contract termination for repeated non-compliance

Contractors must submit bi-annual EHS&S compliance reports to KTZ, detailing:

- Implementation of CESMS policies.
- Incident reports, including root cause analysis and corrective measures.
- Worker safety statistics and grievance handling data.

KTZ shall publish an annual contractor compliance summary outlining major findings, corrective actions taken, and contractor performance evaluations. This monitoring will aim at identifying any compliance gaps and suggesting recommendations to address such gaps. The monitoring can be carried out using the template outlined below in **Table 5-3**.

TABLE 5-3: CONTRACTOR EHSS AND CEMS COMPLIANCE MONITORING TEMPLATE

Applicable Regulations	Requirements under the regulations	Records Maintained (Yes/No)	CEMS/EHSS Compliance	Findings & Observations	Corrective action required (Yes/No)	Target date	Responsible
Legal & Regulatory Compliance	Compliance with Kazakhstan labor laws, EHS regulations, and permits						
OHS Compliance	Proper implementation of Lockout/Tagout (LOTO) procedures for stored energy (electrical, mechanical, etc.						
Labor & Working Conditions	Workers' contracts align with IFC & AIIB labor standards						
Community & Social Complianc	Stakeholder engagement activities conducted as per the SEP						
Human-Machine Interface (HMI) Safety	Machine guarding and emergency stop systems in place						

Applicable Regulations	Requirements under the regulations	Records Maintained (Yes/No)	CEMS/EHSS Compliance	Findings & Observations	Corrective action required (Yes/No)	Target date	Responsible
Environmental Compliance	Waste segregation and disposal as per waste management plan						

Note: Above table is provided as a template only. All applicable regulations are to be listed by the Project EHS In-Charge.

The monitoring records will be submitted to KTZ Project Manager for review and records. The contractor will be informed of the recommended measures to address the gaps.

To meet the project's deadline, the EPC Contractor will not terminate any subcontracting companies for repeated non-compliance. Instead, a warning will be issued to the contractor for the first violation. If a second violation occurs, an official letter will be sent to the management of the subcontractor. In the case of a third violation, Integra Project Manager has the authority to request that the subcontractor's management replace the subcontractors. Fines may also be imposed, according to the conditions specified in the contract agreements.

5.1.2.4 PERFORMANCE REVIEW AND EVALUATION

The performance review and evaluation of the contractors will be conducted by Integra Procurement Manager to verify compliance against legal and contractual obligations. A Corrective Action Plan (CAP) will be developed by Integra Procurement Manager and the status of CAP implementation shall be monitored periodically. Findings of the evaluation and implementation of corrective action shall be shared with Integra Project Manager and KTZ Project Manager.

Weekly HSE meetings between KPC and all contractors

Regular Health & Safety (HSE) meetings shall be conducted at all construction sites. While the frequency may vary, these meetings are generally held on a weekly basis. Site management and all contractors must be represented at these meetings. The KPC Project Site Manager shall chair the Weekly HSE Committee Meeting, with the HSE team responsible for recording and distributing the meeting minutes. These minutes shall also be reviewed during general site meetings.

The responsibilities of this Committee shall include the following:

- Comprehensive analysis of site HSE activities.
- Implementation and review of best safety practices.
- Addressing deficiencies identified in safety inspections and audits, along with corrective measures.
- Review of incidents, accidents, or near-miss events, including investigations and recommended actions.
- Identification of hazards and implementation of corrective measures.
- Monitoring and addressing unsafe acts.
- Discussion of any other relevant HSE matters.

Contractor HSE committee meetings

Contractors are required to organize HSE committee meetings at least once a month or as determined by the KTZ & ES team or Integra Project Manager. These meetings shall involve, but are not limited to, representatives such as the Contractor Manager, Contractor Safety Officer, Contractor & Subcontractor Management representatives, safety staff, and worker representatives.

The primary objective of contractor safety committee meetings is to enhance employee and worker engagement, ensuring active participation in promoting and monitoring safety and health at work sites.

The minutes of these meetings shall be discussed and communicated to workers during Toolbox Talk briefings.

All Site Safety Committee meeting minutes must be distributed to all members and displayed prominently on notice boards in English, local language, or vernacular within two working days of the meeting.

NON-CONFORMANCE REPORT

- A Non-Conformance Report (NCR) is issued when a deviation from established system procedures or an unsafe condition is identified, requiring immediate corrective action.
- The objective of this procedure is to ensure strict adherence to robust safety protocols and confirm that all activities comply with defined safety procedures.

If a contractor fails to meet CESMS requirements, the following escalation process will apply:

Violation Level	Example Non-Compliance	Action Taken
Level 1: Minor	Missing PPE, incomplete documentation	Warning & corrective action within 48 hours
Level 2: Moderate	Unsafe work practices, repeated minor violations	Work stoppage until issue is resolved
Level 3: Severe	Major safety violations, environmental damage, repeated non-compliance	Contract suspension or termination

- The EPC Contractor will oversee initial enforcement, while KTZ retains authority to issue penalties or remove contractors for repeated non-compliance.

PROMOTION AND PENALTY

Each construction site shall implement HSE promotion initiatives to enhance workforce awareness and engagement. These initiatives should focus on recognizing and rewarding individuals who consistently uphold safe and healthy work practices.

Suggestions for such promotions may include such items as the issue of the following as rewards to individuals for good safety performance. The Following categories may be considered for the awards as per the scheme in practice:

- Zero fatality
- 100% adherence to voluntary reporting of all accident throughout the project
- Safest project team of the year
- Best HSE team of the year
- Safest contractor of the year

5.2 PROCUREMENT AND SUPPLIER MANAGEMENT PLAN

The Procurement and Supplier Management Plan is applicable to all procurement activities undertaken by KTZ and the EPC Contractor during the construction phase of the Project. This

management plan provides a framework that outlines the measures to identify and monitor the roles, impacts and risks associated with the suppliers in relation to E&S issues.

The main objectives of this Procurement and Supplier Management Plan are to:

- Identify potential E&S risk associated with the suppliers/the procured goods.
- Ensure suppliers are compliant with statutory requirement.
- Ensure suppliers are aware and complaint with E&S requirements followed by KTZ and the EPC Contractor.
- Ensure the employment of child labour and forced labour is prohibited across all the suppliers.
- Limit procurement to suppliers who are evaluated to have no significant impacts regarding E&S issues.

5.2.1 ENAGEMENT OF SUPPLIERS

Prior to the engagement of suppliers or procurement of any goods for the construction of the Project, KTZ Procurement Team and the EPC Contractor - Integra Procurement Manager shall perform an E&S screening based on the questionnaire provided in **Annex E**. Where needed, as much as possible, goods shall be sourced locally. Given that construction has started, this supplier E&S screening shall be undertaken retrospectively for all the existing suppliers. This screening will assess compliance with statutory E&S requirements and identify any significant risks such as child and forced labor, unsustainable resource exploitation, environmental pollution, or high greenhouse gas (GHG) emissions.

If the retrospective screening identifies non-compliance or significant E&S risks, the following remediation measures shall be applied, depending on the severity of the issue:

- Minor Non-Compliance (e.g., administrative gaps, inadequate record-keeping)
    - Engage with the supplier to clarify compliance expectations.
    - Provide a corrective action plan (CAP) with a defined timeline for resolution.
    - Require enhanced reporting and monitoring to track compliance.
- Moderate Non-Compliance (e.g., failure to adhere to national labor laws, lack of environmental permits, minor pollution issues)
    - Issue a formal warning and require immediate corrective action.
    - Conduct supplier training or capacity-building programs to improve compliance.
    - Set a compliance improvement timeline with periodic monitoring.
- Severe Non-Compliance (e.g., confirmed cases of child/forced labor, environmental pollution incidents, major human rights violations, high GHG emissions without mitigation efforts)
    - Suspend procurement from the supplier until corrective measures are verified.
    - Require immediate remediation actions such as stopping labor violations, compensating affected workers, or mitigating environmental harm.
    - Engage with authorities or third-party auditors to oversee corrective actions.

If remediation is not feasible or the supplier fails to act, terminate the contract and seek alternative suppliers. Any selection of the suppliers or procurement of goods shall be approved by Integra Project Manager and reported to KTZ Project Manager. Suppliers which have been identified to have significant E&S risks through the screening process (e.g., child and forced labour, exploitation of natural resources, environmental pollution incidents, high GHG emissions) shall be avoided. Integra Procurement Manager with the assistance from KTZ will be primarily responsible to formulate and finalise the work order.

5.2.2 EXECUTION OF CONTRACT

The formal contract between the KTZ and the supplier will outline the terms of engagement along with the following provisions (at a minimum):

- Compliance to statutory requirement.
- Compliance with national employment and labour laws, as well as international standards.
- Compliance with KTZ's E&S policies.
- State clear contracts and payments terms.
- Maintenance of records as per statutory requirements.

For existing contracts under retrospective E&S screening, an assessment shall be conducted to determine whether national legislation sufficiently addresses key E&S risks, particularly child and forced labor. Where gaps are identified, corrective actions will be considered, such as contract amendments, additional supplier commitments, or enhanced monitoring.

An exit clause shall be included in supplier contracts to allow contract termination in cases of material non-compliance with statutory and ESMS requirements. The severity of non-compliance will determine the appropriate remedial action, ranging from corrective measures to contract termination.

5.2.3 SUPPLIER MONITORING AND REVIEW

KTZ and the EPC Contractor shall conduct quarterly audit of their suppliers to identify any significant changes in the supply chain, including emerging environmental and social (E&S) risks or incidents. This monitoring process shall assess suppliers' compliance with KTZ's E&S policies, national regulations, and contractual commitments.

If new risks or E&S incidents are identified, KTZ and the EPC Contractor shall:

- Engage with the supplier to investigate and assess the severity of the issue.
- Implement appropriate corrective measures to rectify non-compliance, where feasible, in line with the remediation framework outlined in **Section 5.2.1 (Engagement of Suppliers)**.
- Monitor the effectiveness of corrective actions through follow-up assessments.

Where it is not possible to rectify non-compliance or where the supplier fails to implement corrective actions, KTZ and the EPC Contractor shall transition to alternative suppliers that demonstrate compliance with KTZ's policies and expectations.

For details on supplier engagement, screening, and remediation measures, refer to **Section 5.2.1 (Engagement of Suppliers)**.

5.3 ENVIRONMENTAL AND SOCIAL PROCEDURAL REQUIREMENTS

This section provides in detail the environment, health and safety, and social procedures to be implemented during construction phase. Formats and checklists associated with the procedures have been provided as Annexes.

5.3.1 STAKEHOLDER ENGAGEMENT & COMMUNITY GRIEVANCE MECHANISM

KTZ and Integra will ensure periodic communication with the appropriate stakeholders and all discussions and interactions will be adequately recorded to ensure proper record keeping and monitoring of any outgoing and incoming communications.

KTZ will establish a local community grievance mechanism and receive the community grievances through the local representative body of the landowner/user or individuals and address the same accordingly after management review. It will also establish a system of addressing the grievance of the employee, public and villagers and direct them to the respective HR & Admin Officer. A system of documentation of grievances and external communication will be set up for tracking and monitoring of grievances. Integra Community Liaison Officer shall be responsible for the social affairs with the community. Integra Community Liaison Officer may also choose to utilise state-established grievance mechanism "e-Otinish" online channel, and communicate this mechanism to the community.

The Stakeholder Engagement Plan and Grievance Redressal Mechanism is provided in a standalone document .

5.3.2 LABOUR MANAGEMENT

KTZ will hire all unskilled, semi-skilled and skilled labour for all construction and modification activities through the EPC Contractor (Integra). Based on the available information from KTZ, all workers currently hired are nationals of RoK. KTZ and the EPC Contractor do not intend to include any foreign workers for the construction of the Project.

In the process of hiring labour, preference shall be given to local workers from the project area. The EPC Contractor will be required to have an HR Policy and related procedures (at the minimum: Employee Handbook including working hours, wages, freedom of association, anti-child and forced labour, Employee Contract) to manage the construction workers. KTZ will contractually bind the EPC Contractor to strictly follow its HR policy and procedures and maintain associated documentation in place. The same practice shall be followed by EPC Contractor while entering contract with sub-contractors. In case any contractor/ sub-contractor does not have a HR Policy or recruitment procedures, KTZ shall provide a guiding document outlining the procedures to be followed during hiring of labour.

No persons shall be employed below the age of 16 years (as per the Labour Code dated 23 Nov 2015 Article 31) nor shall any forced labour be engaged. KTZ and the EPC Contractor is required to verify the age of relevant candidates prior to hiring, including:

- Checks on personal identification documentation (e.g., passport, national identification card or code).
- Checks on birth certificates.

Adequate records will be maintained for proof of age of workers. Considering that most workers have been hired prior to the development of this construction ESMS, checks and record keeping will be done retrospectively.

For future hiring of workers, to ensure women labour is given equal employment preferences during hiring process, hiring assessment should focus on merit and skills. This includes evaluating applicants based on their prior experience, technical knowledge and skill sets. Given that railroad construction primarily involves manual labour, women may be assigned to less physically demanding positions such as patrol officers, safety officers or first aiders, and administrative roles, among others.

Prior to appointment, medical test of each worker will be conducted to assess the overall health and identify any communicable diseases.

5.3.2.1 TERMS OF EMPLOYMENT

All workers will receive a contract which describes the employment relationship with the EPC Contractor or subcontractors. This contract will be provided as part of the hiring process and shall explain in detail the policies and procedures related to the labor and working conditions. This will include terms and duration of the employment relationship, wages and benefits, wage calculation and pay slips, hours of work, overtime, rest days, breaks, grievance procedures, deductions, working conditions, termination procedures, health insurance, and pension. Working conditions will include the physical environment, health and safety precautions, access to sanitary facilities, and also treatment of workers including disciplinary practices, reasons and process for termination or workers. These working conditions, terms of employment and workers' rights under the national labour laws will be communicated to the workers during the induction training.

The contractors/subcontractors will maintain documentation pertaining to labour engagement in accordance with national labour laws. Documentation includes written record of the employment relationship conditions at the time of hire of each directly contracted worker and signed copy of the employment contract.

The monthly wage rates paid to labour will be in accordance with the prevalent Minimum Wages established by the Law of the Republic of Kazakhstan on the republican budget for the relevant fiscal year and will be displayed at the construction site. In addition, a notice showing the period for which wages are to be paid, place and time of disbursement of wages shall also be displayed at conspicuous places within the construction site in English and local language.

KTZ will ensure that the contractor does not restrict the formation of workers organisation or union.

5.3.2.2 GRIEVANCE REDRESS MECHANISM

KTZ Human Resources Manager shall ensure that the grievance redress mechanism outlined in a standalone document **is** implemented and communicated across to all employed workers (including contractors and subcontractors).

5.3.2.3 MONITORING AND REVIEW

KTZ Human Resources & Admin Manager will monitor the labor force engaged by contractor on the following aspects:

- Payment of Minimum wages (review of salary details) and overtime wages,
- Child Labour (review of age proof).
- Work Hours (review of attendance records).
- Health and Safety Practices.
- Grievance Redressal.

KTZ Project Manager, togethering with KTZ Human Resources & Admin Manager will conduct periodic audit of contractors, on a quarterly basis, to monitor the compliance of the above measures. The audit will be undertaken as per the Format for Labour Audit (**Annex F**). The findings of the audit will be shared with the contractor and corrective actions which will be time bound will be formulated and implemented.

5.3.3 CONSTRUCTION CAMP & WORKERS ACCOMMODATION GUIDELINE

5.3.3.1 GENERAL GUIDLINES

KTZ will supervise and monitor the activities performed by their contractor, sub-contractor and accommodation facilities provided in the campsite as per the Guidance on Workers' Accommodation[2] developed by IFC and the European Bank for Reconstruction and Development (EBRD). The following measures shall be ensured:

Housing

- Contractor should assess the location of campsite, and it should not be located in immediate vicinity of any water bodies (drainage channel), ideally be far from the localities.
- Workers shall be provided with accommodation made of insulated material and locally available building material.
- The accommodation should include well-ventilated rooms, fans, proper insulated electrical wirings, sanitary, cooking facilities and emergency exits.
- Campsite should not be overcrowded. Adequate space should be ensured (Minimum room space should be 4 m^2 with a height of 2.1 m. In case of collective room, reasonable number of workers allowed to share the same room is 2 to 8. The room space should be sufficient so that approximately 4 m^2 of floor space is available to each worker.).
- Rooms should be well ventilated and lit.
- All doors and windows shall be lockable and mobile partitions/curtains shall be provided for privacy.
- Facilities for the storage of personal belongings for workers shall be provided within the campsite only.

Sanitary Facilities

- The units must be supported by common toilets facilities duly segregated for male and female labour.

[2] Workers' accommodation: processes and standards

- Adequate number of toilets (minimum of 1 unit to 15 males and 1 unit for 10 females) to be ensured.
- Sanitary and toilet facilities should be designed to provide adequate privacy, including ceiling to floor, partitions and lockable doors. These facilities should be cleaned frequently and kept under working conditions.
- To avoid spread of infections and diseases, proliferation of mosquitoes, flies, rodents and other pests, wastewater generated from domestic activities such as bathing and washing should not be allowed to flow in open and should be channelised to the nearest municipality drain. In absence of municipality drain, a septic tank and a soak pit system of adequate capacity should be constructed.
- Containers for collection of food waste, kitchen waste should be provided in labour camp. These containers should be emptied on regular basis.

Food and Drinking Water

- Water tanks for drinking and other domestic use for workers, should be properly stored to prevent any sort of contamination and pollution.
- In cases where 100 or more workers are likely to work for 6 months, an adequate canteen consisting of at least a dining hall, kitchen, storeroom, pantry and washing places separately for workers and utensils should be maintained.

General Health and Safety

- Health and safety management plan including, electrical, mechanical, structural and food safety should be effectively explained to the workers.
- A medical centre and adequate number of first aid kits should be maintained on site.
- Adequate number of onsite staff and workers should be trained to provide first aid.
- Guidance should be given to workers pertaining to detrimental effects of the abuse of alcohol and drugs and other potentially harmful substances and the risks and concerns related to HIV/AIDS and other health risk related activities.
- Decision should be made on whether to prohibit alcohol, third party access or not from the camp and other important rules should be clearly communicated to all the workers.

Management of Labour Camps

- A person with adequate background (from onsite team) should oversee managing workers accommodation. Person in charge should be trained for good sanitation, nutrition, food handling, basic health and safety and storage.
- Depending on the size of labour camp, enough workers should be identified for cleaning and general maintenance.
- Unannounced inspections should supplement the 6-month audits.
- Specify whether inspections should increase in frequency in case of non-compliance findings.
- Ensure that worker grievances related to accommodation trigger additional reviews.

- The EPC Contractor must incorporate additional details and procedures into the existing HSMP within 1 month.

Medical facilities

- Access to adequate medical facilities is important to maintain workers' health and to provide adequate responses in case of health emergency situations.
- First aid facilities
- Providing adequate first aid training and facilities can save lives and prevent minor injuries becoming major ones

Security

KTZ and the contractor shall put in place the following security measures to ensure the safety of the workers:

- Access to the campsite shall be limited to the residing workforce.
- Security staff should have a clear mandate and instructions about their duties and responsibilities such as not to harass, intimidate, discipline, or discriminate against workers.
- Adequate number of guards shall be deployed for both day and night shifts.
- The security personnel shall be provided with training to respect the community traditions and handling with surrounding community and workers, use of force etc.
- Ensure access to grievance redress mechanism system for labourers to report any concerns related to security arrangement and staff.

Community Health and Safety

- Workers at the labour camp shall be provided with a cultural sensitivity training to provide them with a basic understanding of the local community within the vicinity.
- Ensure access to grievance redress mechanism system for local community to report any concerns related to security arrangement and staff. The grievance redress mechanism shall also allow for reporting of gender-based violence incidents, concerns on in-migration etc.
- Persons with adequate background (from onsite team) shall be appointed as community liaison officers to facilitate communication between the labour camps and the local communities, addressing grievances and fostering mutual understanding. The identified persons should be trained on community engagement protocols.
- Regular engagements with the local communities to assess the social impacts of the labour camps and to gather feedback from the communities shall be conducted by KTZ, the contractor and the identified community liaison officers of the campsite. Details of these engagements shall be recorded.

OHC Facilities

- Medical room with Doctor, Stretcher and ambulance facilities will be provided by civil Contractor. If the same is not adhered, fulfilling the medical requirement, KTZ team reserves the right to take over and charge it to the Contractor.

- Portable first aid boxes must be maintained fully equipped at each local site offices, work locations on each zones and in all site vehicles. The equipment should be unlocked in a clearly marked, designated area in a location that ensures easy and quick access in case of emergency maintained in good condition and inspected regularly in order to secure it completeness and utility.
- In each site office and location one employee, suitably trained in first aid, should be available at all working hours for the purpose of attending to emergencies and to render First Aid and CPR. Proper arrangements should be made to report accidents & Incidents by workers who's identity are displayed being a representative responsible for all health and safety matters.
- A qualified doctor should be appointed for full time at site, and the first aid base shall consist of minimum,

First Aid Kits & Supplies for OHC facility (OSHA's 29 CFR 1926.50(d))

1. OSHA-compliant first aid kits (ANSI Z308.1)
2. Sterile gauze pads (4" x 4" minimum)
3. Adhesive bandages (assorted sizes)
4. Antiseptic wipes and hydrogen peroxide
5. Adhesive tape (1" width)
6. Elastic bandages (for sprains and strains)
7. Burn dressings and burn ointment
8. Antibiotic ointment
9. Eye pads and eye wash solution (29 CFR 1926.50(g))
10. Cold packs (instant ice packs)
11. Tweezers and scissors
12. Disposable gloves (nitrile or latex)
13. CPR face shield or mask
14. Adequate provisions to store enough supplies

- Supervisors and Safety Representatives must be trained in First Aid & CPR and document for future reference
- Each contractor shall provide at least one appropriately sized and stocked first-aid kit in a weatherproof container and shall be inspected regularly to ensure that the expended/ expired items are promptly replaced
- Eye wash capabilities shall be provided by the exposing contractor as required by the MSDS for products used at the job site.
- Each Contractor and Subcontractor shall submit (via the Contractor) to KTZ & ES a list of First Aid / CPR trained personnel prior to starting work

Others

- Transportation shall be provided if the accommodation is offsite.
- Recreational areas shall be provided where feasible.
- A grievance redress mechanism shall be provided and communicated to the workers for them to raise their grievances in relation to living and labour conditions etc.

5.3.3.2 MONITORING AND REVIEW

KTZ Project Manager with the assistance from Integra Project Manager shall conduct audits on the labour accommodation every 6 months at the minimum, to ensure living conditions are well maintained and in compliance with IFC standards and local regulations. Labour Camp Inspection Checklist can be found in **Annex G**.

5.3.4 OCCUPATIONAL HEALTH AND SAFETY (OHS) MANAGEMENT

The objective is to reduce accidents and work-related illnesses, aiming for a zero-incident workplace. KTZ, the EPC Contractor (Integra), and all subcontractors must ensure that all reasonable precautions are taken to protect worker health and safety. This section outlines the **minimum mandatory controls** for high-risk activities.

OH&S Policy

Overall intentions and direction of an organization related to its OH&S performance

as formally expressed by top management.

The EPC Contractor shall implement a project specific:

- Safe Systems of Work (SSOW): Including Job Hazard Analysis (JHA), Permit-to-Work (PTW), and Simultaneous Operations (SIMOPS), to systematically control risks.
- Incident Reporting & Investigation: All accidents, near-misses and high potential incidents must be reported and investigated within 24 hours with lesson learned incorporated into safety plans.
- H&S Plan updates: This plan will supplement the existing Health and Safety Plan (HSP) that has been developed for the Project by the EPC Contractor. These additional details and procedures shall be incorporated into the existing HSP within the 1 month from ESMS approval.

The process of identifying hazards, assessing risks and issuing Health and Safety (H&S) procedures is a continuous process and must be repeated/carried out every time significant changes to working conditions occurs or new working operations, or new types of machineries, are used. The OHS procedures and work instruction are therefore subject to continuous revision based on the outcomes of the risk assessment process

Construction operations are organised and carried out by the EPC Contractor and its subcontractors. KTZ employees carry out mainly office activities and field activities consisting mainly of inspections and auditing. KTZ's employees visiting the construction site; therefore, must comply with the EPC Contractor's OHS procedure to access the work areas.

During the execution of the works, the EPC Contractor shall comply with the applicable national and international requirements detailed in **Section 3** of this ESMS. The EPC Contractor shall always implement and demonstrate compliance with these requirements.

In addition, the EPC Contractor must ensure that:

- The resources are in place to implement the requirements of the OHS management system.

- The EPC Contractor and its subcontractor personnel receive the required training for the safe performance of the assigned tasks.
- Systems are in place for routine auditing, inspection and reporting to ensure compliance with the applicable national and international requirements.
- Systems are in place for reporting and investigations of environmental events, near-misses, accidents, incidents and potential hazards within an agreed and legally required timeframe.
- Progress updates are provided to KTZ and lenders on an agreed basis on the OHS performance.
- All records and other relevant documentation are kept showing compliance/conformity to Project requirements for the duration of the Contract.

5.3.4.1 HAZARDS IDENTIFICATION AND RISK ASSESSMENT

Hazard identification and risk assessment are continuous processes that must be conducted before any new activity, change in work conditions, or introduction of new machinery.

To ensure risks are effectively controlled:

- Job Hazard Analysis (JHA) and Job Safety Analysis (JSA) must be performed for all major tasks to identify hazards and define risk controls.
- Lot Simultaneous Operations (SIMOPS) Risk Management: A risk assessment must be performed when multiple activities (e.g., excavation, welding, crane operations) occur in proximity.
- Risk Review Process: OHS risk assessments must be updated quarterly or as work conditions change.

Key OHS Controls

OHS Hazard	Key Safety Controls
LOTO (Lockout/Tagout) – Electrical & Mechanical Work	Energy isolation procedure, authorized personnel only, multi-point locks, LOTO logbook
Hot Work (Welding, Cutting, Grinding, Open Flame Work)	PTW required, fire watch assigned, flammable materials removed, fire extinguishers available
Human-Machine Interface (HMI) – Vehicle & Equipment Safety	Restricted pedestrian zones, spotters required, safety barriers for machine operators
Excavation Safety & Trenching	Sloping/shoring required, soil testing, daily inspections, confined space entry permits
Hazardous Materials Handling & Waste Exposure	Proper labeling & storage, PPE required, secondary containment for spills
Confined Space Entry	Air monitoring, entry permits, rescue team available, lifeline & harness required

OHS Hazard	Key Safety Controls
Working at Heights (Scaffolding, Ladders, Rope Access)	PTW required, certified anchor points, fall arrest systems, harness inspections
PPE Requirements	Minimum PPE: hard hats, safety glasses, gloves, boots, high-visibility vests

The Job Hazard Analysis (JHA) and Job Safety Analysis (JSA) methodologies shall be used as primary tools for risk identification at the task level. JHA will be applied for general workplace hazards, while JSA will provide a task-specific breakdown, detailing each step of the work, the hazards involved, and necessary safety control. An example of how one such activity should look in the JHA matrix has been presented in **Figure 5-1** and in **Annex H** (Job Hazard Analysis Template).

FIGURE 5-1: SAMPLE COPY OF A JHA MATRIX FORM

Task/Operation: Enter task/operation name	**Location:** Enter location **Job Title(s):** Enter job title(s)
Task/Operation Description:	Describe task
Date JHA Prepared: Enter date JHA prepared	**Supervisor(s):** Enter name of supervisor(s)
JHA Team Members: Enter team member name Enter team member name Enter team member name Enter team member name	**Approved By:** Enter name of reviewer **Signature:** Sign here **Date:** Enter date signed

STEP	POTENTIAL HAZARD(S)	CONTROL MEASURES	PHOTOGRAPHS
Step 1 Add step here	• Enter potential hazard • Enter potential hazard • Enter potential hazard • Enter potential hazard • Enter potential hazard	**Can the potential hazard(s) be:** ▪ Eliminated? ☐ ▪ Substituted/replaced? ☐ **How?** Add control measure **Engineering controls** **Existing?** • Add control measure ☐ • Add control measure ☐ • Add control measure ☐	Uncontrolled
		Administrative controls • Add control measure ☐ • Add control measure ☐ • Add control measure ☐ **Personal protective equipment** • Add PPE needed • Add PPE needed • Add PPE needed	Controlled

Through the above process, the EPC Contractor will implement actions and measures to eliminate or mitigate hazards and control risks. The objective is to ensure that residual risks are reduced to As Low As Reasonably Practicable (ALARP).

To ensure that workplace hazards are effectively managed and that risks are mitigated to ALARP, the EPC Contractor and subcontractors must implement a hierarchy of control measures. These control measures will be applied systematically based on the outcomes of the risk assessment process, including Job Hazard Analysis (JHA), Job Safety Analysis (JSA), and Root Cause Analysis (RCA).

5.3.4.2 MANAGEMENT OF IDENTIFIED HAZRDS

Once hazards have been identified through the Hazard Identification & Risk Assessment (HIRA) process, they must be effectively controlled using the Hierarchy of Controls (**Figure 5-2**). The

application of risk management strategies must be aligned with the specific nature of the job activity, worksite conditions, and level of risk exposure.

The following control measures must be implemented as presented in **Table 5-4** below in descending order of effectiveness.

FIGURE 5-2: HIERARCHY OF HAZARD CONTROL MEASURES AND THEIR APPLICATIONS

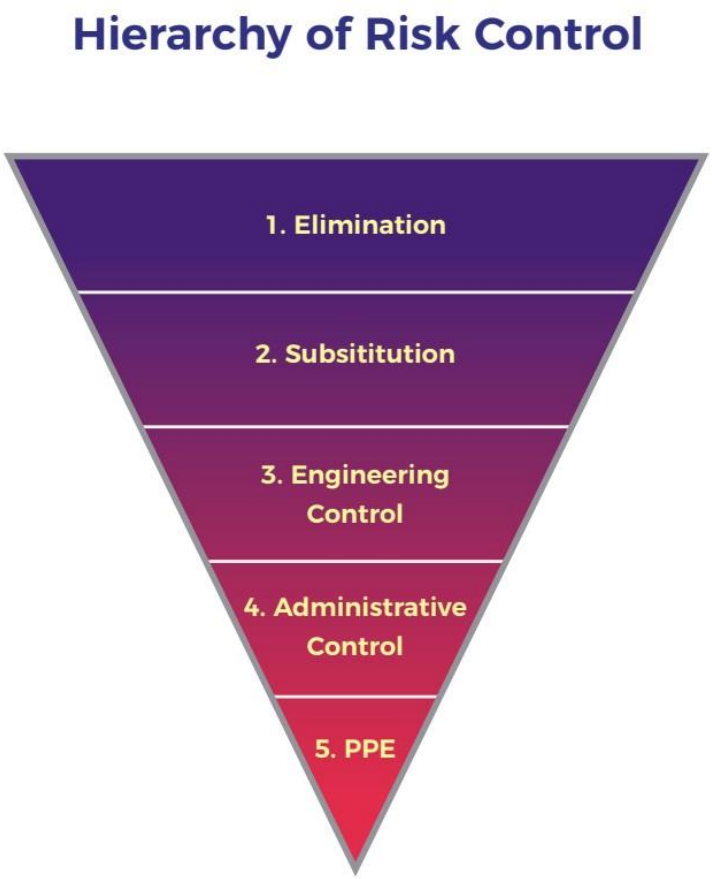


TABLE 5-4: HIERARCHY OF HAZARD CONTROL MEASURES AND THEIR APPLICATIONS

S.N	Control Measures	Description	Examples
1.	**Elimination**	Removing the hazard entirely from the work environment if feasible.	Using mechanized excavation and grading instead of manual digging to reduce worker exposure to soil collapse and heavy labour.
2.	**Substitution**	Replacing hazardous substances, equipment, or processes with safer alternatives.	Using pre-cast concrete sleepers instead of on-site casting to minimise manual handling of heavy materials and reduce exposure to cement dust.
3.	**Engineering Controls**	Implementing physical modifications to processes,	Installing slope stabilization structures (e.g., retaining walls, geotextiles) in cuttings and

S.N	Control Measures	Description	Examples
		equipment, or excavation area to reduce risks.	embankments to prevent landslides and soil erosion.
4.	**Administrative Controls**	Establishing policies, procedures, and training programs to promote safe work practices.	Conducting regular safety briefings, enforcing site access control, and implementing permit-to-work systems for high-risk activities like deep excavation.
5.	**Personal Protective Equipment (PPE)**	Providing workers with protective gear when other controls are insufficient to eliminate the hazard.	Safety helmets, high-visibility clothing, steel-toe boots, dust masks for excavation work, and harnesses for work on bridges and elevated tracks.

To achieve this, the EPC Contractor requires that Job Hazard Analyses be supplemented with a Hazard Identification and Risk Assessment Procedure, as outlined in **Annex I** (Format for HIRA Form). This procedure defines the approach to risk and hazard identification, key responsibilities, and the risk assessment and review process.

The revision shall be done by Integra EHS Manager, with the assistance from Integra Project Manager. Approval has to be obtained by both Integra Senior Management (e.g., Deputy General Director) and KTZ Project Manager.

A structured preventive and protective approach shall be implemented, ensuring that hazards are managed before work commences. Some of the typical hazards identified based on the nature of the job and activity undertaken are presented in **Table 5-5** below, along with their corresponding preventive and protective control measures.

TABLE 5-5: PREVENTIVE AND PROTECTIVE MEASURES FOR OHS

Activity	Identified hazard	Control Measure
Civil work	• High Noise • Fall, slip, trip • Dust inhalation • Extreme heat	• Ear plug shall be required while working • Proper lighting to be arranged • All work surfaces should be properly installed • Work surface, floor will be free from nail, binding wires and all other obstacles. • Face masks to be used to reduce the inhalation of dust or other emission. • Induction training for all new workers to include a detailed module on occupational health and safety. • Ensure the PTW obtained and followed effectively
Loading unloading & Erection of railway tracks by use of the	• Fall, slip, trip • Personal injury • Lifting equipment or gear failure	• All site workers and visitors shall be required to wear PPE while working or visiting the Site

Activity	Identified hazard	Control Measure
crane/heavy machineries	• Improper slinging • Fall of material • Unauthorised access • Improper lighting	• Lifting plan shall be made in consultation with site engineers/project manager & safety personal. • Ensure the PTW obtained and followed effectively • To be ensured that all loads are within the capacity of the crane performing the lifts. • To be ensured that work area demarcated for authorised personnel only & signs posted for crane operations. • Loading and unloading of materials should occur at designated dispatch and receivable points. • While shifting pipes in the excavated trench at that time nobody can be allowed to stay in the excavated trench. • The area should be barricaded and proper sign board to be provided. • Underground utilities to be identified prior to start of excavation work. • Lifting activities to be avoided during high wind condition. • Proper lighting to be arranged in case of working at night.
Vehicle & Equipment movement, Driving & Transportation inside the Project site	• Vehicle / equipment accident • Personal injury/ death • Vehicle rollover • Over speeding • Bursting of tire	• Vehicle’s fitness certificate to be checked. • Fire extinguisher should be placed within vehicles or equipment. • To be ensured that drivers or passengers wear seat belt. • All traffic rules, signage and marking needs to be obeyed. • Vehicles or equipment will be maintained on a regular basis. • The vehicle should not be overloaded Ensure the PTW obtained and followed effectively
Manual handling of materials	• Back pain and body injury due to poor manual handling • Accident due to sharp-edged materials • Loss of control, slip/trip	• All persons must be trained for safe manual handling • Proper PPE shall be used while handling any kind of material. • The weight of all lifting material should be known prior to lifting • Training on proper posture for manual lifting shall be imparted to all labours. • Manual handling of heavy material should be avoided • All persons to be made aware of danger through Toolbox talk • Ensure the PTW obtained and followed effectively

Activity	Identified hazard	Control Measure
Working from Heights	• Fall protection equipment failure or improper use • Anchor point failure • Improperly donned equipment • Walk off unprotected edge • Trips and falls	• Fall protection equipment to be inspected prior to each use. Suspect or damaged equipment must be removed from service. • Appropriate fall-protection equipment must be used during elevated work where there is fall potential of 2 meters or more. • All non-certified anchorages, used for fall protection, must be reviewed by contractor H&S officer. • Ensure the PTW obtained and followed effectively
Welding	• Burns • Injury to eyes of workers and co-located workers from the exposure Inferred light (IR) generated from welding arc • Inhalation hazards associated with welding activities • Fires and explosions	• Only trained workers will be allowed to conduct welding • Welding PPE will be worn to protected exposed skin, e.g., welding gloves, welding sleeves, or welding jacket. • Hardhat mounted face shield with welding shade for the type of welding being conducted must be worn along with safety glasses. • Welding screens or shields must be used to protect co-located workers from the exposure to the welding arc flash. • Ensure the PTW obtained and followed effectively
Use of hand and power tools	• Electrocution • Hand/finger injury	• Electrical equipment must be checked by competent electrician • Only trained person is allowed to use this tool. • Specific PPE to be ensured • Pre task briefing through toolbox training should be provided prior to start of the work • Ensure the PTW obtained and followed effectively
Working in high Temperature / under direct sunlight	• Headache • Loss of concentration • Dehydration • Heatstroke	• Rest shelter to be provided • Drinking water will be provided in the site always • Heat stress precautionary measures and symptoms of heat stress will be highlighted to all employees in the daily toolbox talks in the summertime • Qualified firs aider should be available at site. • All workers will be advised to take a short break if feeling fatigued • Ensure the PTW obtained and followed effectively

Activity	Identified hazard	Control Measure
Electrical works	• Electrocution • Fires and explosions	• Electrical equipment must be checked by competent electrician • Only trained electricians are allowed to perform the works • Specific PPE to be ensured • Pre task briefing through toolbox training should be provided prior to start of the work • Ensure the appropriate LOTO system is implemented and followed • Ensure the PTW obtained and followed effectively
Excavation Work	• Cave-ins or trench collapse • Falling objects or material • Exposure to underground utilities (electrical cables, gas lines, etc.) • Falls into the excavation • Accidents due to improper access/egress • Hazardous atmospheres (oxygen deficiency, toxic gases)	• Protective systems such as shoring, shielding, or sloping to prevent trench collapse • Proper barricading and warning signs around the excavation • Pre-excavation site inspection to identify underground utilities • Safe access and egress (ladders, ramps, or stairs) should be provided • Atmospheric testing for oxygen levels and toxic gases before entry into deep excavations • Workers must wear proper PPE, including helmets and reflective vests • Continuous monitoring of the excavation site for stability • No heavy equipment or material should be placed close to the edge of the excavation • Ensure the PTW obtained and followed effectively
Demolition Work	• Uncontrolled collapse of structure • Dust and debris inhalation • Falling objects hitting workers • Noise and vibration hazards • Exposure to hazardous materials (asbestos, lead, etc.)	• A demolition plan must be in place before work starts • Controlled demolition techniques should be used • Workers must wear dust masks and respiratory protection • Site should be barricaded to restrict unauthorized access • Noise-reducing equipment should be used where possible • Ensure the PTW obtained and followed effectively
Underground Utility Work	• Electrocution from contact with live cables • Gas leaks causing fire or explosion	• Underground utilities must be identified before digging • Work permit to be obtained before starting excavation

Activity	Identified hazard	Control Measure
	• Entrapment due to trench collapse • Oxygen deficiency in confined spaces	• Proper ventilation should be provided in confined spaces • Gas detectors and oxygen meters to be used before entry • Workers to wear flame-resistant clothing when working near gas lines • Ensure the PTW obtained and followed effectively

Safe Working Practices

Confined Space Works

The EHS manager of EPC contractor is the sole person to issue a confined space entry permit in respect of entry into or work in the confined space if the authorised manager is satisfied that:

- Oxygen level in the confined space is within the range of 19.5% to 23.5% by volume.
- Level of flammable gas or vapour in the confined space is less than 10% of its lower explosive limit.
- Levels of toxic substances in the atmosphere of the confined space do not exceed the permissible exposure levels.
- Confined space is adequately ventilated.
- Effective steps have been taken to prevent any ingress of dangerous gases, vapour or any other dangerous substances into the confined space.
- All reasonably practicable measures have been taken to ensure the safety and health of persons who will be entering or working in the confined space.

It shall be the duty of the responsible person/worker entering into or working in a confined space to ensure, before such entry or work, that the person/worker has first received adequate safety and health training for the purpose of familiarising himself/herself with the hazards associated with such entry into or work in the confined space and the precautions to be observed.

An appointed confined space attendant shall remain outside the confined space in order to:

- Monitor persons entering into and working in the confined space.
- Maintain regular contact with the persons in the confined space and when necessary, assist them to evacuate should the need arise.
- Alert the persons appointed to carry out rescue work in the event of an emergency.

The EPC Contractor shall classify the confined spaces into the following:

- Manhole.
- Enclose formwork.
- Dulvert drain.
- Excavation more than 4 meters.

- Partially enclosed excavations.
- Tunnels**.**

Integra will establish controlled access and egress points to confined spaces to prevent unauthorised entry. Where practicable, the EPC Contractor shall ensure that there are at least two (2) readily accessible escape routes from each confined space. The EPC Contractor shall operate a tag system for entry so that all personnel entering the confined space can be accounted for.

Electrical Installation

All electrical wiring in a worksite shall be supported on proper insulators, and not be looped over nails or brackets.

No electrical wiring or cable shall be left or laid on the ground or the floor of a worksite unless it is of the weather-proof type, provided with adequate protection to withstand the wear and tear to which it may be subjected, and maintained in good and safe working order. No machinery shall be left energised.

It shall be the duty of Integra EHS Manager, with the assistance of the duty managers of subcontractors of the construction site where any electrical installation is used, to ensure that:

- Effective residual current circuit breakers are installed for all temporary electrical installations to provide earth leakage protection.
- Overcurrent protective devices with the appropriate ratings are installed in the distribution board to provide overcurrent or short-circuit protection.
- Warning signage displayed at distribution board shall have the word ‘DANGER’ and the operating voltage of the equipment:
    - In block letters of at least 30mm high and 5mm wide.
    - In English and local language.
    - In black against a yellow background.
    - Maintained in a clear and legible condition at all times.
- All plugs, socket-outlets and cable couplers likely to be exposed to the weather shall be contained in waterproof enclosures unless they are of the weatherproof type.

The EPC Contractor shall ensure that all portable electrical appliances used above and below ground level, including handheld tools and inspection lamps, are rated at 110 volts AC via a step-down transformer Centre Tapped to Earth (CTE).

LOTO system

The EHS manager of the EPC contractor is the sole authority to issue a LOTO permit before any servicing or maintenance work begins. The permit will only be issued if the following conditions are met:

- All hazardous energy sources have been identified and isolated.
- Proper Lockout/Tagout devices are applied and secured.
- All affected personnel are notified about the LOTO procedure.

- Verification procedures confirm the effectiveness of energy isolation.
- Trained and authorized personnel are assigned for the LOTO process

Authorized employees are trained personnel responsible for executing LOTO procedures, including shutting down and isolating equipment. They must verify complete energy isolation before beginning any work. Affected employees, who operate or work near locked-out equipment, must be aware of these procedures and refrain from attempting to restart machinery. Other employees on-site must respect all LOTO devices and signs, reporting any missing or tampered locks or tags immediately.

LOTO Procedure Preparation for maintenance:

1. Identify all hazardous energy sources related to the equipment. Notify all affected employees before initiating LOTO.
2. Gather the necessary LOTO devices (locks, tags, blocking devices, etc.).
3. Equipment Shutdown: Turn off the machine or equipment using the standard operating procedure.
4. Ensure all moving parts come to a complete stop.
5. Energy Isolation
6. Locate and operate the primary energy control (breaker, valve, switch) to isolate energy sources.
7. Release or block any stored energy).Use appropriate locks and tags on all isolation points.

Lockout/Tagout Application

Place an individually assigned lock on each energy-isolating device. Attach a durable tag indicating the employee's name, date, and reason for the lockout. Use group LOTO procedures when multiple workers are involved (each worker applies their own lock).

Verification of Isolation

Attempt to restart the equipment using the normal start-up process to verify that energy has been successfully isolated. Check visually and physically to confirm that all parts have stopped moving.

Employees should ensure zero energy before starting work.

- Performing Maintenance or Service Work
- Work should be conducted safely while equipment is in a de-energized state.
- Workers should maintain LOTO procedures throughout the entire task.
- Removal of Lockout/Tagout
- Ensure all tools and personnel are clear from the equipment.
- Verify that controls are in the OFF position.

Emergency Situations

- If a lock must be removed by someone other than the original worker, a supervisor must verify the worker is not on-site and follow proper removal procedures.
- In case of accidental activation, follow emergency response protocols immediately.

Training and Compliance

- All authorized employees must undergo LOTO training annually.
- New employees must receive training before engaging in tasks requiring LOTO.
- Supervisors should conduct periodic audits to ensure LOTO compliance.

Recordkeeping

- Maintain logs of all LOTO procedures performed.
- Keep training records for at least three years.
- Document incidents or near-misses related to energy control failures.

Enforcement

- Failure to follow LOTO procedures will result in disciplinary action, including possible suspension or termination, in accordance with company policy and OSHA regulations.
- By adhering to this LOTO practice, construction sites can ensure the safety of all workers and prevent hazardous energy-related incidents.

Excavation

Where the depth of any excavation exceeds 1.5 metres or where the banks are undercut, the EPC Contractor shall ensure adequate shoring by underpinning, sheet piling, bracing or other means of shoring shall be provided to prevent collapse of the excavation, or any structure adjoining or over areas to be excavated.

Where the depth of any excavation in a worksite exceeds 4 metres, the EPC Contractor shall ensure adequate shoring by underpinning, sheet piling, bracing or other means of shoring shall be made or erected in accordance with the design of a professional engineer to prevent collapse of the excavation, or any other structures adjoining or over areas to be excavated.

The open side of any excavation in a worksite which exceeds 2 metres in depth shall be provided with adequate guardrails to prevent persons from falling into the excavation. Notices shall be put up at appropriate and conspicuous positions to warn persons about the excavation in a worksite.

The EPC Contractor shall ensure excavated material or other superimposed loads shall be placed away from the edge of the excavation in a worksite to prevent the materials or other loads from falling into the excavation or cause the banks to slip or cause the upheaval of the excavation bed.

All reasonably practicable measures shall be taken by the EPC Contractor during any excavation work in a worksite to prevent any person from:

- Being trapped by the collapse of the excavation.
- Being struck by an object, such as an excavating machine or by any material dislodged by the machine.
- Falling into the excavation.
- Inhaling, or otherwise being exposed to, carbon monoxide or other impurity of the air in the excavation.

The EPC Contractor shall ensure proper walkways is provided along struts and walers for access and egress. Walkways shall also be provided on planned emergency escape routes.

Designated walkways along walers and struts shall be levelled, flushed without tripping hazards and with rigid guardrails and toe boards securely provided.

Excavators within the excavation pit shall have suitably reinforced cabin roofs capable of withstanding impact from falling objects from the top of the excavation and its movement coordinated by one of its operators, who shall be appointed as a leader by Integra EHS Manager.

Working Near Water: The EPC Contractor shall ensure that all excavation work conducted near bodies of water, such as rivers, lakes, or coastal areas, is carried out with additional safety measures to prevent accidental drowning or water ingress into the excavation site. Proper dewatering systems, such as sump pumps or well points, shall be installed where necessary to control water accumulation.

All personnel working near water shall be equipped with personal flotation devices (PFDs) and trained in water safety procedures, including emergency rescue operations. Adequate barriers and warning signs shall be placed along the water's edge to prevent accidental slips or falls.

Additionally, a standby rescue team equipped with appropriate life-saving equipment, such as lifebuoys and ropes, shall be present at all times when work is being carried out near water.

The excavation plan shall include an assessment of tidal changes, potential flooding risks, and necessary contingency measures to ensure worksite stability. Excavation near water shall be carried out only under favorable weather conditions, and work shall be halted during heavy rain or rising water levels to prevent hazardous conditions.

Hot Work Management

Hot work, such as welding, cutting, grinding, and other activities involving open flames or high temperatures, presents significant fire and safety risks on construction sites. Proper management of hot work is crucial to prevent hazards, protect workers, and comply with safety regulations. By following these safer hot work management practices, construction sites can significantly reduce fire risks and create a safer work environment for all personnel. Strict adherence to safety protocols is essential in preventing accidents, ensuring worker safety, and complying with regulatory requirements.

The EHS manager of the EPC contractor is the sole authority to issue a Hot work permit before any hot work starts.

- Conduct a Risk Assessment: Identify potential hazards, such as combustible materials, flammable gases, and nearby workers, before starting any hot work.
- Implement a Hot Work Permit System: Ensure that all necessary precautions are in place before work begins.
- Establish a Designated Hot Work Area: Whenever possible, conduct hot work in a controlled area away from flammable materials.
- Use Protective Barriers: Fire-resistant blankets, shields, or curtains should be used if hot work is performed in a non-designated area.
- Ensure Proper Ventilation: Prevent the accumulation of toxic fumes and gases to protect workers' health.

- Wear Appropriate Personal Protective Equipment (PPE): Workers should use fire-resistant clothing, gloves, safety goggles, and face shields.

Fire Prevention Measures:

- Assign Fire Watch Personnel: A fire watch must monitor the hot work area during and at least 30 minutes after completion to detect hidden fires or smouldering materials.
- Keep Firefighting Equipment Readily Available: Fire extinguishers, hoses, or other firefighting tools must always be accessible.
- Remove or Shield Flammable Materials: All combustible materials should be cleared from the work area. If removal is not possible, non-combustible barriers must be used.
- Maintain Safe Storage of Gas Cylinders and Fuel Sources: Ensure proper handling and storage to prevent leaks and explosions.

Training and Compliance:

- Provide Fire Prevention and Emergency Response Training: Workers should be trained on fire hazards, extinguisher use, and emergency procedures.
- Issue Hot Work Permits Only by Authorized Personnel: Only trained individuals should approve and monitor hot work activities.
- **Conduct Regular Inspections and Audits:** Supervisors should verify compliance with hot work safety standards and address any deficiencies.

Emergency Procedures:

- **Follow Site-Specific Fire Response Protocols:** In case of an emergency, workers must activate alarms, use fire extinguishers if safe, and evacuate the area.
- **Maintain Clear Emergency Exit Routes:** Ensure that all workers have an unobstructed path to exit in case of fire or other hazards.

Fire Safety

The EPC Contractor shall ensure means of extinguishing fire shall be provided and maintained and shall be readily accessible, adequate, suitable and tested by a competent person at regular intervals.

There shall be effective warning devices that are:

- Capable of being operated without exposing any person to undue risk.
- Maintained and tested at least once every month.
- Able to give warning in case of fire.
- Clearly audible throughout the construction sites.

All gas cylinders shall be kept away from radiators and other sources of heat. In the case of acetylene and LPG cylinders, they should not be stored within 1.5 metres of an electrical equipment, unless the electrical equipment is of an explosion-proof type.

Cylinder Valves shall be protected from damage by protection caps, valve guards or other effective means. Storage temperature of the cylinder contents shall not be allowed to exceed 50 degrees Celsius.

Oxygen cylinders in storage shall be separated from fuel gas cylinders or combustible materials (especially oil or grease), for a minimum distance of 6.0 m or by a non-combustible barrier of at least 1.5 metres high having a fire-resistance rating of at least half hour.

No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids or other materials which, when subjected to heat might produce flammable or toxic vapours.

All equipment used (for welding, cutting and other operations involving the use of heat) should be visually examined at the beginning of the day, before being used. All hoses must be checked to ensure they are free from cuts, cracks and other defects. Defective hoses and apparatus must not be used. The gas supply must be shut off at the regulators before any changing of torches, hoses or other parts is done.

Before starting the burning operations, checks must be made to ensure that there is no flammable or combustible material nearby.

Storage and Handling of Hazardous Materials

Hazardous materials, such as fuels, lubricants, welding gases, paints, adhesives, and industrial solvents are commonly used on construction sites. Improper storage and handling can lead to fires, explosions, toxic exposures, environmental contamination, and severe injuries.

Hazardous materials should be stored in well-ventilated, designated areas, away from railway tracks, worker camps, and water sources. Flammable substances like diesel, gasoline, and hydraulic oils must be stored in fire-resistant containers with proper secondary containment to prevent spills.

For example, diesel fuel used in the project should be kept in approved fuel tanks with bund walls to prevent leakage into the soil. Oxygen and acetylene cylinders used for welding railway tracks should be secured upright and separated to avoid fire hazards.

Proper labelling and documentation are essential. All hazardous substances should have Material Safety Data Sheets (MSDS) available on-site, detailing their properties, risks, and emergency procedures. Workers must be trained to handle materials safely, such as using spark-proof tools when working with fuel or wearing chemical-resistant gloves and goggles when handling adhesives or solvents used for railway sleepers and track maintenance.

Transportation of hazardous materials within the rail project site must follow ADR(European Agreement concerning the International Carriage of Dangerous Goods by Road) regulations, ensuring that materials like compressed gases and industrial chemicals are carried in approved, leak-proof containers with proper hazard labelling.

For example, transporting welding gases for track repairs should be done using designated carts with secure fastening to prevent cylinder tipping.

To minimise risks, emergency response plans must be in place. Each hazardous material storage area should have fire extinguishers (Class B for fuels, Class C for electrical fires), spill kits (absorbents and neutralizers), and emergency showers and eyewash stations near chemical storage units. In case of fuel spills from railway maintenance equipment, spill containment booms and absorbent pads should be used immediately to prevent environmental contamination.

Proper waste disposal is crucial. Hazardous waste, such as used lubricants, empty chemical containers, and oily rags, should be disposed of through licensed waste management companies in Kazakhstan to prevent pollution.

For example, used engine oil from railway maintenance machines must be stored in sealed, labelled containers and transported for proper recycling or disposal.

By following local and international safety regulations, this construction projects in Kazakhstan should ensure worker safety, environmental protection, and compliance with legal requirements.

Regular HSE (Health, Safety, and Environment) training, audits, and inspections should be conducted to monitor and improve hazardous material management on-site.

Ladders

The EPC Contractor shall use step platforms instead of portable ladders for works at height subjected to the Engineer's approval and establish a Permit-To-Work system for such works. In addition, for works in excess of three (3) metres, the EPC Contractor shall demonstrate the stability of these step platforms to prevent toppling. No vertical access ladders exceeding 3 metres in length is allowed on site.

The EPC Contractor shall ensure that all staircases have anti slip strips / paint to prevent slip and fall.

Scaffolding

Every scaffold shall be constructed, erected or installed on structures or foundations of adequate strength.

In the case of a scaffold in a workplace exceeding 15 metres in height or being erected on poorly drained soil, base plates shall bear upon sole plates that are:

- Of strength not less than 670 kgf per square metre.
- Of a length suitable to distribute the load.

There shall be no cavity under the sole plate immediately below any standard of a scaffold in a workplace.

Ensure that stairs or ladders are provided to allow individuals to access different levels of any scaffold in the workplace, and that they are, where feasible, installed within the scaffold itself.

Work platforms in a workplace shall be provided:

- At any place of work which does not afford a proper and secure foothold.
- In the case of a railway station building under construction, around the edge of the building at every uppermost permanent floor which is under construction.

Every side of a work platform or workplace from which a person is liable to fall more than 2 metres shall be provided with toe-boards and two (2) or more guards-rails.

Signboards stating the maximum permissible weight of tools and materials and the maximum number of persons permissible on each bay shall be prominently displayed at suitable locations on the scaffold in a workplace.

Any board or plank which forms part of a work platform shall project beyond its end support to not less than 50 millimetres and not more than four (4) times the thickness of the board or plank unless it is effectively secured to prevent tipping or uplift.

Ensure that no scaffold is used unless it has been inspected by a scaffold supervisor. Inspection shall be performed at the following junctures:

- Upon completion of its construction, erection or installation, as the case may be.
- Thereafter, at intervals of not more than seven (7) days immediately following the date of the last inspection by the scaffold supervisor.
- After exposure to weather conditions likely to have affected strength or stability or to have displaced any part.

Human-Machine Interface (HMI) in Construction

The interaction between humans and machines is a critical aspect of construction site safety and efficiency. Effective management of the Human-Machine Interface (HMI) ensures seamless operation, minimises risks, and enhances productivity. Proper implementation of HMI protocols helps prevent accidents and optimizes the use of construction equipment and automated systems

Safety Measures:

- Conduct a Risk Assessment: Identify potential hazards associated with machine operation, such as pinch points, moving parts, and operator errors.
- Ensure Proper Machine Guarding: Install physical barriers, sensors, and emergency stops to protect workers from accidental contact with machinery.
- Implement Clear Controls and Displays: Use intuitive and easy-to-read controls, color-coded signals, and warning indicators to enhance operator awareness.
- Provide Operator Training: Ensure all workers operating or interacting with machinery receive proper training on controls, emergency procedures, and safe usage.
- Establish Standard Operating Procedures (SOPs): Develop clear guidelines for machine operation, maintenance, and shutdown processes.

Ergonomics and Efficiency:

- Design User-Friendly Interfaces: Ensure that control panels, screens, and input devices are positioned for easy access and visibility.
- Reduce Physical Strain: Adjust seating, workstations, and machine controls to minimise repetitive stress and fatigue.
- Enhance Communication Systems**:** Use alarms, intercoms, and digital notifications to facilitate real-time communication between operators and supervisors.

Maintenance and Compliance:

- Schedule Regular Inspections: Conduct routine checks on HMI systems to ensure functionality and detect potential failures with checklist
- Monitor Software and Hardware Performance: Keep control systems updated and maintain mechanical components for optimal performance.
- Adhere to Safety Regulations: Follow industry standards and regulatory requirements for machine safety and interface design.
- Implement Lockout/Tagout (LOTO) Procedures: Ensure that machines are properly de-energized before maintenance or repairs.

Emergency Response and Hazard Prevention:

- Install Emergency Stop Mechanisms: All machines should have accessible and functional emergency stop buttons or switches.
- Provide Clear Safety Signage: Labels and instructions must be prominently displayed to warn of potential dangers and required precautions.
- Develop Incident Response Protocols: Establish procedures for handling malfunctions, machine failures, and emergency evacuations.

By managing HMI effectively, construction sites can improve safety, reduce operational risks, and enhance worker productivity. A well-designed HMI system not only protects employees but also contributes to efficient and smooth construction operations.

Hand Tools:

- Always select the appropriate tool for the job to ensure efficiency and safety.
- Inspect tools before use to ensure they are in good condition and free of defects.
- Maintain tools properly to extend their lifespan and prevent malfunctions. Unsafe tools include cracked wrenches, broken screwdrivers, hammers with loose or damaged heads, and chisels with mushroomed heads.
- Avoid using dull saws or electrical tools with exposed wiring, damaged plugs, or missing grounding systems.
- Store tools properly in designated areas to prevent damage and ensure easy access.
- Train workers to use the correct tools for each task and ensure tool availability.

- Carry tools using toolboxes, cabinets, or pouches instead of by hand to prevent accidents.
- Never carry tools up or down ladders by hand; instead, use pouches or hand lines.
- Do not throw tools between levels or across distances, as this can cause injuries.
- Avoid leaving tools on the floor, scaffold, or walkways to prevent tripping hazards.
- Spark-proof tools should be regularly inspected to prevent steel splinters.
- Always follow the manufacturer's instructions when using power tools to ensure safe operation.
- Power tools must be equipped with fail-safe devices that prevent accidental activation.
- Only trained and authorized personnel should operate power tools to minimise risks.
- Machine guards must be securely attached and properly adjusted to protect the user.
- When using pneumatic tools that generate heat or sparks, an approved coolant should be used.
- Pneumatic hoses, couplings, and fittings must be of the correct rating to handle pressure safely.
- Cartridge-operated tools must not be used near other workers or in flammable environments.
- A suitable guard or shield must always be fitted to cartridge-operated tools for protection.
- Cartridges should not be carried loose or left unattended to prevent accidental discharge.
- Only manufacturer-specified cartridges should be used to avoid equipment failure.
- Loaded tools should never be left unattended for safety reasons.
- The issue of cartridges must be controlled through an approved procedure.
- Always wear the proper protective clothing and equipment when handling tools.
- Plan jobs in advance to ensure the correct tools and safety measures are in place.

Portable Electrical Tools:

- All portable electrical tools should operate at 240 volts to ensure standard power compatibility.
- Each electrical tool and piece of equipment must be clearly labelled and recorded in a checklist for tracking.
- A certified electrician must inspect all electrical tools weekly to ensure safety and functionality.

Portable Angle Grinders:

- The spindle speed of every angle grinder must be indicated on its body for safe operation.
- A cutting or grinding disc must not be used on a machine if the spindle speed exceeds the rated speed of the disc.
- Cutting discs must never be used for grinding operations to prevent accidents.
- Angle grinders should not be used for cutting tasks under any circumstances.
- Operators must wear proper eye protection to prevent injuries from flying debris.

- Users must take precautions to protect others in the vicinity when using an angle grinder.
- The grinding disc must be securely fastened using the correct components for stability.
- Machine guards, fences, or protection devices must never be tampered with or removed.
- If guards are removed for maintenance, they must be replaced immediately after the task is completed.

Bench Grinders:

- Grinding wheels must be in good condition and properly dressed to ensure even performance.
- The tool rest gap must not exceed 3 mm to prevent tools from slipping into the wheel.
- Wheels should be securely mounted, and finger guards should be in place to prevent accidents.

Drilling Machines:

- The chuck must be in good condition and have a working locking mechanism to secure drill bits.
- The spindle key must always be available to properly adjust and secure the drill bit.
- The machine casing should be intact, without cracks, and the on/off switch must function correctly.

Portable Generators and Lighting:

- Earth leakage protection must be functional to prevent electrical shocks.
- Plugs and sockets must be in good condition, without damage or exposed wiring.
- Lights and lenses should be intact to ensure proper visibility and functionality.
- Power cords and plug tops must be well-maintained to prevent electrical hazards.

Permit to Work:

PTW, is a formal written system designed to control specific types of work that are inherently hazardous. A PTW must be obtained before carrying out any such activities, as it outlines the scope of work, the associated risks, and the necessary precautions to be taken. Non-compliance with PTW requirements may result in disciplinary action.

JHA findings are reviewed to assess risks associated with a specific task, the JHA only identifies high-risk activities, these findings are supports to determine the type of Permit to obtain.

Based on the nature of work of this project, the probable list of work types that will require a PTW are listed in **Table 5-6**Error! Reference source not found..

TABLE 5-6: TYPE OF PERMIT TO WORK

S.N	Type of Work	PTW Type
1	Work involving open flames, sparks, or high temperatures that may ignite combustible materials like: • Welding and cutting of railway tracks and steel structures. • Grinding and drilling in confined spaces or near flammable materials. • Torch cutting or brazing for steel fabrication in bridges or viaducts. • Rail grinding operations for track maintenance.	Hot Work Permit
2	Any work conducted at heights above 2 meters where there is a risk of falling like: • Viaduct or bridge girder installation. • Overhead electrification system installation and maintenance. • Scaffolding erection and dismantling. • Track construction on elevated railway corridors. • Work on elevated platforms or gantries.	Work at Height Permit
3	Work in enclosed or partially enclosed spaces with restricted entry and exit, poor ventilation, or hazardous gases like: • Inspection and maintenance of drainage systems or culverts. • Entering rail pits, sumps, or cable ducts. • Work inside pre-cast concrete sections before installation.	Confined Space Entry Permit
4	Work involving ground disturbance where there is a risk of trench collapse, underground utilities, or structural instability like: • Trenching for underground railway signaling cables. • Excavation for foundation work of railway bridges and viaducts. • Digging near buried pipelines, electrical cables, or sewer lines. • Installation of track bed layers and ballast foundations.	Excavation Work Permit
5	Work involving electrical installations, high-voltage equipment, and railway power systems like: • Overhead Catenary System (OCS) installation and maintenance. • Work on railway substations and transformers. • Cabling work for railway signaling and communication systems. • Earthing and bonding of electrical installation	Electrical Work Permit
6	Work involving the use, storage, and disposal of hazardous chemicals like; • Use of chemicals (e.g., herbicides for vegetation control). • Storage and handling of fuel and lubricants for construction machinery.	Chemical Handling Permit

S.N	Type of Work	PTW Type
	• Painting and coating of railway structures using chemical-based paints. • Handling of adhesives and sealants for railway infrastructure.	
7	Work involving the use of cranes, lifting equipment, and heavy machinery where loads are lifted or transported like: • Demolition of building • Dismantling of existing railway tracks and steel structures. • Removing old overhead electrical lines and poles. • Controlled blasting	Heavy Lifting and Crane Operation Permi
8	Any work conducted directly on or near railway tracks that could affect track stability or train movement like: • Track realignment or re-railing operations. • Ballast tamping and track stabilization work. • Installation of railway switches and signaling equipment. • Inspection and maintenance of expansion joints on long tracks	Railway Track Work Permit
9	Work involving the use of explosives for breaking rock, tunneling, or earthworks like: • Controlled blasting. • Rock-cutting operations for track alignment • Excavation of hard ground for bridge foundations.	Blasting & Controlled Explosive Work Permit

The work permit (**Annex J**) will have a PTW number, date and completing section (1) Permit Description of PTW form: Location of Work, System/ Equipment ID, Description of Work, Estimated Time of Completion (approximate).

The Contractor is responsible for documenting JSA records and ensuring PTW compliance before work starts.

Integra EHS Manager / site supervisor shall approve the PTW during the construction phase of the Project. The PTW will be issued only after ensuring that the person requesting the permit is trained and competent to perform the work concerned and has the necessary PPE. A copy of PTW to be displayed at worksite and completed PTW will be kept in 'Active' folder till the completion of work. After completion of the work, the same issuing authority will close the PTW after ensuring all works have been satisfactorily and safely completed.

Behaviour Based Safety (Monitors PTW Compliances & Reinforce Safe Work Practices)

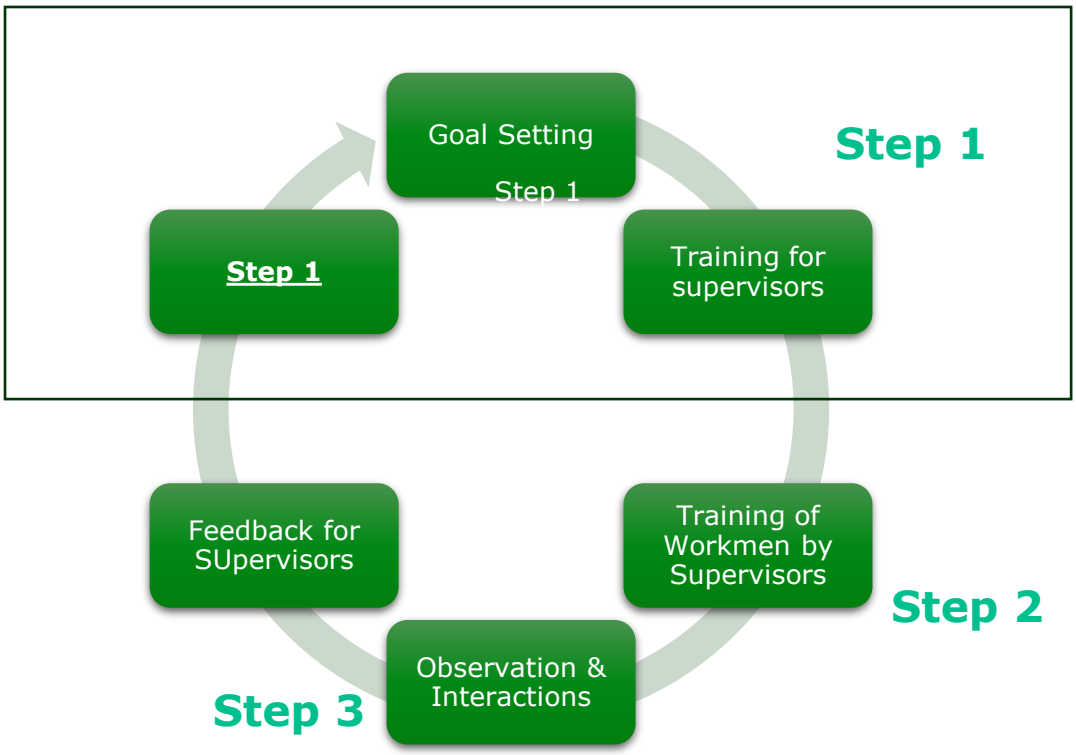
The EPC Contractor shall implement a Behavior-Based Safety (BBS) program, which must be approved by the KTZ Project Manager. BBS is a proactive safety approach that focuses on motivating individuals to adopt safe work practices while identifying and correcting unsafe behaviors before they result in incidents. BBS supports PTW enforcement by monitoring behaviors before, during, and after work execution. The program emphasizes continuous observation, feedback, and engagement to reinforce a strong safety culture.

Key Steps in BBS Implementation for this project

1. **Baseline Observations Without Intervention:** Conduct initial observations of worker behaviors without interference, using a standardised checklist that identifies critical behaviors associated with railway construction activities. These may include safe handling of track materials, correct PPE usage, proper lifting techniques, adherence to excavation safety measures, and signaling protocols for heavy equipment operations.
2. **Identification of At-Risk Behaviors:** Workers/observers shall document unsafe acts such as inadequate use of fall protection for bridge construction, improper excavation procedures, unsafe interactions with heavy machinery, or failure to follow electrical safety measures during railway electrification work. Data collected shall be used to analyse patterns and recurring safety gaps.
3. **Intervention and Coaching:** EPC Contractor's trained safety coaches or supervisors shall provide real-time feedback and corrective action when unsafe behaviors are observed. Workers shall be encouraged to self-correct and intervene when they see unsafe actions by their peers, fostering a culture of shared responsibility.
4. **Continuous Monitoring and Positive Reinforcement:** Regular BBS observations shall be conducted at key stages of railway construction, including earthworks, track laying, bridge construction, and electrification work. Safe behaviors shall be reinforced through recognition programs, toolbox talks, and ongoing training sessions.
5. **Reporting:** BBS findings shall be incorporated into monthly ESMS reports and reviewed during EHS performance meetings. Lessons learned shall be used to enhance worksite safety procedures, update risk assessments, and refine Standard Operating Procedures (SOPs) for railway construction.
6. **Worker Engagement and Leadership Commitment:** The EPC Contractor shall ensure that all personnel, including subcontractors and laborers, actively participate in the BBS program. KTZ and Integra teams shall demonstrate commitment by participating in observations, engaging workers, and setting clear expectations for safety compliance.

Based on the result of baseline observation, a goal-setting committee of KTZ and Integra EHS person shall be formed to set achievable targets for safe behaviour. Improvement for the critical behaviours and monitor intervention results according to the intervention cycle below (**Figure 5-3**).

FIGURE 5-3: BBS INTERVENTION CYCLE



As presented in **Figure 5-3** above, the EPC Contractor shall undertake the following steps>

Step 1: Observation results and causes of unsafe behaviours communicated to supervisors.

- Conduct structured observations using predefined checklists to assess worker behaviours at various railway construction stages, including earthworks, track laying, bridge construction, and electrification work.
- Record both safe and unsafe behaviours without intervention to establish a baseline understanding of safety performance on-site.
- Identify root causes of unsafe behaviours, including lack of awareness, inadequate training, environmental factors, or poor adherence to procedures.
- Organise daily or weekly safety meetings where BBS observation results are presented to supervisors and EHS personnel.
- Supervisors must be trained to acknowledge positive safety behaviours while addressing and correcting risky actions in a constructive and non-punitive manner.
- The findings must be documented and integrated into site-specific Environmental and Social Management System (ESMS) reports for continuous improvement.

Step 2: Train the trainers (supervisors) on methods to promote safe behaviour.

- Conduct specialised safety leadership training for supervisors, foremen, and team leads on how to effectively communicate safety expectations, provide feedback, and reinforce safe behaviours.
- Supervisors shall be trained to identify behavioural patterns, encourage peer-to-peer intervention, and use positive reinforcement techniques to promote safety compliance.
- Training topics shall include:
    - Psychological and behavioural aspects of workplace safety.
    - Effective communication and coaching techniques.

  - Recognition and reinforcement of safe behaviours.
  - Handling safety interventions and corrective feedback professionally.
- Supervisors shall also be trained on tracking behavioural trends over time, ensuring BBS observations are action-oriented and lead to measurable safety improvements.
- The EPC Contractor shall ensure all supervisors receive refresher training at regular intervals to keep the safety culture evolving.

Step 3: Discuss and set new goals for next observation cycles.

- After each observation cycle, supervisors, EHS managers, and workers shall collectively review the results and set new safety goals.
- Goals shall be SMART (Specific, Measurable, Achievable, Relevant, and Time-bound) to ensure continuous improvement. Examples of safety goals include:
  - Reduction in observed unsafe behaviours by a specific percentage over the next cycle.
  - Increased compliance with PPE use during excavation and track-laying activities.
  - Reduction in manual handling risks through better use of lifting equipment.
  - Improved worker participation in safety discussions and reporting.
- Action plans shall be developed to address key problem areas, such as:
  - Additional safety toolbox talks for high-risk tasks.
  - Deployment of engineering controls to reduce exposure to hazards.
  - Increased supervisor involvement in field safety checks.

The outcomes of the next cycle shall be evaluated and compared with previous results to assess improvements, and adjustments shall be made to further strengthen the BBS approach. **Annex K** outlines the checklist for BBS Programme implementation.

Emergency Preparedness & Response

The project aims to have a 'zero harm culture' that is delivered through safe leadership and embodied in line with KTZ goal. Emergency preparedness and response planning seeks to prevent and minimise harm to workers, the community and the environment in the event of an emergency. The purpose of the Emergency Response Plan (ERP) is to provide guidance to those personnel that have the responsibility of managing emergency situations.

The probability of emergency situations must be evaluated, through a risk assessment of construction activities, ensuring that key emergency response scenarios are identified. All the critical risk sources that must be considered,

- All medical emergencies,
- Falls from height (includes workers suspended by a harness or in elevated/inaccessible locations),
- Confined space entry rescue,
- Excavation collapse,
- Fire & Explosions,
- Structural failure,
- Heavy equipment accidents,
- Chemical spills, Electrocution,
- Extreme weather events ,

- Immersion in water and other water-related incidents

Each identified scenario should have corresponding emergency response actions, required equipment, and planned drills. Drills should be conducted for different emergency scenarios to ensure preparedness and effectiveness

To ensure an effective emergency response, incidents are classified into three severity levels: Minor, Major, and Critical, with corresponding response actions and responsible parties.

Incident Classification System

- **Minor incidents,** involve no injuries and minimal operational disruption; these are managed internally by the site safety team through first aid and corrective actions.
- **Major incidents**, involve serious injuries, work stoppages, or situations requiring external emergency services. In such cases, the full Emergency Response Plan (ERP) is activated, with the Emergency Response Coordinator (ERC) and Medical Officer taking charge, while government liaison personnel engage external responders.
- **Critical incidents,** such as multiple casualties, fatalities, or major environmental damage, require crisis-level intervention, where the KTZ Crisis Management Team and relevant government agencies assume control. This tiered classification ensures that emergency responses are proportional to the severity of the incident and aligned with KTZ's crisis management procedures.

The following key roles and responsibilities are assigned within the Emergency Response Team (ERT) to ensure efficient emergency management:

- **Emergency Response Coordinator (ERC)** – Leads the response, ensures ERP execution, and communicates with senior management.
- **Rescue Team Leader** – Directs on-site rescue operations and ensures proper PPE and equipment use.
- **Medical Officer** – Provides first aid, triages injuries, and coordinates medical evacuation if required.
- **Site Supervisors & Foremen** – Initiate emergency procedures, direct workers to designated assembly areas, and ensure personnel accountability.
- **Government Liaison** – Serves as the primary contact with local emergency services and regulatory authorities for incident reporting and coordination.

This tiered classification system ensures that emergency responses are **proportional to incident severity**, allowing for swift and effective action while aligning with **KTZ's crisis management framework**.

And procedures must be implemented to ensure efficient response to emergencies and to prevent and minimise associated harm or damage. If required, ERP should be well coordinated and communicated to main stakeholders (local communities, local authorities etc.)

In the event of an emergency situation, Integra (EPC Contractor) will provide and mobilise all available equipment & resources necessary to rescue personnel, minimise damage, and restore normal operations. Personnel shall only operate emergency equipment & initiate control measures if they have been properly trained to do so. All KTZ personnel, EPC Contractors and

subcontractors and contractors are required to attend an HSE orientation. Any questions on Safety issues should be directed to Integra EHS Office.

The EPC Contractor is required to establish and maintain a Site Emergency Response Plan(s) – ERP(s) in order to be prepared to respond to accidental and emergency situations associated with the Project, in a manner appropriate to prevent and mitigate any harm to people and/or the environment. The ERP shall be subject to periodic audit and inspections by KTZ and lenders.

The plan must identify:

- Areas where accidents and emergency situations may occur
- Communities and individuals potentially impacted
- Response procedures and provision of necessary equipment/resources
- Designation of responsibilities, including clear roles for Integra, ERT, subcontractors, KTZ & ES
- Project site map and emergency access routes
- Emergency notification list and procedures
- Evacuation routes and refuge areas
- First aid facilities and assembly points
- Communication procedures and periodic training plans

All communications and periodic training to ensure effective response. The Emergency Response Plan (ERP) covers both environmental and health & safety (H&S) emergencies, including spill response. Refer to **Appendix A** for the detailed ERP.

The EPC Contractor must properly document emergency preparedness and response activities, resources, and responsibilities, and must provide, on request, appropriate information to potentially affected communities and relevant government agencies.

Additionally, the EPC Contractor shall plan for emergency preparedness which includes:

- All workers and contractors will be shown the emergency meeting point as part of their induction (this shall be covered in the induction checklist)
- Display emergency procedures in the site office or other visible locations.
- Confirm emergency drills and response team training are conducted regularly.
- Provide and inspect fire extinguishers at the beginning of the project and as required as per Annex L.
- Verify the availability of emergency equipment (harnesses, breathing apparatus, etc.) for confined spaces, working at heights, and excavation.
- Provide adequate supply of first aid kits and equipment to all construction sites.

OHS Training, Monitoring & Compliance Audits

Please refer to **Section 7.2** (Occupational Health and Safety Trainings).

Occupational Health & Safety (OHS) Monitoring, Inspections, and Incident Reporting

Effective OHS monitoring and reporting mechanisms are essential for ensuring continuous safety compliance and proactive risk management. This section outlines the procedures for inspections, incident tracking, and reporting to be implemented by Integra and subcontractors.

Joint Inspections with KTZ

To ensure consistent oversight of safety practices, Integra shall conduct monthly joint inspections with KTZ Project Manager, Integra EHS Manager and Integra Project Manager across active construction zones. These inspections will assess compliance with safety procedures, effectiveness of risk controls, and adherence to PTW conditions.

Findings will be documented in a Joint Inspection Report, with corrective actions assigned and follow-up reviews scheduled. Format of Joint Inspection report is provided in **Annex M**.

Internal Contractor-Led Safety Inspections

Integra EHS Manager together with the Control Team shall conduct weekly site safety inspections as per **Annex N**, covering:

- PPE compliance.
- Housekeeping & hazard elimination.
- Permit-to-Work (PTW) compliance.
- Equipment & machinery inspections.
- Emergency preparedness (fire extinguishers, exits, muster points).

Subcontractor activities will be included in these inspections, and any violations will trigger a formal corrective action request.

Subcontractor Audits & Compliance Checks

Quarterly safety audits will be conducted for all subcontractors to ensure alignment with the HSMP and ESMS. Subcontractors will be required to submit self-inspection reports (refer to **Annex O**) every month.

Non-compliance cases will be escalated to project management and repeat violations may result in contract penalties or termination.

Incident Reporting & Safety Observation

To ensure a coordinated response, the project's Emergency Response Plan (ERP) is aligned with KTZ's Crisis Management Framework, ensuring that incident escalation, communication, and decision-making processes are well-integrated.

Incident Escalation Process

All incidents must be reported and escalated based on their severity, following a structured chain of command:

- Minor Incidents: Managed at the site level by the Emergency Response Coordinator (ERC) and reported to the Project Manager within 24 hours.

- Major Incidents: Reported to the KTZ Safety & Compliance Division, which will provide guidance and external coordination if needed.
- Critical Incidents: Immediately escalated to KTZ's Crisis Management Team, activating higher-level response efforts, including government agency involvement.

Standardized Incident Reports must be submitted to KTZ within 6 hours of a major/critical incident occurring.

Emergency Communication Protocols

To streamline emergency response, communication channels have been standardized:

- Site-Level Communication: The Emergency Response Coordinator (ERC) must inform the Project Manager & Site HSE Team immediately.
- KTZ Notification: For Major/Critical Incidents, the KTZ Emergency Liaison must be contacted within 30 minutes via an emergency hotline.
- Government Authorities Engagement:
    - Fire & Rescue Services (Kazakhstan Ministry of Emergency Situations).
    - Local Police Department (for security risks).
    - Medical Services (nearest hospitals & trauma centers).
    - Environmental Agency (for hazardous spills & contamination).

TABLE 5-7: KTZ & SUBCONTRACTOR RESPONSIBILITIES IN EMERGENCY RESPONSE

Entity	Key Responsibilities in Emergency Response
KTZ Crisis Management Team	Oversees Critical Incident response, ensures legal/regulatory compliance, coordinates with government agencies.
KTZ Safety & Compliance Division	Provides oversight for Major Incidents, ensures adherence to KTZ's emergency protocols.
Project Manager & Site HSE Team	Leads on-site response, activates ERP, and liaises with KTZ's Safety Division.
Emergency Response Coordinator (ERC)	Manages immediate emergency response, ensures first aid & rescue teams are deployed.
Subcontractors	Must adhere to CESMS emergency protocols, participate in emergency drills, and report incidents within 12 hours.

Safety Observations & Near-Miss Reporting

All workers, including subcontractors, are required to report safety concerns and near-miss incidents immediately. A tracking system shall be implemented to document, track, and analyse reported safety concerns. Supervisors must conduct real-time interventions to address at-risk behaviours identified through BBS observations.

All safety incidents will be categorised into Near-miss, First-aid case, medical treatment case, Lost Time Incident (LTI) and Fatality, as defined in **Table 5-8** below.

TABLE 5-8: INCIDENT CLASSIFICATION

Incident Category	Definition
Near-Miss	An unplanned event that did not result in injury or damage but had the potential to do so.
First-Aid Case	A minor work-related injury or illness that requires simple first-aid treatment and does not require medical intervention beyond on-site care.
Medical Treatment Case	A work-related injury or illness that requires treatment beyond first aid but does not result in lost workdays.
Lost Time Incident (LTI)	A work-related injury or illness that results in an employee being unable to perform their regular job duties for one or more days beyond the day of the incident
Fatality	A work-related incident resulting in the death of a worker.

Integra EHS Manager needs to report in incident/accident reporting format of any lost time incidents, fatalities, severe incidence to Integra Project Manager, who will report to KTZ Project Manager within 24 hour. KTZ Project Manager is to report the same to lenders within 3 working days.

A detailed Root Cause Analysis (RCA) shall be conducted for all major incidents, with findings reviewed by the Integra EHS Manager, Integra Project Manager, KTZ Project Manager and KTZ representatives (where necessary).

Details can be referred to in **Section 5.3.9** - Incident and Accident Handling, Recording, Reporting, Investigation and Analysis.

Additionally, Integra EHS Manager shall undertake all reporting obligation as detailed under Internal & External reporting (**Section 6.2**).

5.3.5 COMMUNITY HEALTH AND SAFETY MANAGEMENT PLAN

5.3.5.1 OVERVIEW

This plan applies to all construction activities by the EPC Contractor, other contractors and subcontractors. It includes all foreseeable potential risks and impacts related to site access control and community safety associated with construction stage of the project identified during the ESIA. The main objectives are to:

- Avoid or limit risks to, and impacts on, the health, safety and security of the community during the construction phase. This is achieved through implementing targeted prevention programs to reduce risks, along with the implementation of an effective monitoring and evaluation program.
- Ensure that safeguarding of personnel and property is conducted in an appropriate manner that avoids or limits risks to the community safety and security.

- Prevent unauthorised entry at construction site to prevent the health and safety hazard.

5.3.5.2 IMPACTS IDENTIFIED DURING ESIA FROM PROJECT CONSTRUCTION ACTIVITIES

Based on the supplementary ESIA, impacts identified mainly includes:

- Traffic risks.
- Health and Safety risks from construction activities, including dusts and noise.
- Security risks, including gender-based violence.
- Communicable diseases and labour influx risks.

Full details on the impact description and analysis can be referred to the Supplementary ESIA Chapter 7.

5.3.5.3 MITIGATION AND MANAGEMENT ACTIONS

The hazards at the construction site are to be mitigated and managed efficiently to overcome adverse effects on the workers and the local communities. The EPC Contractor needs to ensure that the potential hazards during the construction phase of the project is managed as per applicable national regulations and social safeguards as outlined below.

Visitors Control

KTZ, EPC Contractor and/or contactors shall keep entry/exit records of all construction work zone employees and visitors at all construction sites. Each employee and visitor shall be briefed and trained as appropriate concerning the dangers, the security requirements before they are allowed to enter the construction sites.

Health and Safety Protocols

Preventing Unauthorised Access and Encroachment

The EPC Contractor is responsible for securing the construction site and preventing unauthorized access to minimise potential safety risks to the community. Management actions include the following.

Arrange perimeter fencing at the construction of railway stations and associated facilities to:

- Ensure good visibility and safe access at site entrances.
- Provide adequate warning signs at the entrance and exit, storage of chemicals and materials etc. where necessary.
- Provide adequate space/area for loading and unloading, storage of materials and machinery.
- Display emergency procedure and statutory notices at conspicuous location.
- During toolbox meetings, remind workers to secure the site or their work area against unauthorised access before leaving. This is particularly important at areas where hazards are present. Steps include securing tools, chemicals, and machinery, as well as covering and securing open excavations, voids, and skip bins.

For construction activities along the railroad alignment where perimeter fencing may not be practical and feasible, informative signages shall be prominently displayed along the alignment to notify the public about the construction work, emphasize hazards, and prohibit unauthorised

access. Integra Community Liaison Officer shall also inform the local residents and communities of the construction work in the vicinity and engage them in observing and reporting unauthorised access or suspicious activity.

Earthworks and Excavation

- Hard barricades must be provided for earthworks, and excavation works for the construction of stations and related facilities, along with visual caution board and traffic diversion boards at excavation areas.
- For earthworks and excavation activities along the alignment, where installation of hard barricades are not feasible, clear and visible signs shall be installed along the alignment to inform the public about ongoing construction, potential hazards and detour routes. Where feasible, temporary barriers such as cones or portable fences shall be utilised to prevent the public from entering the danger zones. Integra Community Liaison Officer shall also inform the local residents and communities of the upcoming earthworks and excavation activities within the vicinity, including the expected disruptions and safety measures.
- Earthworks and excavation activities shall be preferably carried out during daytime.
- Measures identified in the Pollution Prevention Plan (**Section 5.3.6**) shall also be implemented to minimise health and safety risks from noise and dusts to the community.

Location of Sensitive Area (e.g., residential area, schools)

If the site is in an area where children could be in proximity (e.g., residential area, schools), installing security fences should be considered if hazards cannot be removed or secured against unauthorised access.

Warning signs/blinkers will be attached to the barricade to caution the public about the hazards associated with the construction works, and presence of deep excavation.

Traffic Management

Section 5.3.9.1 of this ESMS shall be implemented to ensure strict traffic management strategies during the construction phase to minimise risks to pedestrians, cyclists and other passers-by.

Community Engagement and GRM Mechanism

A feedback/grievance mechanism shall be established as per the Stakeholder Engagement Plan and Grievance Mechanism provided as a standalone document.

Security Management

Details on Security Management, including gender-based violence management can be referred to the Security Management Plan in **Section 5.3.11**.

Public Health

Considering the influx of workers from different districts and regions, the EPC Contractor shall implement that following measures to limit the risk of infectious disease spread:

- Vaccination and health screening to be provided for all construction workers. This shall be done retrospectively if not really done so. Records of health screening and vaccination certificates shall be maintained by Integra HR & Admin Officer.

- Integra Community Liaison Officer, together with Integra Project Manager, to liaise with nearby healthcare clinics and hospitals to notify them of potential increase in healthcare demand from the influx of workers. Additionally, direct service medical provision shall be arranged to provide medical care for vulnerable groups.

Incident and Accident Investigation

- Incident and accident investigation shall follow that set out in **Section 5.3.9 - Incident and Accident Handling, Recording, Reporting, Investigation and Analysis**. Template for incident and accident reporting shall follow that in **Annex P**, which concludes root cause analysis, preventative measures etc.
- The investigation to be carried out as quickly as possible and interviews to be conducted with as many witnesses to ascertain the incidents.
- The basis and typical information for accidents to be obtained from tape records, cameras, measuring taps and special equipment for investigation.

5.3.5.4 IMPLEMENTATION ARRANGEMENTS

Monitoring and Review

Integra Project Manager shall carry out monthly monitoring and review of implementation of this action plan. The checklist presented in **Table 5-9** is to be used to monitor and report risks associated with site access control and community safety.

TABLE 5-9: CHECKLIST FOR MONITORING AND REPORTING RISKS ASSOCIATED TO SITE ACCESS CONTROL AND COMMUNITY SAFETY

Responsible Personnel	Purpose of Monitoring	Aspects to be covered	Monitoring Mechanism	Timeline for Monitoring
Integra Project Manager	• Ensure Contractor's compliance to laws /requirements • Monitor Contractor's EHS performance	• Labour camps • Safety & Security Measures • Following safety protocols in tasks • Maintenance of Documentation • Access to project hazardous locations • Emergency preparedness drills • Right of Way access restrictions	Accident Register Review	Weekly and Monthly
			Visual observation	At least weekly
			Discussion with Workers	Monthly
			Discussion with Contractor	Monthly
			Review of grievances (if any)	Monthly
			Toolbox talks /trainings (as applicable) for skill upgradation	Daily and quarterly training
			Register of Migrant workers	Daily
			Visual reconnaissance of community issues	Weekly

Recordkeeping and Documentation

Integra EHS Manager together with Integra Community Liaison Officer shall be required to fully comply with the monitoring programme in terms of timely submissions of reports. Site level documentation of all the management measures implemented is necessary, the same has to be reported to KTZ Project Manager by Integra Project Manager. Checklist to be maintained for record keeping and documentation is given in **Table 5-10**. Records shall be retained and kept onsite for the duration of the Project.

TABLE 5-10: CHECKLIST FOR RECORD KEEPING AND DOCUMENTATION RELATING TO COMMUNITY HEALTH AND SAFETY MANAGEMENT PLAN

Documentation	Record keeping (Yes/ No)	Evidence/ Document reference and date	Remarks
Training	☐ Yes/ ☐ No		
Incidents and accidents	☐ Yes/ ☐ No		
Stakeholder Consultation Meetings	☐ Yes/ ☐ No		
Employees at the Work site	☐ Yes/ ☐ No		
Employees at campsite	☐ Yes/ ☐ No		
Vehicles at the construction site	☐ Yes/ ☐ No		
Grievances	☐ Yes/ ☐ No		

5.3.6 POLLUTION PREVENTION PLAN

5.3.6.1 AIR EMISSIONS MANAGEMENT

Based on the Supplementary ESIA, potential sources of air emissions will be primarily limited to construction and major maintenance activities, and will include fugitive dust emissions from excavation, loading/ unloading, handling and storage of construction material, emissions from onsite operation of batching plant, diesel generator sets, construction equipment and vehicles. Stationary diesel generator sets used during construction works and at the project office will be periodically maintained for the control of emissions. Measures that shall be implemented includes:

For Construction Activities:

- Adequate dust suppression and control measures shall be provided at material storage areas, unloading and loading points to control fugitive dust emission.
- A water sprinkling system shall be installed as a dust suppression control measure at open construction sites during earthworks, material storage areas, unloading and loading points.

- A water sprinkling schedule shall be developed and implemented. Monitoring shall be performed by Integra EHS Manager to ensure the effectiveness of the system in keeping airborne Particulate Matter (PM) to the minimum.

For Construction Machinery and Vehicles:

- Construction machinery and vehicles to strictly follow designated temporary access routes and adhere to speed limits on access roads without hard surfacing must be adhered to. Details can be referred to **Section 5.3.9.1** (Traffic (Transportation) Management Plan).
- The EPC Contractor shall perform monthly inspections and preventive maintenance of the engines of construction machinery and vehicles. Where required, the EPC Contractor shall engage third-party mechanics to perform the maintenance.
- Air emissions testing from engine exhaust of construction machinery and motor vehicles shall be conducted annually and after every engine overhaul or adjustments. Air emissions testing records shall be kept and retained at the construction site office.
- Integra EHS Manager shall ensure that workers do not use machinery/vehicles which have not undergo technical inspections and exhaust gases testing.

5.3.6.2 NOISE AND VIBRATION MANAGEMENT

For Construction Activities:

Noise emissions will be regularly monitored and recorded as appropriate at areas where the road passes through habitations and presence of noise sensitive receptors. At locations exceeding construction noise levels as specified in the United States Federal Transit Administration (USFTA) Transit Noise and Vibration Impact Assessment Manual, provision will be made for vegetative noise barriers. Other noise mitigation options shall also be explored based on site conditions.

As nightworks are anticipated, heavy construction or major maintenance works shall be kept minimal and below 80dBa. Noise reducing measures such as reducing the number of equipment running and the run time of the equipment shall be considered for nightworks. Other safeguard and mitigating measures such as situating noisy activities away from sensitive receptors, using quieter equipment and vibration-dampening methods, and maintaining machinery regularly, shall be undertaken. Noise barriers, soundproofing, and alternative ventilation systems shall be installed to reduce noise exposure to nearby residents and construction workers. In the event of community complaint regarding noise or vibration during such activities, monitoring will be undertaken and additional mitigation measures implemented where practicable.

For Construction Machinery and Vehicles:

Traffic noise will be generated by vehicle engines and tire / pavement interaction for vehicle speeds over 90 kilometers per hour (kmph). Traffic noise can be a significant nuisance to the communities and locals residing alongside the station locations and route alignment and may be loud enough to interfere with normal conversation and cause noise-related stress disorders. Traffic noise levels can be reduced by distance, terrain, vegetation, and natural and manmade obstacles. Details can be referred to **Section 5.3.9.1** (Traffic (Transportation) Management Plan).

For Labour Camps:

Given that labour camps have already been constructed, the EPC Contractor shall conduct regular monitoring of the noise emissions to the nearby communities. Where required and when there is any community complaint regarding noise from the labour camps, the EPC Contractor shall implement measures to reduce noise emissions including increasing the sound insulation of façade elements and providing alternative means of ventilation to reduce the need to open windows during the periods of high external noise.

5.3.6.3 WATER AND WASTEWATER MANAGEMENT

Water Usage:

Water required for construction activities will be obtained from authorised sources only. Private water suppliers engaged for the Project should have necessary and valid permissions from authorities. Water meters shall be installed on the bore wells and groundwater extraction records shall be maintained on daily basis. Prior No Objection Certifications (NOCs) in this regard shall be obtained if required. Integra EHS Manager, with the assistance from Integra Project Manager, shall monitor the water usage on monthly basis and maintain water consumption records. Water conservation will be identified and implemented by KTZ.

Soil and Groundwater:

Due to the large volume of earthworks, Integra EHS Manager, with the assistance from Integra Project Manager shall ensure that potential contamination to soil and groundwater is minimised. Prior to the use of fill material, the EPC Contractor shall conduct sampling and laboratory analysis of each new batch of fill material. Fill material of similar composition and characteristics to the existing site shall be utilised. Sampling records shall be kept and maintained at the construction site office.

Stormwater Management:

Construction activities, particularly excavation, embankment stabilization, and track foundation development, can lead to soil erosion, sediment runoff, and water pollution. To mitigate these risks, a Stormwater & Erosion Control Plan (SECP) is mandatory for all work that alters land surfaces. To prevent contamination from construction activities on surface water quality from surface runoffs, the EPC Contractor shall implement the following:

- Engage a third-party contractor to perform a hydraulic study to understand the nature of water flow and potential surface runoffs. Findings from the hydraulic study will be implemented through the design of the drainage control plans.
- Identify high-risk erosion zones (e.g., steep slopes, waterway crossings). Assess soil composition and vulnerability to runoff.
- Silt fences, sediment traps, or barriers around exposed soil areas and stockpiles shall be installed to prevent sediment runoff into nearby water bodies.
- Weekly monitoring of sedimentation levels/ water quality of drainage shall be performed by Integra EHS Manager and the control team. Monitoring parameters includes DO, TSS, turbidity and pH from upstream and downstream. The purpose of the monitoring is to detect elevated sediment levels and verify that the implemented barriers are functioning effectively. If elevated sedimentation is detected, Integra Project Manager shall be notified. Interim measures shall be implemented within 48 hours and permanent corrective actions

such as reinforcing sediment control barriers or adjusting site management practices shall be implemented within two (2) weeks with the approval from KTZ Project Manager. Subsequently, monitoring shall be conducted daily until the parameters have reduced and stabilized.

Wastewater Management:

During the construction phase of railway line projects, stormwater and wastewater management will adhere to IFC EHS Guidelines and Kazakhstan's national standards (Environmental Code of the Republic of Kazakhstan). Stormwater drainage systems will be constructed along the railway alignment to manage runoff effectively, minimising contamination risks from oil, grease, heavy metals (e.g., lead, zinc, copper, cadmium, chromium, and nickel), and particulate matter typically associated with construction activities. Regular inspection and cleaning of drainage channels will be carried out to ensure efficient functioning. If herbicides and nutrients are used for vegetation management along the right-of-way, they will be controlled to prevent runoff contamination. Servicing and washing areas for construction vehicles and machinery will be confined to designated roofed and paved locations, equipped with oil-water separators to treat effluents before discharge, ensuring compliance with both IFC and local standards.

Wastewater generated from construction activities, including batching plants, will be treated to meet the discharge limits specified under Kazakhstan's environmental protection regulations and IFC EHS guidelines. Uncontrolled wastewater discharge into water bodies or surrounding land will be strictly prohibited. Workers will be provided with adequate sanitation facilities, and open defecation will be prohibited. They will also receive training on the proper use of waste disposal facilities and environmentally responsible practices. All drainage and wastewater management measures will be regularly monitored to ensure compliance with environmental regulations and mitigate potential impacts during the construction phase.

5.3.6.4 IMPLEMENTATION ARRANGEMENTS

Monitoring and Review

Integra EHS Manager, with the assistance from Integra Project Manager will conduct daily, weekly and/or monthly (depending on the requirements and/or needs) monitoring of the alignment and all other sites (camps, material storage.) to check for signs of pollution issues. The daily monitoring will include, but not limited to, the following:

- Noise levels at sensitive receptors when required.
- Air emissions at sensitive receptors when required.
- Dust generation and control at camps, on access roads and alignment.
- Wastewater discharges to the receiving body.
- Fuel, oil and hazardous material transport, handling and storage.
- Visual inspections of all hazardous waste storage area and containers to look for signs of deterioration, leaks, unsecured container covers, or excess accumulation of materials in the containment areas. All visible leaks and releases will be promptly corrected.

Additionally, equipment operators will conduct periodic inspections on equipment to check for leaks, perform periodic preventive maintenance on equipment to minimise the potential for spills or leaks, and ensure spill kits are complete and available.

Accredited testing laboratory shall only be used for monitoring of requisite environmental parameters. The monitoring results shall be evaluated by Integra Project Manager and KTZ Project Manager. Adequate measures shall be undertaken if the monitoring results are observed exceeding the prescribed acceptable limits.

Record keeping and Documentation

The personnel delegated in EHS roles, shall be required to fully comply with the monitoring programme including the timely submissions of reports. Site level documentation of all the management measures implemented is required be reported to KTZ by EPC Contractor.

5.3.7 WASTE MANAGEMENT PLAN

5.3.7.1 OVERVIEW

This Waste Management Plan aims to avoid waste generation and if not possible then reduce, reuse or dispose the waste at proper designated place or dispose of through an authorised vendor. This plan covers both hazardous and non-hazardous waste from land preparation and construction of the Project. The main objectives of the plan include:

- Ensure measures are identified and implemented to minimise waste, manage waste throughout the construction of the project.
- Provide staff with an increased level of understanding and awareness of waste and resource use management issues.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements.

5.3.7.2 ANTICIPATED WASTE GENERATED FROM PROJECT CONSTRUCTION ACTIVITIES

Table 5-11 outlines the type of waste anticipated under each construction activity.

TABLE 5-11: ANTICIPATED WASTE GENERATED FROM CONSTRUCTION PHASE

Activity	Waste generation aspects	Type of waste generation
Construction and Modification of Railway and associated facilities	• Excavation work • Cutting and welding • Civil work • Site clearance activity • Use of chemical, paints • Use of PPEs • Storage of construction materials	• Demolition waste • Cut vegetation, stumps, roots. • Empty containers • PPE kit contaminated with oil or other chemicals • Empty cements or construction material bags • Used oil • Empty paint cans, chemical containers • Used lighting equipment

Activity	Waste generation aspects	Type of waste generation
Railway track laying work	• Excavation work • Cutting and welding	• Blacktop of the road • Excess excavated material • Metal waste like pieces of railway tracks • Used oil, lubricating oil • Oil contaminated cotton/rags or other cleaning materials • Empty paint cans, chemical containers
First aid Implementation of Environmental and Social Management Procedures	• Use of cotton, bandage and other emergency medicine • Mask for precaution against COVID-19	• Biomedical waste
Site Office	• Canteen facility • Use of paper, plastic for official use	• Food waste • Domestic waste • Used lighting equipment
Labour camp	• Kitchen activities • Canteen • Domestic activities	• PPEs • Food waste • Municipal waste • Plastic & paper waste • Empty bottles • Used lighting equipment
Storeroom	Storage and use of construction material	• Discarded plastic and wrapping • Card boards, plywood, empty cement bags, containers • Unusable construction materials, metal waste

5.3.7.3 ANTICIPATED IMPACTS

Anticipated impact on ground and surface water and soil quality

Construction and hazardous waste may contain harmful materials which can be detrimental to immediate surroundings, if not disposed at designated disposal sites. Improper disposal of waste could lead to ground / surface water and soil pollution or contamination. Runoff from haphazardly stored construction and demolition waste and excavated materials may impact soil quality or waterways.

Anticipated impact on landscape and aesthetics

Improper waste management could cause odour and vermin problem, flow obstruction of nearby watercourse and could negatively impact the landscape.

Anticipated impact on construction worker and community

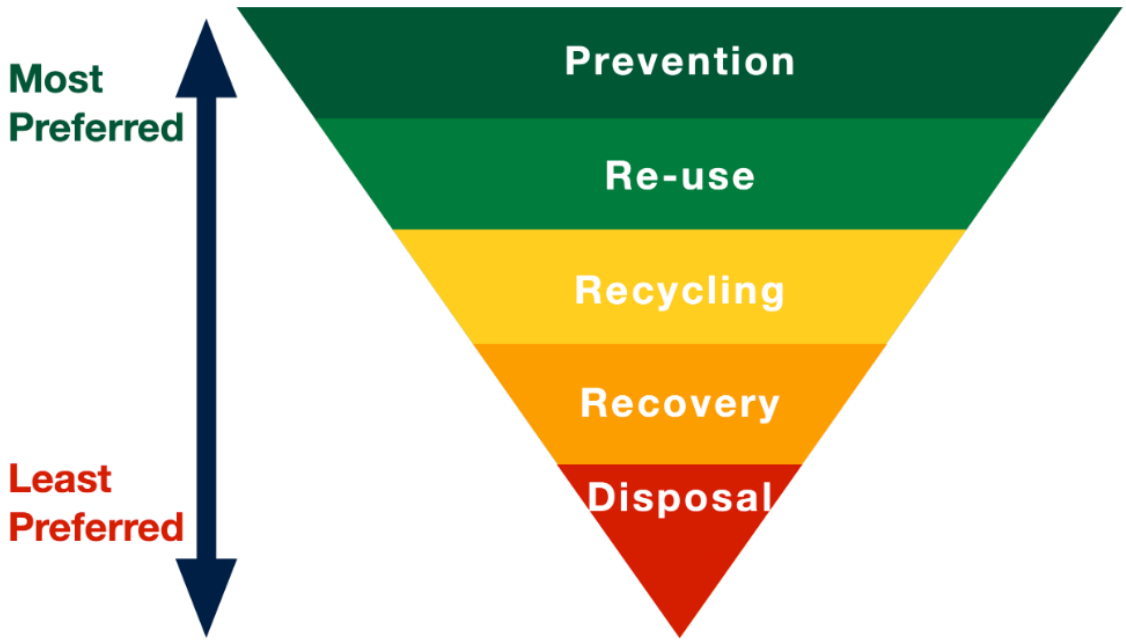
Improper handling of biomedical waste generated produced from first aid procedures can have a negative impact on the workers as well as the community. If the waste is disposed of in a standard garbage bin or other exposed area, pathogens can spread from that point forward. Like biomedical waste, if municipal solid waste such as food waste is not managed properly it can lead to foul odours and spread of vectors. Improper management of solid waste can lead to blockages of nearby drains.

Improper handling of hazardous waste generated may increase construction workers' and the communities' exposure to short term and long-term health issues including respiratory issues and neurological damage.

5.3.7.4 MITIGATION HIERARCHY FOR WASTE MANAGEMENT

This Waste Management Plan follows the waste management hierarchy as shown in **Figure 5-4**. The waste hierarchy outlines a preferred order for waste management: prevention, reuse, recycling, and energy recovery, with disposal as a last resort. This strategic approach promotes environmentally friendly practices, ensuring efficient resource use and reducing environmental impact.

FIGURE 5-4: WASTE MITIGATION MANAGEMENT HIERARCHY



Prevention

The above wastes are products of the construction phase and it is not always practical to avoid creating these wastes. However, it is important that the use and disposal of these wastes is considered with the principals of ecologically sustainable development in mind. Waste avoidance and reduction will be implemented wherever practically feasible. Waste reduction strategies that will be employed include:

- Minimising the clearing of vegetation through careful planning and design of access roads and location of substation.

- Accurate estimation and ordering of construction and electrical materials to avoid excess waste and minimise associated costs.

Reuse & Recycling

Material reuse and recycling should be a major component of the waste management strategy.

The materials most likely to be reused and recycled on site consist of:

- Excess Spoil.
- Vegetation and Topsoil.
- General Construction Waste.
- Scrap Metal.
- Discarded plastic and wrapping.
- Card boards, plywood, empty cement bags, containers.

All materials to be recycled will be checked via weekly inspections by Integra EHS Managers to ensure they do not include any contaminants and as such, the most suitable location to recycle this material will be identified in consultation with KTZ Project Manager and Integra Project Manager.

Storage & Disposal of Waste

Proper storage and segregated bins shall be provided for all waste identified. Waste that cannot be reused or recycled shall be disposed appropriately by licensed third-party waste disposal vendors.

Details on managing the various waste types can be found in **Table 5-12** below.

TABLE 5-12: MANAGEMENT ACTIONS FOR WASTE MANAGEMENT

Waste Name	Type	Disposal and Management Measure
Construction and Modification Waste		
Cement Concrete, Masonry	Non-Hazardous	• The area for storage of the construction debris will be selected ensuring that natural flow in drainage channels is not impeded. • Tarpaulin or HDPE cover will be provided on the heap of the construction debris to prevent fugitive emissions. • Construction debris will be stored within the designated area. • The construction debris needs to be collected from the point of its generation in a manner to prevent emission of dust. This includes collecting debris in closed bins and lightly spray or mist debris with water before collection to dampen it. • Construction debris can also be reused in construction activities (e.g., as fill material, etc.) subject to technical suitability and non-hazardous character. The decision to reuse these debris shall be

Waste Name	Type	Disposal and Management Measure
		performed by the civil/construction engineer of the Project and approved by KTZ Project Manager.
Reinforcement including metal waste	Non-Hazardous	• To be segregated and stored in non-hazardous and covered waste storage bins / at covered storage areas • Reinforcement including metal waste are to be sold by the contractor to the local traders/ authorised recyclers • Records of recycling and disposal to be maintained
Topsoil and Vegetation	Non-Hazardous	• The first 100mm of soil is to be considered topsoil and is to be stockpiled onsite. Topsoil can be reused around the batter to assist in the revegetation/ rehabilitation process. Where possible vegetation cleared during construction and reused during landscaping and site improvements. Tree stumps and branches are to be spread around the site and used for habitat purposes while any unwanted material shall be mulched/ chipped and used for stabilization. No green waste will be burnt on site during the life of the project.
Municipal Solid Waste		
Food Waste	Non-Hazardous	• To be stored in covered non-hazardous storage bins • Waste storage to be kept covered at all times and subject to regular pest/rodent control activities • To be subjected to onsite composting (involving third party for proper composting and maintenance) or being disposed through local waste disposal authority/authorised agencies.
Office and domestic waste (paper, waste plastic bag)	Non-Hazardous	• To be segregated and stored at the non-hazardous waste storage bins. • To be deposited through local waste disposal authority • As part of the induction training, instruction on handling waste shall be given so that burning of waste is not practiced
Biomedical Waste		
Bio-Medical Waste	Hazardous	• Biomedical wastes will be kept in the designated colour coding bins to ensure bio-medical waste does not get mixed with any other category of wastes. • No other vehicles except the vehicles licensed for transportation of the biomedical wastes will be used. • The bio-medical wastes as generated will be disposed via authorised third-party waste handler.

Waste Name	Type	Disposal and Management Measure
		• Records of disposal to be maintained for the entire period of construction phase.
Hazardous waste		
Empty paint cans, chemical containers, contaminated cotton/rags/PPE kits	Hazardous	• A logbook should be maintained for quantity and type of hazardous waste generated • Hazardous wastes are to be stored in designated coloured closed bins away from direct sunlight, wind and rain. The bins should be provided with secondary containment. • Regular housekeeping near hazardous waste storage areas to ensure safe environment. • All hazardous waste to be transported is to be properly loaded on the transport vehicles before leaving the site and be accompanied by a manifest (transport paper) that describes the load and its associated hazards. • All manifests and other records that document the amount of waste generated and its destination are to be documented and maintained for the entire period of construction phase.
Asbestos-Containing Materials (ACM)	Hazardous	• Conduct an asbestos survey before demolition. • Only licensed contractors should handle ACM. • ACM should be double bagged in heavy-duty plastic and labelled as hazardous. • Transport ACM waste using certified hazardous waste transporters. • Dispose of it in a licensed hazardous waste landfill.
Used Batteries (Lead-Acid & Lithium-Ion)	Hazardous	• Store in non-corrosive, leak-proof containers in a designated hazardous waste area. • Recycle through authorized battery recyclers. • Lithium-ion batteries should be discharged before disposal to reduce fire risk. • Prohibit landfill disposal due to heavy metal contamination risks.
Contaminated Soil (Oil Spills, Chemical Leaks)	Hazardous	• Immediately contain spills using absorbents like sand or sawdust. • Excavate contaminated soil and send it for thermal desorption or bioremediation. • Store excavated soil in lined, leak-proof containment before disposal. • Develop an Emergency Spill Response Plan.
Polychlorinated Biphenyls (PCBs)	Hazardous	• Conduct PCB testing for old equipment. • Dispose of PCB-containing materials through high-temperature incineration at licensed hazardous waste facilities.

Waste Name	Type	Disposal and Management Measure
		• Strictly prohibit open dumping. • Train workers in handling PCB waste safely.

5.3.7.5 MONITORING AND REVIEW

Records of waste generated from each working area e.g., labour camps, excavation area and their handling and disposal methods will be recorded monthly by Integra EHS Manager. Results of inspections and monitoring will be provided to KTZ Project Manager for review. The EPC Contractor will use the table format as indicated in **Annex Q** for tracking of the waste generated during construction phase. Records shall be maintained on site throughout the duration of the construction of the Project.

5.3.8 QUARRY SITE RESTORATION PLAN

The EPC Contractor procures sand and stones from government quarries. The purpose of this section is to establish a structured and comprehensive approach to ensure that all quarry sites utilized for sand and stone procurement for this project are adequately restored after completion.

- Government-Owned Quarry Sites: All materials procured from legally operated and licensed government quarry sites must adhere to established restoration obligations and guidelines.
- Temporary Borrow Pits and Extraction Areas: Any land temporarily utilized for project-related extraction activities must be rehabilitated to pre-extraction conditions or a condition agreed upon with relevant stakeholders.
- Privately Leased or Contractor-Operated Quarry Sites: In cases where the EPC contractor leases or operates quarry sites independently, restoration obligations must be aligned with lease agreements, permit conditions, and local environmental policies.

5.3.8.1 REHABILITATION AND RESTORATION GUIDELINES

The objective of the rehabilitation program is to return quarry and borrow pits to a safe and stable condition, ensuring they can be safely accessed by the public. Securing borrow pits and quarry sites in a stable condition is a fundamental requirement of the rehabilitation process. This could be achieved by filling the quarry or borrow pit floor to approximately the access road level.

It is important to plan restoration from the outset and coordinate restoration with quarrying activities. In addition to biodiversity considerations, land-use planning is integrated into rehabilitation projects to both preserve the environment and generate income for local communities. As part of this framework, quarry rehabilitation often leads to the creation of wetlands, natural reserves, or recreational areas.

Special Quarry Rehabilitation Plans: A rehabilitation plan should be developed based on the location and slope shaping of the mining site after exploitation. Different land uses, such as forestry, meadows, or water bodies, should be considered alongside appropriate re-greening and replanting methods.

Criteria for Quarry Rehabilitation:

- Quarries and borrow pits should be backfilled with rejected construction waste and covered with vegetation.
- If backfilling is not feasible, slopes should be smoothed and depressions filled to match the natural ground surface.
- During works execution, the contractor shall preserve existing trees and ensure proper management of stripping materials to facilitate water percolation and natural vegetation growth.
- Restoration efforts should also focus on re-establishing natural drainage flows and improving site appearance.
- If the site is designated as a usable water source for livestock or nearby communities, measures should be taken to maintain roadways and access.

To create a safe environment in compliance with The Mines and Quarries Act, excavation faces must be reduced to a naturally stable slope or adequately fenced to prevent unauthorized access. The fence must meet the prescribed height under The Mines Act, including a barbed wire top strand to deter the public from entering the quarry area. Depending on the site's location, a permanent water body may be considered an alternative to fencing.

Vegetation and Biodiversity Restoration:

Suitable plant species for the rehabilitation program should be selected in consultation with ecological consultants and local forest authorities. Given the challenging growing conditions (e.g., lack of irrigation, extreme weather), plant loss may be significant, necessitating a planting program spanning 3–5 years. Each planting phase should be monitored to ensure plant survival before proceeding with the next stage.

Community and Recreational Integration:

The surroundings of the quarry or borrow pit should be developed into a low-maintenance reserve with native trees, shrubs, and grassy areas. Walkways may be constructed around the rehabilitated borrow site to allow for recreational use.

5.3.9 INCIDENT AND ACCIDENT HANDLING, RECORDING, REPORTING, INVESTIGATION AND ANALYSIS

5.3.9.1 OVERVIEW

Injuries, interruptions to work operations, and damages to property and equipment due to workplace incidents can be costly. By finding out how the incident happened, steps can be taken to prevent similar recurrences in the future. Incident reporting and investigation is applicable to all OHS, CHS, E&S Emergencies highlighted in this ESMS.

5.3.9.2 INCIDENT CLASSIFICATION

The safety pyramid (**Figure 5-5**) forms the basis of categorising incidents and accidents related to construction activities for this Project.

FIGURE 5-5: SAFETY PYRAMID

Unsafe Act

This category makes up the base of the safety triangle. Incident precursors provide opportunities to find and correct dangerous conditions and implement behaviors based safety before they lead to near misses and injuries.

Near Misses and Minor Injuries

These occurrences serve as stronger warnings about the need to identify and address the source before a severe accident or fatality occurs. Minor injuries sit in the middle, bridging the gap between near misses and serious accidents. These are injuries that require first aid or minimal medical attention such as small cuts, bruises, sprains, or minor burns, but do not result in hospitalisation or significant time away from work (more than 20 days of medical leave).

Serious Injuries and Fatalities

The most severe incidents fall into this category, and workplaces must strive to eliminate accidents that cause life-changing or fatal injuries. Serious injuries include but not limited to:

- Amputation.
- Blindness.
- Deafness.
- Paralysis.
- Crushing, fractures and dislocations.
- Exposure to electric current.
- Asphyxia.
- Drowning.

- Burns with more than 20 days medical leave.
- Concussion with more than 20 days medical leave.
- Mosquito borne diseases with more than 20 days of medical leave.
- Virus outbreak with more than 20 days of medical leave.

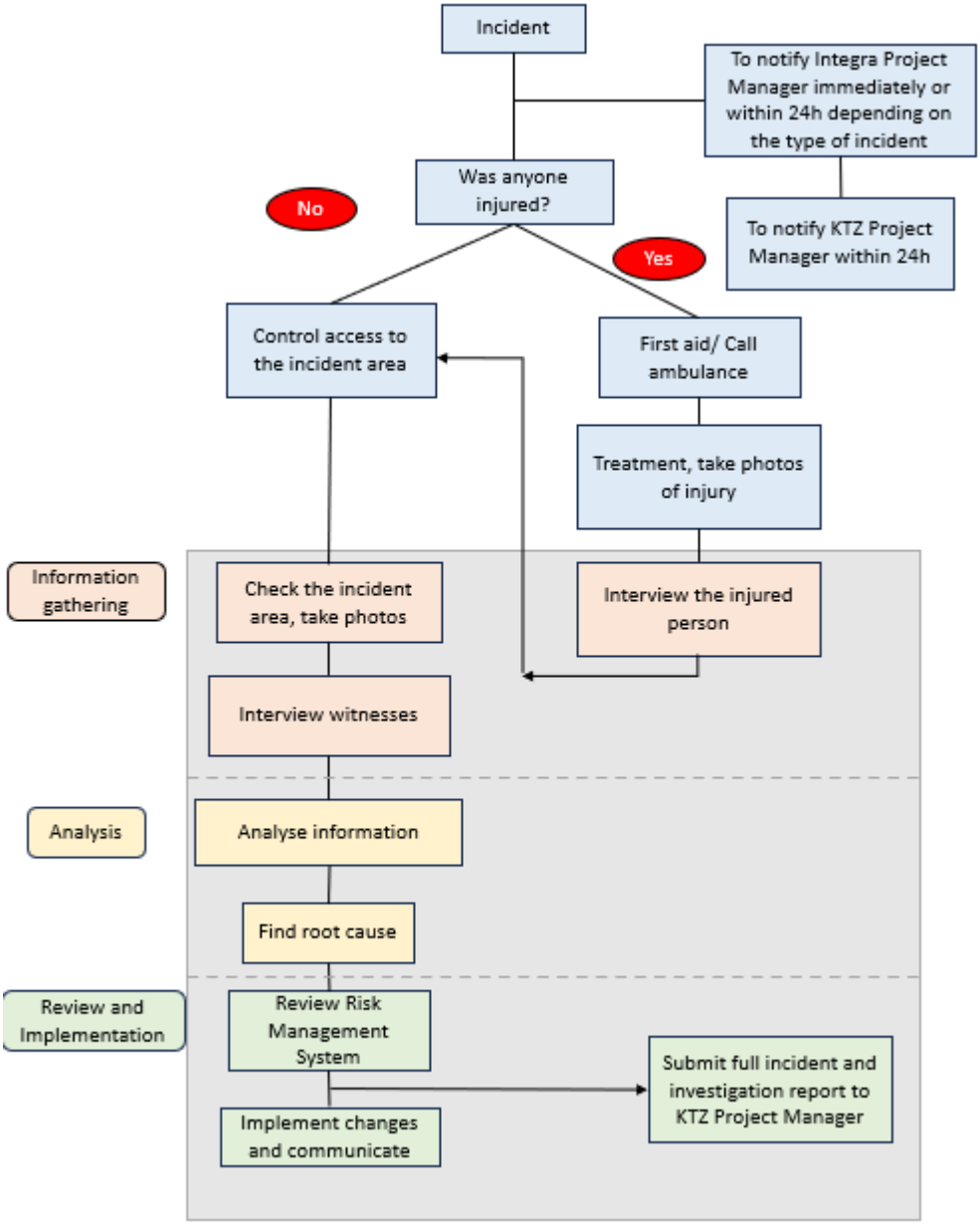
5.3.9.3 INCIDENT MANAGEMENT PROCEDURE

The Incident/Accident Management will entail the following steps:

1. Immediate Action
2. Incident Reporting
3. Incident Investigation
4. Corrective Actions and Learning/ Review and Implementation.

A flow chart on what to do when an incident occurs is illustrated in **Figure 5-6** below. The Incident Notification Form (**Annex P**) will be utilised as part of this process. All near miss incidents shall also be reported using the same form; however, they will be maintained separately from the incident records. All incidents will be recorded and shared with the KTZ Project Manager by Integra Project Manager.

FIGURE 5-6: INCIDENT MANAGEMENT PROCESS



Immediate Actions and Incident Reporting

All incidents, including those involving subcontractors, shall be reported to Integra Project Manager immediately for lost time/serious injuries and fatalities, and within 24 hours for unsafe act, near misses and minor injuries. Integra Project Manager is to report to KTZ Project Manager of any incidents within 24 hours. KTZ Project Manager is to report the same to lenders within 3 working days. Responding to incident and injuries shall follow the procedure detailed in **Appendix A – Emergency Response Plan**.

Incident Investigation

The investigation process has three main parts: 1. information gathering; 2. analysis; and 3. review and implementation.

1. Information Gathering

Upon occurrence of an incident, the EPC Contractor shall secure the site to ensure accurate information can be obtained for investigation purpose. For investigation purpose, Integra Project Manager, with the assistance from Integra EHS Manager shall implement the following:

- Stop work in that area.
- Cordon off the incident area and make sure that people who are not involved in the incident do not remain there.
- Ensure that the area is safe for investigation (e.g., turn off the power to the machinery or wear the necessary PPE such as safety boots in areas with sharp or broken objects on the floor).
- Ensure the location where the injury occurred has not been altered.
- Ensure that the equipment used to cause the injury (if applicable) has not been re-used.
- Ensure that hazardous substance/chemicals connected with the incident (if applicable) has not been removed.
- Take photos of the incident scene where necessary.
- Interview each witness privately, asking open-ended questions.

It is important to listen and not assign any blame at this point.

2. Analysis

The EPC Contractor, with the assistance from KTZ, shall ensure that sufficient resources are allocated to investigate the root causes of the incident, especially in cases of serious injuries and fatalities. The main purpose of the investigation is to determine the causes of the accident and to establish systems or procedures to reduce the likelihood of a similar occurrence in the future.

Root Cause Analysis

The root cause analysis framework shall be utilised, and encompasses the following core principles:

- Focus on correcting and remedying root causes rather than just symptoms.
- Do not ignore the importance of treating symptoms for short term relief.
- Realise there can be, and often are, multiple root causes.
- Focus on HOW and WHY something happened, not WHO was responsible.
- Be methodical and find concrete cause-effect evidence to back up root cause claims.
- Provide enough information to inform a corrective course of action.
- Consider how a root cause can be prevented (or replicated) in the future.

The goal of root cause analysis is to discover the root cause of the incident, to fully understand how to fix, compensate or learn from any underlying issues within the root cause. Ultimately, it is to apply what was learnt from the analysis to systematically prevent future issues or to repeat successes.

The most common techniques in performing a root cause analysis are the 5 WHYS approach, where for every answer to a WHY question, follow it up with an additional, deeper WHY question.

Procedure

- Write down what happened during the incident.
- Clearly record any unsafe acts and conditions.
- Look through the information gathered.
- Review current related documents, such as Safe work procedures, Safety data sheets, Maintenance logs, Employee records.
- Check for gaps and lapses in the current system by comparing the unsafe acts and conditions during the incident with the current documents.

3. Corrective Actions and Learnings/Review and Implementation

Once the root cause analysis has been completed,

- Choose corrective actions to plug the gaps you identified.
- Discuss with management who would be in charge of implementing each control measure and record it down clearly.
- Complete the Incident Notification Form (**Annex P**) and submit to KTZ Project Manager for approval of control measures.
- Once approved, implement suitable control measures as soon as possible.
- Review the effectiveness of the new control measures.

5.3.9.4 RECORD KEEPING

All incident reports shall be properly retained and kept at the construction site office for the duration of the Project.

5.3.10 TRAFFIC (TRANSPORTATION) MANAGEMENT PLAN

5.3.10.1 OVERVIEW

This plan applies to all transportation activities to be conducted during the construction by the EPC Contractor and other contractors and subcontractors to be mobilised at site. It includes the potential E&S risks associated with construction stage of the project. The main objectives are:

- To identify activities which necessitates management of traffic movement and transportation.
- To assess the anticipated impacts.
- To recommend necessary mitigation and management measures to address any risks or impacts that may arise due to improper traffic management.
- To provide guidelines for monitoring and reviewing the implementation of the action plan.

5.3.10.2 ANTICIPATED IMPACTS FROM PROJECT CONSTRUCTION ACTIVITIES

During the construction phase of the Project, following key impacts are anticipated:

- Increase in localised traffic will have impacts on air quality and noise levels.
- Laying of railway tracks along narrow roads and along main carriage ways would impact regular traffic flow and safety of the commuters.
- Movement of heavy vehicles needs to be pre-planned taking into account available routes and construction activities.
- Safety near sensitive locations i.e. schools, hospitals would be impacted due to construction activities, traffic management and increased traffic at these locations.
- Inconvenience in commuting for nearby communities, businesses and may cause operational constraints.
- Risk of accidents may increase due to presence of construction activities and associated congestion/space constraints.

5.3.10.3 MITIGATION AND MANAGEMENT ACTIONS

The EPC Contractor must ensure that traffic management is managed as per applicable regulations and environmental safeguards. Management actions required for various aspects are presented in the subsequent sections.

Access Road to Construction Sites Maintenance

Throughout the construction period, Integra EHS Manager and Integra Project Manager will be responsible for monitoring the condition of access roads used by project construction traffic. The EPC Contractor shall ensure that they are maintained in a condition that is at least as good as the condition they were in before the start of construction, to the satisfaction of the road maintenance authorities. Integra EHS Manager and the control team will review the condition of access road on regular basis as per checklist given in **Annex R**.

On completion of the project construction activities, the EPC Contractor will reinstate land and access roads disturbed by transport activities. An audit of the access road conditions is required to ensure they have been reinstated to prior conditions at a minimum. The following measures are required to keep access roads free from mud, dust and debris:

- Inclusion of hard standing areas within the project construction footprint.
- Sprinkling water to control dust.
- The provision of wheel washing facilities for vehicles leaving the marshy or slushy construction base/working width.
- Appointment of personnel/sweepers to clean hard standing area and to remove any mud/debris deposited on the access roads and public highways.

Railway Track Roads Management

Where excavation along the tracks is envisaged, the remaining road should not be disturbed. Safety arrangements and adequate demarcations along the work zone to aid in safe traffic flow is required. Any traffic diversions planned should be indicated with signage boards and flagmen should be deployed for traffic diversions/ rerouting. In high traffic areas where traffic diversions are planned, the EPC Contractor is to coordinate with the local traffic department to ensure additional traffic police are deployed.

Restoring the excavated road should be undertaken in a phased approach as soon as the laying of railway tracks and alignment of a particular stretch is completed. Excavated areas, work zones and re-laying of roads should be barricaded to not hinder traffic flow and to ensure road users safety.

Right of Way Works along the Road/Habitations

- Use of signage to alert pedestrians/other passers-by of potential unsafe conditions around the construction area.
- Use of appropriate signage devices based on the site conditions/situation. The devices include regulatory signs, delineators, barricades, cones, pavement markings, lanterns and traffic control lights.
- When using signages, ensure they are (i) simple, easy-to-understand and convey only one message, (ii) written to both English and the local language, (iii) luminescent and with reflective properties, and (iv) broad, prominent and of appropriate size.
- When using barricades, make sure to keep traffic away from work areas and guide the drivers to keep along a safe, alternative path.
- Plan the layout and traffic management so that hazards are not created.
- Deploy flagmen, who control traffic at the work areas. The flag should be 600mm x 600mm fastened to a 1m length staff.
- Flagmen should wear reflective safety vests along with hard hats.

Parking

Parking of construction vehicles shall be prohibited on community roads in the vicinity of the construction sites. A dedicated parking area will be provided within the project footprint area and other suitable locations for vehicles will be proposed. All the vehicles used for the Project should be parked in the dedicated parking areas and the parking areas should have clear signage. The parking of Project vehicles on footways, along single lane roads and double parking shall be prohibited.

The vehicle maintenance procedures will address the oil and fuel spills due to leakage. Oil and fuel spill during parking or whenever the vehicle is idling will be addressed by providing oil and fuel adsorbent materials or drip trays in the in the hard stand areas. Vehicles will not be allowed to park anywhere else outside the hard standing area.

Vehicle Management and Maintenance

To ensure that accident rates and the fuel consumption are minimised, vehicle fleet working on the Project (EPC Contractor or subcontractors) is to be maintained according to the manufacturers' specifications. This includes all safety related specifications, as well as mechanically maintaining vehicles to manufacturer specifications.

The EPC Contractor will ensure the following in respect of vehicle maintenance, noise and emission standards:

- All vehicles are to be properly maintained to minimise noise and emissions to workers or local people.
- An up-to-date database of all vehicles and construction equipment deployed for the Project, including their location is to be maintained. The database is to contain details

regarding the maintenance conducted, maintenance schedule, vehicular emission and noise emission testing completed as per regulatory requirements.

- Routes to be selected to minimise nuisance to local residents from noise and emissions.
- Avoidance of passage through and near settled areas during nighttime hours.
- New vehicles/equipment purchased 'as new' after contract award are to comply with the emission standards in force on the purchase date.
- Older vehicles/equipment not purchased 'as new' after contract award to be maintained so that noise and emissions levels are no greater than when the vehicle/ equipment was new.
- Oil and fuel leaks to be addressed within 24 hours of observation or reporting on any vehicle or construction equipment.
- All heavy vehicles, cranes, battery operated trolleys to be provided with reversing siren and flagman to be deployed to assist heavy vehicle reversing or manoeuvring in narrow roads.

Community Liaison and Community Safety

Traffic safety in local communities will be a high priority for KTZ, EPC Contractor and its contractors. The contractors will ensure communities are advised in advance of project progress and near-term activities where transport issues have the potential to impact local communities. In the event the contractor plans for construction activities and transportation activities during the night, the same has to be communicated to the community in advance and adequate care and planning of timings to be considered depending on sensitivity of the location and the community.

The Project Stakeholder Engagement Plan (a standalone document) will be utilised to communicate with the communities in this regard. The communications issued will include the timing of traffic and transportation activities. Traffic safety awareness information session for inhabitants of areas affected by significant increases in Project related road traffic to be arranged. The EPC Contractor Community Liaison Officer will provide these communities with sufficient information on safety measures related to road traffic prior to commencement of work and continue to provide sufficient opportunity for community members to air and resolve traffic related complaints during the Project.

Mitigation Measures

KTZ in coordination with traffic department and road transportation authorities will plan alternate traffic management arrangements throughout the construction period. KTZ through the EPC Contractor will minimise the road transport wherever possible by efficient transport planning. Significant efforts will be made by the EPC Contractor to ensure that materials will be conveyed in such a way that their transport does not cause significant or undue adverse environmental impacts. To minimise disruptions, the following measures are to be adopted:

- Restrict construction vehicle movements to defined access roads and demarcated working areas (unless in the event of an emergency).
- Enforce strict speed limit (20-30 kmph) for plying on unpaved roads, construction tracks.
- Night-time driving will be by exception only, as approved by Integra Project Manager, to minimise driving risk and disturbance to communities.

- Ensure additional road safety measures such as the placement of adequate signage prior to approaching the location of interest (cautionary signs) and appropriate speed breakers are adopted at sensitive locations and blind spots.
- When using signages, ensure they are (i) simple, easy-to-understand and convey only one message, (ii) written to both English and the local language, (iii) luminescent and with reflective properties, and (iv) broad, prominent and of appropriate size.
- When using barricades, make sure to keep traffic away from work areas and guide the drivers to keep along a safe, alternative path.
- High traffic density areas near schools, commercial areas are to be identified, and alternate routes are to be planned in coordination with the traffic police department and road transport authorities.
- High-Mobility Vehicles (HMV) holding areas are to be provided for vehicles waiting to deliver loads at work sites to avoid queuing on connecting roads.
- Vehicle movement and parking within the site premises shall be manned properly to avoid accidents.
- Construction traffic routes are planned to minimise impact on residential areas and unsuitable parts of the road network.
- Provision of a dedicated path within the site for exclusive entry and exit of the construction vehicles.
- Necessary training provided to the drivers of construction vehicles and to crew members on the do's and don'ts during construction vehicles movements.
- Arrangements and routes for abnormal loads to be agreed in advance with the traffic police, emergency services and the roads authority.
- Clear signs, flagmen and signal posts to be set up as necessary.
- Appropriate supervision to be provided to control flow of traffic when machinery needs to cross roads.
- Ensure that traffic activities requiring 'Long and Heavy Vehicle Transport' are in accordance with the regulatory requirements.
- If road closures are required, diversions are to be planned by liaising with Police department and to be communicated to the affected communities in advance. All diversion to be constructed to the specifications of the applicable road authority and to be maintained in good drivable conditions until the completion of the re-instatement work.
- Where roads used by children to reach schools are used by construction traffic, road safety education to be provided at schools as well to the local community. Vehicle traffic to be minimised during the periods when children are travelling to and from schools falling on traffic routes.
- In the case of open excavation works, all road diversions to employ traffic control devices to warn and protect the public and construction personnel.
- Appropriate speed limits for various motor vehicles and construction equipment to be determined as part of the traffic management based on type of roads available for the transport of project components.

- Contractor will comply with all statutory vehicle limits with respect to width, height, weight, loading.
- Conduct alcohol testing of drivers daily prior to commencement of work. Drivers found to have 80 mg of alcohol per 100ml of blood or 35 micrograms of alcohol per 100ml of breath will not be allowed to drive.
- Anyone found non-compliant to the speed limit, alcohol content or any unsafe traffic behaviours for two (2) counts will face disciplinary action from the EPC Contractor and escalated to KTZ Project Manager.

5.3.10.4 IMPLEMENTATION ARRANGEMENTS

Monitoring and Review

Integra Project Manager shall carry out monthly monitoring and review of this action plan. The checklist specified in **Annex S** is to be used for monitoring and reporting traffic management at the Project site.

Record keeping and Documentation

Integra Project Manager and Integra EHS Manager shall be required to comply with the monitoring programme and the timely submission of reports. Site level documentation of all the management measures implemented is required and reported to KTZ by the EPC Contractor. The checklist to be maintained for record keeping and documentation is provided in **Annex T**. Records shall be retained and kept onsite for the duration of the Project.

5.3.11 SECURITY MANAGEMENT PLAN

5.3.11.1 OVERVIEW

During construction there may be a risk of social conflicts between the local community and the construction workers, including an increased risk of illicit behaviour, crime and emergencies. Therefore, the security team assigned to the sites should approach their responsibilities with an understanding that ensuring security and respecting the human rights of both employees and community members is essential in the execution of the security management plan. This plan includes all foreseeable potential risks and impacts associated with the deployment of security personnel during construction. The main objectives of the plan are to:

- Provide security and safety to the employees, communities, and property at the construction site.
- Mitigate risks and threats hindering the project activities and reputation of the organisation.
- Ensure that effective security is compatible with the respect for human rights.

5.3.11.2 ENGAGMENT OF SECUIRTY PERSONNEL

Based on KTZ, security personnel will be hired through a third-party provider. KTZ will ensure the following regarding the engagement of security personnel:

- Security provider and personnel employed must not have any prior records of abuse or violations of human rights. Reasonable inquiries should be made on the security provider's

reputation with other companies, foreign government representatives, UN missions etc. prior to engagement.

- The security provider must implement a clear Code of Conduct. The security personnel will receive clear instructions on the objects of their work and permissible actions.
- Force shall only be used for preventive and defensive reasons, proportionate to the nature and extent of the threat, and as a last resort, while respecting human rights.
- Security personnel employed shall be clear on how to respond and appropriately use available tools (e.g., weapons or other measures) in addressing a threat.
- Expectations regarding conduct and use of force should be communicated as terms of employment and reiterated through regular training.
- When the provision and/or possession of firearms in necessary, any weapons issues, including firearms and ammunition, should be licensed according to the laws and regulations of RoK.
- Security personnel engaged will be adequately trained according on their scope of work and responsibilities.

5.3.11.3 ANTICIPATED IMPACTS FROM PROJECT CONSTRUCTION ACTIVTIES

The security risks anticipated during construction are categorised as "Internal" and "External" risks. The internal security risks may arise from the site construction workers and external risks are caused by the actions of the people outside the project who seek to take advantage of opportunities presented by KTZ. The most common ones are presented in **Table 5-13** below.

TABLE 5-13: ANTICIPATED SECURITY RISKS

Internal Risks	External Risks
• Employees theft • Emergency preparedness • Workplace violence • Illicit behaviour and crime • Sexual harassment of women and adolescent girls, exploitative sexual relations • Inappropriate behaviours of project personnel's	• Ethnic and social conflict • Disruption of the project materials/ theft • Political or social vendetta • Illicit sexual relations with minors from the local community • Sexual harassment and crime

5.3.11.4 MITIGATION AND MANAGEMENT MEASURES

Physical Security

- The EPC Contractor, with the assistance from KTZ, shall be responsible for deploying an adequate number of guards for the Project.
- Access to the campsite and project sites must be limited to residing workers or the temporary workforce.
- Ensure checks and screening for both people and vehicles at the campsites and construction locations. Access to campsite shall be limited to residing workforce.

- The site should be under surveillance to detect any intrusions. Surveillance guards' posts and patrols to be done along the alignment and associated facilities.
- A security control centre is recommended to be established to report and control all responses and to alert local fire stations or local police station during an emergency.
- A team of specially trained security persons should be deployed at the material storage.

Security Supervision and Control

- The management structure and the responsibility of the security guards needs to be clearly defined and include overall lines of control, accountability, and supervision of the security staff.
- Security personnel should be trained on the communication protocols and content to be shared with external stakeholders.
- Security risk assessments are to be conducted by key stakeholders which include KTZ, EPC Contractor and key community representatives around the construction sites.
- Security personnel should appropriately address incidents that involve conflicts between the local community and the workforce.

Provisions of Engaging Private Security Force Management

- The private security force role is to provide preventive and defensive services, protecting company employees, facilities, equipment, and operations wherever they are located and has no law enforcement authority.
- The security guards engaged, should be legitimate and from reputed organisation which follows applicable standards and legal requirements.

5.3.11.5 IMPLEMENTATION ARRANGEMENTS

Monitoring and Review

Integra Project Manager shall carry out the monthly monitoring and implementation of this action plan. Findings shall be evaluated and reported to KTZ Project Manager. Adequate measures shall be undertaken if there is any non-compliance to the management plan.

Recordkeeping and Documentation

The Security Officer or personnel in EHS roles shall be required to fully comply with the monitoring programme. Documentation of all management measures implemented is required to be reported to KTZ by the EPC Contractor.

5.3.12 BIODIVERSITY MANAGEMENT PLAN

Based on the Supplementary ESIA, the following ecological impacts during the construction phase of the railway bypass project have been evaluated based on the following key activities within the Area of Influence (AoI):

- Habitat Loss and Modification: Construction activities, including excavation, embankment creation, and clearing of vegetation, are anticipated to lead to direct loss and alteration of habitats. These changes may disrupt species composition, degrade ecological connectivity, and affect local biodiversity, particularly for species reliant on habitats within the AoI.

- Introduction and Proliferation of Invasive Alien Species (IAS): Construction-related disturbances, coupled with the movement of materials and equipment, increase the risk of introducing and propagating invasive alien species. IAS may outcompete native flora and fauna, potentially leading to long-term degradation of local ecosystems and biodiversity.

As such, a detailed Biodiversity Management Plan has been developed for effective biodiversity management within the project area (**Appendix B**).

5.3.13 CULTURAL HERITAGE MANAGEMENT FRAMEWORK

The Cultural Heritage Management Framework (a standalone document) encompasses 3 sections, mainly:

1. Chance Find Procedure: This Procedure forms the main overview to inform users on how to manage cultural heritage that is unexpectedly discovered during project construction, in alignment with IFC PS 8.
2. Kurgan Archaeological Landscape Mitigation and Management Guidelines: Given that a total of three Cultural Heritage assets were identified along the Project's alignment, this second section goes in depth into detailing steps to manage and conserve the recorded Kurgan sites in the vicinity of the Project during construction.
3. Cultural Heritage Screening Checklist: To aid in ensuring regulatory compliance and alignment with IFC PS 8, this checklist was developed for the identification and assessment of potential impacts on cultural heritage early in the project planning process.

5.4 MANAGEMENT OF CHANGE PROCESS

Changes in the scope of the Project and/or modifications to key control documents that affect the conditions and commitments outlined in the ESIA are subject to the management of change process. This management of change process is applied when there is:

- Engineering/Design changes.
- Route/location changes.
- Applicable legislation changes related to environmental and social issues.
- Authority provision changes.
- Any new environmental/social data is introduced.
- Construction strategy changes.
- Stakeholders influence on the project.
- Changes in staff and contractor teams.

A Change Facilitator shall be appointed within KTZ to be responsible for the coordination of actions and assessments because of scope deviations. The Change Facilitator shall ensure that KTZ Project Manager is informed of any changes, as specified above, which could have potential environmental and social impacts.

5.4.1 THE INITIAL ASSESSMENT OF THE CHANGE

Prior to the implementation of the proposed change, the Change Facilitator, together with relevant technical experts shall assess the potential impacts of the proposed change. The Management of Change Process (MCP) Form given in **Annex U**, is used to specifically describe potential environmental issues associated with the proposed change. If the potential environmental and social issues are identified from this process, KTZ Project Manager shall be notified by the Change Facilitator.

5.4.2 COORDINATION OF THE CHANGE

After the Management of Change Process (MCP) data is received from the Change Facilitator, the KTZ Project Manager shall coordinate with the Integra Project Manager, Integra EHS Manager, and Integra Community Liaison Officer. Integra Community Liaison Officer shall review and evaluate the MCP data to assess whether stakeholder consultation and/or new mitigations are required with respect to the change. The KTZ Project Manager shall ensure that the feedback from Integra Project Manager, Integra EHS Manager, and Integra Community Liaison Officer are reflected in the MCP form and delivered to the Change Facilitator together with the evaluation results.

5.4.3 EVALUATION OF CHANGE

The KTZ Project Manager shall ensure that any potential environmental and social impacts associated with the change which are not within the scope of ESIA studies are evaluated using the similar impact assessment methodology used in the ESIA. If a significant environmental or social impact is determined, the KTZ Project Manager will:

- Identify whether the change requires an "EIA", or preparation of a "Project Description File" is required by Environmental Code of the Republic of Kazakhstan.
- Identify the environmental standards and objectives to be attained.

- Outline the way that the environmental and social impacts are managed and mitigated (e.g., physical controls) or the development of additional management systems (e.g., environmental guidelines, procedures or training requirements).
- Detail the required human and financial resources.
- Document and communicate the above in the MCP data form, for the evaluation of this data by the "Change Facilitator".

5.4.3.1 THE CHANGES ASSOCIATED WITH ROUTE AND FACILITY LOCATION

If the change is associated with the route or site facility change then the Change Facilitator shall notify the KTZ Project Manager (e.g., by MCP form in **Annex U**). KTZ Project Manager shall ensure that environmental and social assessment studies as well as the official processes are initiated. KTZ Quality Control/Technical Compliance shall check whether the change requires an additional environmental permit and/or approval.

5.4.3.2 THE CHANGES ASSOCIATED WITH DESIGN

If the change is associated with the engineering or design development, the Change Facilitator shall identify what type of new aspects such as new emission types, changes in noise, vibration levels, energy consumption are expected due to such changes and reports in MCP data form. The MCP form in **Annex U** will be used for such an evaluation and will be forwarded to KTZ Project Manager. KTZ Project Manager will initiate environmental and social assessment studies if a new aspect is identified. KTZ Quality Control/Technical Compliance shall check whether the change requires any additional environmental permit and/or approval.

5.4.3.3 THE CHANGES ASSOCIATED WITH AUTHORITY PROVISION AND LEGISLATION

If the change is due to a change in Construction/Operation Execution Strategy (e.g., need for blasting, intermittent operation) or a Management Strategy (e.g., change of organisation, resources), then the KTZ Project Manager shall ensure that the new strategy is evaluated and identify if additional studies, assessments or mitigations are required and, if required, proceed with the environmental and social assessment studies accordingly.

5.4.3.4 THE CHANGES ASSOCIATED WITH STAKEHOLDER INFLUENCE

If the change is due to any new environmental and social data obtained through the implementation of a Stakeholder Engagement Plan, the KTZ Project Manager shall ensure that the new data is evaluated and identify if the change impacts the outcomes of the current studies and assessments. The KTZ Project Manager shall ensure that environmental and social assessment studies are implemented if required.

5.4.4 PROCEED NOTIFICATION FOR THE CHANGE

The MCP data form, completed and evaluated by the Integra Project Manager, Integra EHS Manager, and Integra Community Liaison Officer, will be reviewed by the Change Facilitator. Based on the review, advice will be provided on whether the proposed change is feasible and can proceed with the outlined actions. Upon receipt of proceed notification, these personnel shall act accordingly and proceed with the environmental and social assessment studies, public consultation, permitting processes or other actions required for implementation of the change.

5.4.5 CHANGE IMPLEMENTATION

KTZ Project Manager shall review progress against the implementation of the proposed change, as required, to verify that the environmental considerations have been fully addressed and environmental and social assessment studies, public consultation, permitting processes are completed as necessary and necessary revisions are performed in the ESMS and sub-management plans.

6. MONITORING AND REPORTING MECHANISM

6.1 LEGAL REGISTER & COMPLIANCE MONITORING

KTZ and the EPC Contractor will be required to ensure that permits and authorisations under all applicable laws are in place, current and valid. KTZ Quality Control/Technical Compliance will regularly review the regulatory environmental and social licenses applicable to the construction of the railway and associated facilities. Based on the required licenses KTZ Quality Control/Technical Compliance will maintain a document monthly and update the license files, in the format given in **Annex A**.

6.2 INTERNAL & EXTERNAL REPORTING

Integra EHS Manager and Integra Project Manager will be required to report on the E&S performance to KTZ Project Manager on a periodic basis through customised reports with an acceptable level of detail. The reports will enable KTZ Project Manager to understand the effectiveness of the ESMS and management plans/procedures, status of compliances with legal and/or contractual obligations and regulatory requirements. The E&S performance report formats are provided in **Annex V**.

In addition to the above performance reports, an internal reporting schedule will be adopted by the EPC Contractor to ensure that E&S management procedures are effectively implemented on a day-to-day basis (**Table 6-1**). Reporting will be done in the form of an accident/incident records register, grievance records, environmental monitoring records, employee/staff and worker details, trainings records and other E&S compliance at required intervals. All the internal reports will be submitted to the KTZ Project Manager along with monthly E&S Performance report.

TABLE 6-1: INTERNAL REPORTING SCHEDULE

No.	Type of Report	Responsibility	Frequency
1.	E&S Performance report of the Project	Integra Project Manager to KTZ Project Manager	Monthly
2.	Training registers for staff and workers	Integra Human Resources & Administration Officer to KTZ Human Resources Manager	Weekly
3.	Report on Compliance to Work Plan including toolbox meetings	Integra Project Manager to KTZ Project Manager	Weekly
4.	External Audit Report review by an Independent Engineer	Integra Project Manager to KTZ Project Manager	Monthly
5.	Compliance to Environmental licenses	Integra Project Manager to KTZ Project Manager	Monthly
6.	Compliance to Social/Labour related requirements	Integra Human Resources & Administration Officer, Integra Community Liaison Officer to KTZ Human Resources Manager, KTZ Community Liaison Officer	Monthly

6.3 PERIODIC INTERNAL AND EXTERNAL AUDITS

The overall monitoring responsibility of the Project's construction E&S performance will lie with Integra Project Manager and will report to KTZ Project Manager. Integra Project Manager will undertake the monitoring of routine construction activities as well as activities being undertaken its subcontractors as per the Internal Audit Checklist (**Annex F**). KTZ Project Manager will undertake periodic visits to work areas as well as accompany Integra Project Manager and Integra EHS Manager at the time of internal audits.

Table 6-2 outline the monitoring and auditing schedule.

TABLE 6-2: E&S MONITORING AND AUDITING SCHEDULE

No	Type of Audit	Frequency	Responsibility
1.	Daily site observations	Daily	Site supervisors
1.	Routine inspections	Weekly	Integra Project Manager, Integra EHS Manager, Control team
2.	Internal audit	Monthly	Integra Project Manager and KTZ Project Manager
3.	External audit	Quarterly/Semiannually	External third-party consultant engaged by KTZ
4.	Lender Supervision Visits	Quarterly/Semiannually	Lenders

Integra Project Manager will be responsible for further communication of the schedule to respective site supervisors and organise the audits. The findings of the audit will be shared in the form of an Internal Audit Report, including a time bound corrective action plan to be implemented by the site for addressing non-conformances/non-compliances.

6.4 MANAGEMENT REVIEW OF ESMS AND E&S PERFORMANCE OF THE PROJECT

KTZ Project Manager and Integra Project Manager will monitor and measure the effectiveness of this construction ESMS through periodic reviews and discussions. Integra Project Manager will produce a monthly update on compliance to E&S at the construction site through adequate documentation. This statistical information will be collated into a report every month and shared with KTZ Project Manager, as per procedures in **Section 6.2** above.

KTZ Upper Management will review all volumes of the ESMS on periodic basis, at least on annual basis, along with the KTZ Project Manager and Integra Project Manager. Integra Project Manager, with the assistance from the Integra team (Integra EHS Manager, Integra Environmental Specialist, Integra Community Liaison Officer, Integra Human Resources & Administration Officer) will provide asset specific reports to KTZ Project Manager to provide with progress against ESAP (format as per **Annex W**), ESMP and regulatory compliances. The management review will address the following:

- Review of issues/initiatives raised by individuals.
- Review of implementation of EMP, and HS&E accidents, incidents and complaints.

- Review of audit findings.
- Review of the applicability of ESMS policies and procedures, and ensure they are still relevant to the current construction context.
- Review of objectives and targets and status to date.
- Review of KTZ and EPC Contractor's management structure, resources and training requirements.

The suggestions and observations received from the review shall be incorporated into the ESMS wherever necessitated.

7. TRAINING AND CAPACITY BUILDING

7.1 TRAINING REQUIREMENTS AND OVERVIEW

Training is needed for the effective implementation of the ESMP. The training programme will ensure that all concerned members of the team understand the following aspects:

- Purpose of the management plan for construction activities.
- Requirements of the management plan and specific action plans.
- Sensitive environmental and social features within and surrounding the project areas.
- Potential risks from the construction activities.

Integra Project Manager, with the assistance from KTZ Project Manager, will ensure that the EHS induction training and job specific trainings are identified and given to the required personnel. The following trainings (but not limited to) shall be conducted to encourage the implementation of environmentally and socially sound practices and compliance requirements (**Table 7-1**).

TABLE 7-1: MANDATORY TRAINING REQUIREMENTS

S.N	Type of Training	Frequency	Trainer	Site Supervisors & Security	Railway Corridor Monitoring Officer	Construction staff
1.	Occupational health and safety (including, but not limited to, need and usage of PPEs, work permit system, on-job hazard analysis, excavation safety, electrical safety, material handling, scaffold safety, etc.)	Monthly (different training sub-topics may be selected for various months)	Integra EHS Manager supported by Integra Project Manager and KTZ Project Manager	√	√	√
2.	Emergency preparedness and response	Quarterly	Integra Project Manager	√	√	√
3.	Behavioural aspects (including, but not limited to, conversation with peers, supervisors and general public, prevention of sexual harassment, defensive driving, etc.)	Monthly	Integra Project Manager supported by KTZ Project Manager	√	√	√
4.	Standard operating procedures/ steps to be followed for various project works	Daily before start of the work	Integra EHS Manager supported by Integra Project Manager	√	√	√
5.	Health and hygiene	Monthly	Integra EHS Manager supported by Integra Project Manager	√	√	√
6.	Traffic diversion and road safety	Quarterly	Integra EHS Manager supported by Integra Project Manager	√	√	√
7.	First aid awareness	Quarterly	Integra EHS Manager supported by Integra Project Manager	√	√	√

S.N	Type of Training	Frequency	Trainer	Site Supervisors & Security	Railway Corridor Monitoring Officer	Construction staff
8.	Environment awareness	Quarterly	Integra Environmental Specialist supported by Integra Project Manager	√	√	√
9.	Waste management	Monthly	Integra EHS Manager supported by Integra Project Manager	√	√	√
10.	ESMP (including associated management plans) and legal compliance	Quarterly	Integra Project Manager supported by KTZ Project Manager	√	√	x
11.	Reporting and investigation of incidents	Quarterly	Integra Project Manager supported by KTZ Project Manager	√	√	√
12.	Stakeholder engagement and grievance mechanism	Quarterly	Integra Project Manager supported by Integra Community Liaison Officer, Integra HR & Administration Officer, KTZ Community Liaison Officer and KTZ Human Resources Manager	√	√	√

The same level of awareness and commitment will be imparted to the contractors and sub-contractors prior to their engagement for any construction activities. Additional trainings will also be required as follows (**Table 7-2**):

TABLE 7-2: TRAININGS FOR CONTRACTORS AND SUB-CONTRACTORS PRIOR TO ENGAGEMENT

S.N.	Type of Trainings	Frequency
1.	General H&S	Induction stage
2.	Usage of PPE	Induction stage
3.	Spil Response	Induction stage
4.	Road Safety and Prevention of Road Accidents	Induction stage
5.	Safety measures during median maintenance	Induction stage
6.	Labour working rights and conditions	Induction stage

7.2 OCCUPATIONAL HEALTH AND SAFETY TRAININGS

7.2.1 OHS INDUCTION

Workers will only be allowed to enter the construction sites after undergoing an OHS Induction, which includes OHS training, the use of protective devices and personal protective equipment. No person will be allowed to work on the construction site until they have received the necessary inductions, information, protocols and after completing the required training to perform the work competently and safely. A person who does not wish to undergo an introductory briefing must be taken out of the construction site by security personnel.

Copies of occupational health and safety instructions, occupational health and safety rules, regulations and activities will be given to workers at the beginning of their employment or when there is a change in the nature of their employment.

7.2.2 OHS TRAINING

The EPC Contractor shall ensure OHS competence by providing training for all Project workers. The EPC Contractor will employ personnel with sufficient OHS skills for the Project and provide additional OHS training if required. In addition to the standard professional courses for skilled operators, additional OHS training may be required depending on the need and circumstances.

Integra EHS Manager, with the assistance of Integra Project Manager and KTZ Project Manager, will conduct various training courses on Health, Safety and Environment in accordance with the specific requirements of the Project. Several topics will be included, such as (but are not limited to):

- Proper use and application of PPE.
- Information signs and alarms.
- Daily inspection of cars and trucks (if necessary).
- Manual handling and related ergonomic factors.
- Awareness of chemicals and hazardous substances, including storage, handling, use.

- Fire prevention and preparedness.
- Noise measurement, limitation and mitigation.
- Electrical safety and related tools and equipment.
- Work with the use of machining tools and electrically driven tools.
- Fire prevention and preparedness.
- Awareness of chemicals and hazardous substances, including storage, handling, use, etc.
- Work with heavy loads.
- Rigging and scaffolding.
- Hot work, including sheet cutting, rolling, welding, and grinding.
- Work with the use of machining tools and electrically driven tools;
- Information signs and alarms.
- Daily inspection of cars and trucks (if necessary).

A detailed training program shall be prepared by Integra EHS Manager, specifying training requirements for all staff. The training program needs to be submitted to KTZ within one month of approval of this ESMS and training programs needs to be scheduled within 3 months of approval of this ESMS.

7.3 EMERGENCY RESPONSE TRAINING

Please refer to **Appendix A** for details to emergency response training.

7.4 BEHAVIOURAL AND SECURITY TRAINING

The EPC Contractor, with the assistance from KTZ, shall ensure that all security personals shall receive procedural or knowledge trainings, to be provided by the security service providers or authorised third-party security service vendors. Trainings should include, but not limited to:

- Basic guarding skills;
- Guard post orders and procedures;
- Rules for the use of force;
- Rules of engagement in social conflicts;
- Adequate weapon training (as applicable);
- Gender based violence;
- Sexual Exploitation and Abuse;
- Sexual Harassment;
- Environmental, Health and Safety trainings; and
- Emergency response mechanism.

7.5 TRAFFIC AND ROAD SAFETY TRAINING

All Site personnel, drivers and construction workers are required to be properly trained in measures to be implemented for safe work zones, safe transportation and overall traffic management. Integra Project Manager is to ensure that all the employees are effectively informed and trained in these aspects, including defensive driving techniques.

Driver qualifications, skills of drivers and contractor's driving assessors will be checked by Integra Project Manager, with the assistance from Integra Human Resources & Administration Officer, in accordance with the contractor's approved training requirements. Unauthorised passengers in Project related vehicles will be strictly prohibited. Driver's safe work practice checklist is given in **Annex X**. All trainings imparted shall be documented and records maintained.

7.6 WASTE MANAGEMENT TRAINING

The EPC Contractor shall ensure all construction workers are aware of the mitigation hierarchy for waste. Awareness training topics shall include:

- Understanding the various waste generated on site.
- Environmental and social risks associated with waste generated.
- Waste segregation measures implemented on site.
- Understanding the procedure for waste aggregation, storage and disposal.

7.7 REPORTING AND INVESTIGATION OF INCIDENTS TRAINING

All construction workers engaged shall undergo trainings to understand the procedure for reporting incidents observed on site. The objective is to ensure workers are able to:

- Identify the various types of incidents for reporting.
- Able to respond promptly to the various types of incidents.

Additional trainings will be provided to workers with more senior positions (such as site supervisors, proposed incident investigation team, ERT) to ensure a level of competency in investigating reported incidents. Trainings should allow workers to:

- Carry out the incident investigations
- Apply root cause analysis tools to determine the root cause of incidents including personal health issues.
- Suggest, monitor and report the corrective and preventive measures to address possible root causes of the incidents.
- File a report to relevant personnels.

7.8 STAKEHOLDER ENGAGEMENT AND GRIEVANCE MECHANISM

All workers shall be informed on the stakeholder engagement and grievance mechanism procedure. Refer to the stand a standalone document.

8. ASSOCIATED TOOLS & CHECKLIST

- Annex A: Legal Register
- Annex B: Vendor Onboarding Recordkeeping Checklist
- Annex C: EHS Contractor Guidelines
- Annex D: Monitoring of Contractor's Sub-Contractor's Regulatory Compliance
- Annex E: Supplier E&S Screening Questionnaire
- Annex F: Checklist for Internal EHS and Labour Audits
- Annex G: Labour Camp Inspection Checklist
- Annex H: Job Hazard Analysis Template
- Annex I: Format for HIRA Form
- Annex J: Permit to Work Form
- Annex K: BBS Checklist
- Annex L: Fire Extinguisher Inspection, Testing and Maintenance List
- Annex M: Joint Inspection Report Format
- Annex N: Construction-Safety-Inspection-Checklist
- Annex O: Self-Inspection Report Template
- Annex P: Incident Notification Report
- Annex Q: Waste Tracking and Management Form
- Annex R: Checklist for Access Route Maintenance
- Annex S: Checklist for Daily Traffic Management
- Annex T: Record Keeping and Documentation for Traffic Management Plan
- Annex U: Management of a Change Process Form
- Annex V: Format for Environmental and Social (E&S) Performance Reports
- Annex W: Format for ESAP Progress
- Annex X: Drivers Safe Practice Checklist

APPENDIX A EMERGENCY RESPONSE PLAN

APPENDIX B BIODIVERSITY MANAGEMENT PLAN

ANNEX A LEGAL REGISTER

ANNEX B VENDOR SELECTION CHECKLIST

ANNEX C EHS CONTRACTOR GUIDELINES

ANNEX D MONITORING OF CONTRACTOR'S/SUBCONTRACTOR'S REGULATORY COMPLIANCE CHECKLIST

ANNEX E SUPPLIER E&S SCREENING QUESTIONNAIRE

ANNEX F CHECKLIST FOR INTERNAL EHS AND LABOUR AUDITS

ANNEX G LABOUR CAMP INSPECTION CHECKLIST

ANNEX H JOB HAZARD ANALYSIS TEMPLATE

ANNEX I FORMAT FOR HAZARD IDENTIFICATION: RISK ASSESSMENT FORM

ANNEX J PERMIT TO WORK FORM

ANNEX K BEHAVIOUR-BASED SAFETY PROGRAMME CHECKLIST

ANNEX L FIRE EXTINGUISHER INSPECTION, TESTING AND MAINTENANCE LIST

ANNEX M JOINT INSPECTION REPORT

ANNEX N(A) OCCUPATIONAL HEALTH AND SAFETY CHECKLIST

ANNEX N(B) LABOUR AND WORKING CONDITIONS INSPECTION CHECKLIST

ANNEX O SELF-INSPECTION REPORT TEMPLATE

ANNEX P INCIDENT NOTIFICATION REPORT TEMPLATE

ANNEX Q WASTE TRACKING AND MANAGEMENT FORM

ANNEX R CHECKLIST FOR ACCESS ROUTE MAINTENANCE

ANNEX S CHECKLIST FOR DAILY TRAFFIC MANAGEMENT

ANNEX T RECORD KEEPING AND DOCUMENTATION FOR TRAFFIC MANAGEMENT PLAN

ANNEX U MANAGEMENT OF CHANGE PROCESS FORM

ANNEX V ENVIRONMENTAL AND SOCIAL PERFORMANCE REPORTS

ANNEX W FORMAT FOR ENVIRONMENTAL AND SOCIAL ACTION PLAN PROGRESS

ANNEX X DRIVERS SAFE PRACTICE CHECKLIST

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