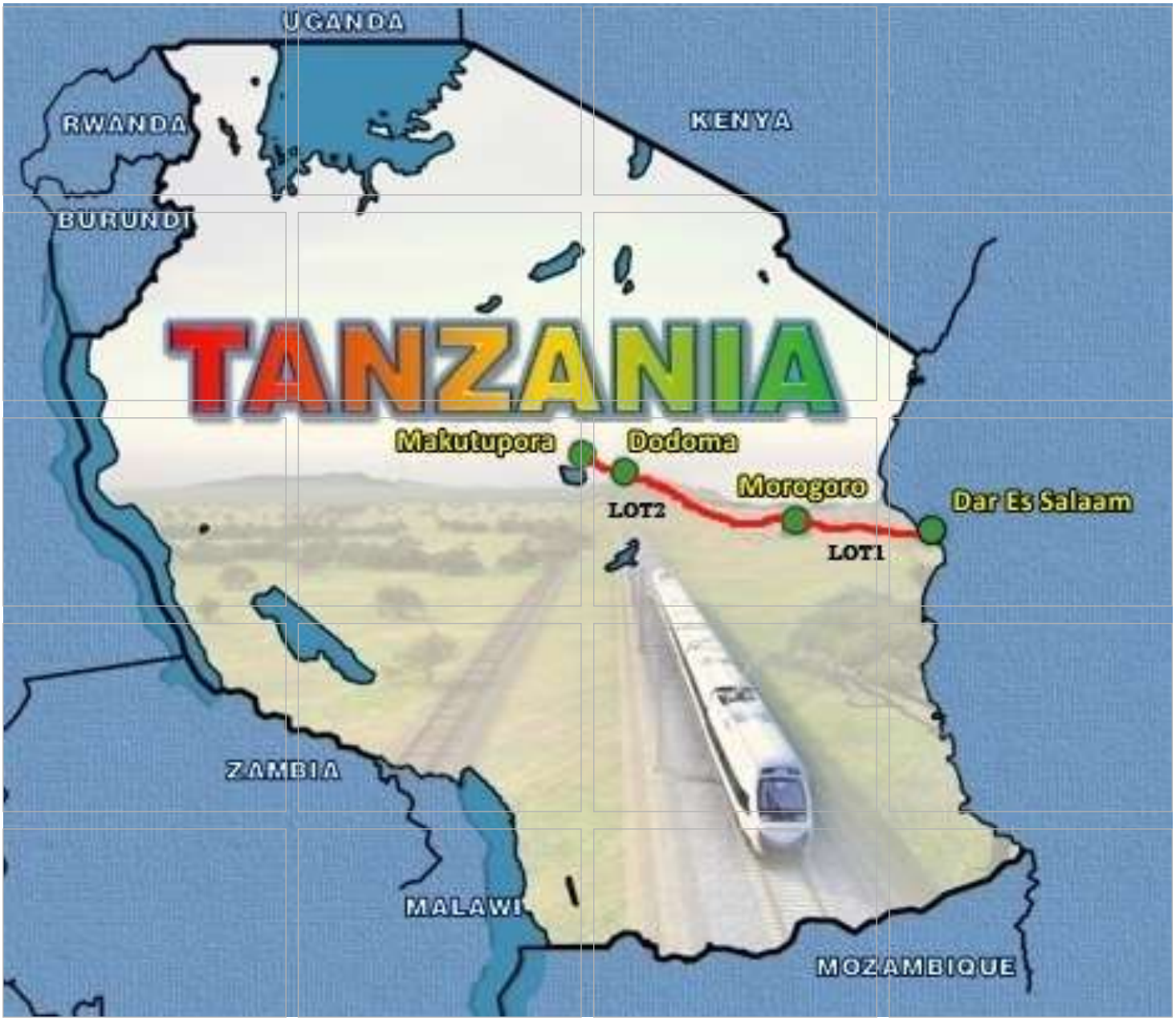

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Standard Gauge Railway Line (SGR) Project
Dar es Salaam – Makutopora, Tanzania

Environmental and Social Management and Monitoring Plan

August, 2019
www.erm.com

STANDARD GAUGE RAILWAY LINE (SGR) PROJECT
Dar es Salaam – Makutopora, Tanzania

Environmental and Social Management and Monitoring Plan

Prepared for:
Tanzania Railway Corporation (TRC)
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P.O.Box 76959, Dar es Salaam,
Tanzania

ERM
August 2019

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LIST OF ACRONYMS

Abbreviation	Full Definition
AU	African Union
AZE	Alliance for Zero Extinction
CLO	Community Liaison Officer
CRB	Contractors Board
EA	Environmental Assessment
EAC	East African Community
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ERB	Engineering Registration Board
ESIA	Environmental and Social Impact Assessment
ESMMP	Environmental and Social Management and Monitoring Plan
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GN	General Notice
GoT	The Government of the United Republic
HDPE	High-density polyethylene
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome
HR	Human Resources
IAP	Invasive Alien Species
IBA	Important Bird and Biodiversity Area
IFC	International Finance Corporation
ILO	International Labour Organization
IUCN	The International Union for Conservation of Nature
KBA	Key Biodiversity Area
L&FS	Life and Fire Safety
LGA	Local Government Authority
MGR	Meter Gauge Railway
NEMC	The National Environment Management Council
NEP	National Environmental Policy
NGO	Non-Governmental Organization
OP	Operational Policy
OSHA	Occupational Safety and Health Authority
PPE	Personal Protective Equipment
PS	Performance Standards
RoW	Right of way
SGR	Standard Gauge Railway
STI	Sexually Transmitted Infection
TAC	Technical Advisory Committee
TBS	Tanzania Bureau of Standards
TRC	Tanzania Railways Corporation
WHO	World Health Organization
WWF	World Wildlife Fund
YM	Yapı Merkezi

1 INTRODUCTION

1.1 TERMS OF REFERENCE

The Government of the United Republic of Tanzania (GoT) through the Tanzania Railways Corporation (TRC), is embarking on a major railway revitalisation programme in the country through the rehabilitation and construction of new railway line links. The GoT intends to construct a Standard Gauge Railway (SGR) from Dar es Salaam to Mwanza via Isaka (1,219 km). This partly follows the African Union (AU) and East African Community (EAC) decision in 2006, which was that all new railway development projects on the continent would be to a standard gauge specification. TRC intends to lay a separate SGR line alongside the existing Metre Gauge Railway (MGR) along the entire length from Dar es Salaam to Mwanza, via Isaka.

The implementation of the SGR Project is being undertaken in phases. Phase I (Dar es Salaam to Morogoro) and Phase II (Morogoro to Makutopora) have a total length of approximately 541 km. The GoT, through TRC, awarded Yapi Merkezi Insaat VE Sanayi (Yapi Merkezi) to provide design services and actual construction of the SGR Project. The SGR Project is being implemented under a design and build scenario.

As part of the environmental approval process for the SGR Project, a simple and easy to implement Environmental and Social Management Plan (ESMP) is needed to address the issues identified in the Environmental and Social Impact Assessment (ESIA).

PLEASE NOTE:

This Environmental and Social Management and Monitoring Plan (ESMMP) has been compiled as a framework, which aims to set out a formal system by which the SGR Project can update the existing Environmental and Social Management Plan ((DSM-YME-AL-GL00X-G-EN-MGP-0001-0) and associated Environmental and Social Procedures, which the Project can use to manage / mitigate impacts to the receiving physical, biological and social environments.

This ESMMP needs to be read and implemented in conjunction with the requirements of approved Local EIA dated 27th November, 2018 prepared by Ardhi University and NEMC Certificate and conditions as defined in Annex H.

Moreover, when updated, the ESMMP and associated Procedures should be considered "living" documents and should be amended in light of the learning experienced during the implementation thereof.

1.2 STRUCTURE OF THIS ESMMP

The structure of this ESMMP is as follows:

- **Chapter 1 (Introduction)** – presents the terms of reference for the ESMMP, purpose and objectives of the ESMMP, and details of the SGR Project proponent.
- **Chapter 2 (Summary of Project Description)** – presents an overview of the SGR Project, specifications and activities.
- **Chapter 3 (Environmental and Social Management System)** – presents a framework fr the system necessary for the integrated management of the ESMP and associated Environmental and Social Procedures.
- **Chapter 4 (Legal and International Good Practice Requirements)** – summarises relevant legal and international good practice requirements related to environmental and social compliance.
- **Chapter 5 (Implementation of the ESMP and associated Procedures)** – summarises the institutional arrangements required for governance, implementation and monitoring of the ESMP and associated Environmental and Social Procedures.
- **Chapter 6 (Environmental and Social Management Procedures)** – describes the framework required for updating of the SGR Project Environmental and Social Procedures (both existing and proposed Procedures).
- **Chapter 7 (Environmental and Social Monitoring)** – describes the framework for environmental and social monitoring required for updating of the existing Environmental and Social Monitoring Procedure.
- **Chapter 8 (ESMP Mitigation Measures Table) -** describes the mitigation measures as set out in the ESIA, along with the responsible entities for implementation, the required timing by which the measure must be implemented, the monitoring / Key Performance Indicators (KPI) by which the completion of the measures can be verified.

1.3 PURPOSES AND OBJECTIVES OF THIS ESMMP

This ESMMP has been prepared to cover the environmental and social management of activities associated with the SGR Project during the all phases (pre-construction, construction and post construction / operation). The ESMMP (*Section 7*) sets the framework for updating the ESMP and associated Environmental and Social Procedures with the management measures identified in the ESIA, and for implementation by the Contractor (i.e. Yapi

Merkezi) and associated subcontractors during construction of the SGR Project. The monitoring framework required by the Contractor or under the responsibility of the TRC are covered in *Section 8*.

The purpose of this ESMMP is to outline appropriate management strategies and actions for updating the existing ESMP and associated Procedures so that negative impacts are mitigated and beneficial impacts enhanced of the SGR Project through all phases. The purpose is also to provide a basis for an on-site environmental and social manual for staff, maintenance personnel, contractors and consultants with responsibilities for the SGR Project. The ESMMP includes the framework required for monitoring to measure the efficacy of the mitigation measures and to enable adaptive management to correct mitigation requirements.

Each management action will be designed to be practical, measurable and auditable. Given the expected lifespan of the SGR Project, an ESMP for decommissioning is not warranted, as the SGR Project is not expected to be decommissioned at any foreseeable time.

The objective of this ESMMP is to provide:

- Environmental and Social Procedures that effectively control Project impacts and that monitor compliance with the requirements set out in the Procedures;
- A framework for setting out environmental and social performance indicators, monitoring requirements and review procedures for activities associated with the SGR Project;
- Government authorities, stakeholders and the Proponent (TRC) with assurance that mitigation measures will be addressed, are achievable, and a common basis for measuring compliance with specific mitigation requirements; and
- Stakeholders with assurance that identified mitigation measures to address impacts are documented, and that the environmental and social management of the SGR Project can reduce negative impacts and optimize or enhance positive impacts.

NOTE:

As the proponent, TRC will have ultimate responsibility for implementing the ESMMP.

1.4 DETAILS OF THE PROPONENT

The proponent of the SGR Project is TRC on behalf of the Government of the United Republic of Tanzania. The contact details for the proponent are as follows:

TRC

Contact: Magdalena Kitila

P.O. Box 76959,
Dar es Salaam
Tel: +255 (22) 212 7403

2 SUMMARY OF PROJECT DESCRIPTION

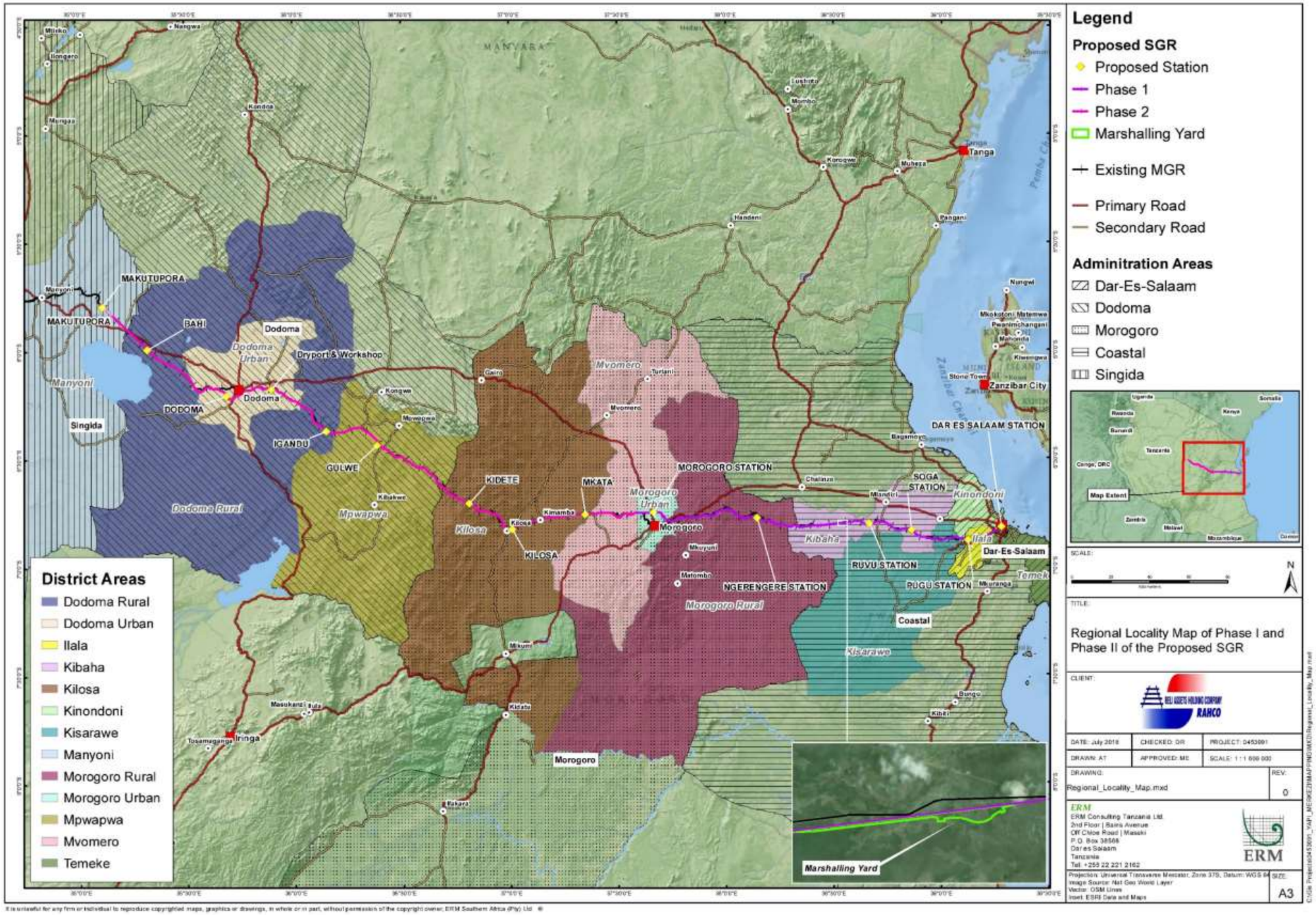
2.1 PROJECT LOCATION AND BACKGROUND

The SGR Project will be undertaken in the following two phases – Phase I (Dar es Salaam to Morogoro – 205 km) and Phase II (Morogoro to Makutupora – 336 km) (refer to *Figure 2.1*). Phase I and Phase II will traverse the Regions and Districts presented in *Table 2.1.* The proposed SGR from Dar es Salaam to Makutupora station (541 km) will run parallel to the existing Metre Gauge Railway (MGR). The existing MGR starts from Dar es Salaam to and ends in Mwanza via Isaka and has a total length of 1,231 km. The proposed SGR will pass through the regional headquarters of Dar es Salaam, Morogoro and Dodoma which harbor the major train stations (*Figure 2.1*). There are also minor stations along the way including Dar es Salaam, Pugu, Soga, Ruvu, Ngerengere, Morogoro, Mkata, Kilosa, Kidete, Gulwe, Igunda, Dodoma, Bahi and Makutopora (*Figure 2.1*).

Table 2.1 Regions and Districts Traversed by the Proposed SGR

SGR Phase	Region	District
Phase I	Dar es Salaam	Ilala
	Coast	Kisarawe
		Kibaha
	Morogoro	Morogoro Rural
		Morogoro Urban
Phase II	Morogoro	Morogoro Urban
		Mvomero
		Kilosa
	Dodoma	Mpwapwa
		Dodoma Rural
		Chamwino
	Singida	Manyoni

Figure 2.1 Regional Locality Map of Phase I and Phase II of the Proposed SGR



2.2 KEY PROJECT ASPECTS

2.2.1 Current Design

The main design parameters are construction of a standard gauge railway system adjacent to the existing MGR track. The SGR will be designed to have an axle load of 35t and a design speed of 160 km/ for passenger trains and 120 km/h for freight trains and rail width of 1,435 mm (4ft 8½ in). The type of rail will be of 60 UIC-maximum train length of 2,000 m with passenger capacity of 1,100,000 passengers/year (*Table 2.2*). The SGR will be laid approximately 15 meters away from the existing MGR. The horizontal curves of the proposed SGR will designed to account for the relatively higher speed of the new train. Generally, the existing MGR line will continue with operations during the construction period of the proposed SGR. Minimal disturbance to MGR operations will however be limited to those sections of the SGR that cross the existing MGR line.

Table 2.2 Technical Specification of the Selected Alignment

Design Parameter	Design Specification
Design speed	160 km/h
Maximum speed (Passenger trains)	160 km/h
Maximum speed (Freight trains)	80 km/h
Maximum axle load	35 t
Rail	60 UIC
Rail cross inclination on turnouts	1 : ∞
Gauge of track	1435 mm
Sleepers	Pre-stressed Mono-Block Concrete ≈280 kg
Sleeper length	≈2.60 m
Sleeper spacing	600 mm / 1.667 sleepers/km
Sleeper for turnouts	Pre-Stressed Mono-Block Concrete
Ballast thickness	300 mm minimum
Ballast shoulder width	400 mm minimum
Slope of ballast shoulder	01:01,5
Ballast volume	2.50 m^3/m
Ballast size	Graded 25 mm to 63 mm
Rail fastening system	Elastic rail fastening-anti vandal
Track	Continuously Welded Rails (CWR)
Welding procedure	Flash-butt in workshop Thermit on site
Mainline turnouts	1:24 60 UIC Tangential
Yard and siding turnouts	1:9 60 UIC Tangential
Width of track platform	≈ 7.10 m
Inclination of track platform	01:20
Minimum horizontal curve	1900
Maximum vertical grade	16 percent
Maximum super elevation	60

Source: Design Report, 2017

To prevent pedestrian access onto the proposed SGR, the first 20 km of the Phase I section of the proposed SGR will be fenced, and the entire length of the Phase II section will be fenced. Moreover, all stations and marshalling yards will be fenced.

The alignment of the proposed SGR will deviate significantly away from the MGR line to bypass Morogoro Town (chainage 195+000 to 205+000) and Dodoma Town (chainage 443+000 to 452+000). These bypasses are required for speed manoeuvring and to avoid major towns for safety reasons.

2.2.2 Project Infrastructure

The proposed SGR will require the construction of bridges, overpasses, underpasses and culverts (refer to *Annex A* for the locations of these infrastructure). Overpasses and underpasses will be provided where the proposed SGR intersects with existing roads. Culverts are provided beneath embankments where natural watercourses occur or where required for drainage beneath the proposed SGR. Bridges will be required where the proposed SGR will cross over significant more large rivers. Viaducts will also be required where the proposed SGR passes through well-established towns and or cities. Viaducts will allow the proposed SGR to be elevated through towns / cities. Four viaducts are proposed in Dar es Salaam and will vary in length from 102.7 m to 2,156.7 m. In addition to the above, cattle and pedestrian crossing underpasses will also be constructed.

Moreover, the proposed SGR will require support facilities including stations and marshalling yards (refer to *Annex A* for the locations of these infrastructure). The stations along the proposed SGR are to serve as passenger and freight facilities. The marshalling yard will include a maintenance and assembly workshop, tank washing point, shed for shunting locomotive, wheelsets deposit shed and air compressor workshop, living quarters, general office building, canteen, bathroom and other facilities.

Dar es Salaam, Morogoro and Dodoma Stations will also include water supply infrastructure. Each of these three stations will include one new water source well, one water supply point, one 400 m^3 water tower and one 1,000 m^3 water tank. Within the new water supply, point at each water supply station, one chlorine dioxide sterilization unit and one centralized control unit and two fire pumps will be arranged. The centralized monitoring system of water supply and drainage will be arranged at each station according to the station area control and conforming to the technical condition of basic processing operation.

2.2.3 Construction Sequencing

Activities during the construction phase will be sequenced as follows:

- **Survey Works** – initially a lidar survey will be undertaken to understand the terrain. Based on the design, and data from lidar survey, the normal survey is carried out. The survey works will be carried out before the start and end of every activity to mark the alignments and the levels of all the layers on the railways. Survey is one of the most important activities of the SGR Project, since all the activities depend on the survey results.
- **Geotechnical and Geophysical Works** – initially test pit investigations will be carried out along the alignment of the SGR to determine soil profile. Test pits will be excavated and tests will be carried out in each test pit. Secondly, borehole investigation will be undertaken by means of an auger or core barrel equipment (depending on the type of soil or rock encountered). Soil/ rock samples will be selected at various depth intervals for laboratory test in each borehole. The samples will be identified according to borehole number and depth.

  If soft soils are discovered along the alignment, geophysical test should be conducted to enable design for earthworks on soft deposits. Laboratory testing will be conducted in accordance with CML test methods. Based on the results, soil and material report will be prepared.

- **Resettlement** – the government will acquire the land that is required for the construction of the SGR Project. Permanent land acquisition has the potential to result in displacement of households, community assets, infrastructure and economic displacement. Moreover, construction of the SGR Project will require the temporary acquisition of land for camps, laydown areas and other construction related activities. Where physical and economic displacement is required a resettlement, resettlement action planning will be undertaken and implemented.
- **Clearance of Existing Land and Vegetation** – the contractor will clear land and top soil required for the construction of the SGR Project using the dozers and other earthworks machinery.
- **Earthworks and Civil Works (including underground works / tunnelling)** – earthworks will involve cut and fill works. The aim of cut and fill works, is to provide a levelled surface required for construction of the SGR Project. Cutting activity is performed using excavators and loaders, and the cut material which is either suitable or unsuitable is loaded to the dump trucks. For fill works the grader is used to spread the fill material (from borrow area

or corridor) and level the surface. Using a roller, the fill material is compacted to attain the required construction build rating.

- **Construction of Culverts** – prior to the installation of track works, culverts will be constructed. As previously mentioned, culverts are required for drainage beneath the SGR Project.
- **Track Works** – track works consists of ballast laying, track laying, flash butt welding, stage tamping and completion works. Ballast aggregates are produced in the crusher plant, and then taken to the wet mix plant before the laying activity. Track laying, where the concrete sleepers are laid on the platform, is completed through use of an excavator with sleeper attachment. Sleepers are laid at distance of 60 cm apart from one another. The rails are then placed on the rail seats on sleepers. Rails and sleepers are welded by flash butt welding method.
- **Catenary Works** – following the completion of track works, excavation of catenary pole foundations will be undertaken through use of a mobile drill rig. Catenary poles will be anchored by concrete being poured into the drilled foundation and under the catenary pole base plate.
- **Signalling & Telecommunication Works** – excavation of trenches will be done along the proposed SGR alignment, following which HDPE pipes will installed. Underground signalling and telecommunication cables will be installed within these pipes. Mobile communication towers will also be installed.
- **Building Works** – building infrastructure (including stations and marshalling yards) will be constructed.
- **Bridge Works** – during this activity, all bridges, overpasses, underpasses, viaducts, and cattle and pedestrian crossing underpasses (as described in *Section 2.2.2*) will be constructed.
- **Commissioning** – following completion of the above mentioned activities the SGR Project will be commissioned.

2.2.4 Continued Operation of the Existing MGR during the Construction Phase

Operations along the existing MGR will continue for the entire duration of the construction phase of the SGR Project. To ensure that continued operations of the MGR allow for safe working conditions, the following measures will be adopted:

- At least 50 flagmen will be present at active construction sites in the vicinity of the existing MGR and when construction works are undertaken at existing rail crossing points;

- Trains along the existing MGR will not stop to collect passengers along active construction sites; and
- Ongoing communication between the Contractor and the Railway Traffic Controller.

2.2.5 Raw and Construction Materials and Sources

During the construction phase of the SGR Project raw materials (sand, gravel, crushed stone and water), specialised materials, machinery and equipment, and concrete will be required. More specifically:

- **Borrow Areas** – Gravels and fill materials shall be extracted from newly established borrow pits. The quantity of gravel needed for the duration of the construction phase of the SGR Project is approximately 17,000,000 m^3. Refer to *Annex A* for the locations of borrow areas.
- **Quarry Sites** – Two and seven proposed quarry sites have been identified for use during construction of the Phase I and Phase II sections of the SGR Project respectively. The quantity of hardstone required for the SGR Project including ballast and sub ballast is 6,800,000 m^3. Aggregate crushing facilities will be provided at Lugoba. Refer to *Annex A* for the locations of quarry sites.
- **Sand Sources** – Construction of the SGR Project will require approximately 400,000 tons of sand. Sand will be used for concrete works. Refer to *Annex A* for the locations of sand sources.
- **Water Sources** – During the construction phase of the SGR Project water will be used for compaction of gravel materials, concrete making at batching plants, dust suppression and for domestic use. Construction water will be sourced from the rivers traversed by the proposed SGR alignment. Where surface water is not available or where quality is deemed inadequate, boreholes will be constructed. The design has estimated the construction water demand to be 844,488 m^3. *Table 2.3* shows the potential targeted water sources.

Table 2.3 Potential Water Sources for SGR Construction Activities

SN	Name of the River	Chainage	Estimated Amount of water to be abstracted (m^3)	Remarks
1	Mpiji	38+500	105,561	Seasonal
2	Ruvu	76+750	105,561	Perennial
3	Ngerengere A and B	131+320and 197+000	105,561	Seasonal
4	Mkata	227+915	105,561	Perennial
5	Mkondoa	280+150	105,561	Perennial
6	Kidete	310+388	105,561	Seasonal
7	Kidimo	342+434	105,561	Seasonal
8	Msaze	352+000	105,561	Seasonal

Source: Design report, 2017

2.2.6 Additional Support Services for Construction of the SGR Project

The SGR Project will also require –

- Five concrete batching plants located at Ilala, Soga, Ngerengere, Kilosa and Dodoma.
- Access routes along the right of way (RoW) of the SGR alignment.
- Workforce accommodation (camps).
- Fuel and electricity at active working sites and camps.
- Measures for the handling and disposal of waste at active working sites and camps.
- Spoil dumping areas for 4,268,000 m^3 and 7,117,000 m^3 of excess spoil (i.e. – which cannot be used for fill) along Phase I and Phase II of the proposed SGR alignment respectively. Refer to *Annex A* for the locations of spoil dumping areas.

3 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

The ESIA has identified potential impacts (both positive and negative) to the physical, natural and socio-economic environments. In order to avoid, minimise and reduce negative impacts, and to ensure opportunities for the enhancement of positive impacts are realised, an overall Environmental and Social Management and associated Procedures have been developed, the details of which are included in *Section 0*. The ESMP and associated Procedures described in *Section 0* include the following as outlined in *Box 3.1.*

Box 3.1 SGR Project Environmental and Social Management Plan and associated Procedures

Environmental and Social Management Plan and associated Procedures

- Environmental and Social Management Plan (*already in place at YM for the Project*)
  - Air Quality and Emissions Procedure
  - Water Quality Management Procedure
  - Waste Management Procedure
  - Pollution Prevention Procedure
  - Environmental Emergency Procedure
  - Code of Conduct Procedure
  - Chance Finds Procedure
  - Environmental and Social Training Procedure
  - Environmental and Social Monitoring Procedure
  - Biodiversity and Ecological Protection Procedure
  - Evaluating of Legal Compliance Procedure
  - Noise and Nuisance Reduction Procedure
  - Environmental Consents Procedure
  - Stakeholder Engagement and Grievance Mechanism Procedure
  - Integrated Pest Management Procedure
  - Community Safety Management Procedure
  - Erosion Control Procedure
  - Aggregate Management Procedure
  - Environmental Incident Response Procedure
  - Environmental Impact Assessment Procedure
  - Off-site Working Procedure

Each Procedure listed above will be updated to include the following:

- The objectives and purpose of the Procedure;
- Applicable phases of the SGR Project when the Procedure is required;
- The Project related activity resulting in the impact, requiring the elaboration of each Procedure;

- An overview of the responsibility for the implementation of each Procedure;
- A summary of the performance criteria to which the Procedure must aim to comply (which includes Tanzanian legal requirements, the International Finance Corporation (IFC) Performance Standards (PS), or applicable good practice), that is relevant to each Procedure; and
- Mitigation measures (actions) required during various Project phases (*viz.* design, construction and operational phases), that were identified and described in the ESIA and Section 8 "Mitigation Measures Table" of this ESMMP.

Note – the Environmental and Social Monitoring Procedure is described separately in *Section 7*.

The vehicle for the ***integrated*** management and ***implementation*** of ESMP and associated Environmental and Social Procedures is an Environmental and Social Management System (ESMS). Therefore, the ESMS is a key component of this ESIA.

An ESMS is also a requirement of the IFCs Performance Standards (PS 1: Assessment and Management of Environmental and Social Risks and Impacts). The objective of PS 1 is to:

"*Identify and evaluate environmental and social risks and impacts of the project, adopting a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and, where residual impacts remain, compensate/offset for risks and impacts to workers, affected communities, and the environment, ...*" (undertaken as part of this ESIA process)..... "*and to promote improved environmental and social performance of clients through the effective use of management systems....*"

The main elements of an ESMS are provided in *Figure 3.1* and comprise the following four phases, also described in the Box below.

Figure 3.1 The Main Elements of an ESMS

Planning:	Establishing the *objectives* and processes necessary to deliver results in accordance with the Project Guideline for Environmental Management.
Doing:	Implementing the processes through defining *mitigation* measures and assigning *responsibilities* for undertaking or implementing such mitigation measures, typically through suites of Procedures.
Checking:	*Monitoring* and *measuring* these processes against the policy, objectives and targets, legal and other requirements (such as those of the IFC), and *reporting* of the results.
Acting:	Taking actions to continually improve performance of the ESMS through the *training* of personnel and *auditing* of results.

The ESIA process has essentially undertaken most of the initial ***planning*** aspects required by an ESMS by identifying environmental and social impacts and formulating management/mitigation recommendations. The existing SGR Project ESMP and associated Procedures listed in *Box 3.1* will be updated to include the outcomes of the ESIA (namely the management/mitigation and monitoring measures).

Further elements of an ESMS related to its implementation (***doing***, ***checking*** and ***acting)***, are described in *Section 0* of this ESMMP under the following sections:

- **Planning / Doing:** *Section 5.2* provides the institutional framework, organisational frameworks and specific roles and responsibilities for implementing the ESMS.

- **Planning / Doing:** *Section 5.3* outlines plans for on-going stakeholder engagement including the management of community grievances and concerns.
- **Checking / Acting:** *Section 5.4* introduces key components for the implementation of the ESMS including training, monitoring, audits and inspections, and reporting.
- **Acting:** *Section 5.4* introduces key components for the implementation of the ESMS; *Section 5.4.6* explains the system for the management of change during the implementation of the SGR Project.

As such, an ESMS is implemented to:

- Assist management in establishing priorities for environmental and social impacts;
- Provide a mechanism for ensuring that the existing ESMP and associated Procedures are updated to include the measures identified in the ESIA, and that these measures are implemented;
- Track changes in Tanzanian legislation and/or Lender standards so that they can be addressed in a timely manner;
- Provide a framework for compliance auditing and inspection programmes;
- Ensure environmental and social (including Project induced health issues) continue to be integrated into business decisions;
- Provide a framework for mitigating impacts that may be unforeseen or unidentified until construction or operation is underway;
- Encourage and achieve appropriate environmental and social performance and awareness from all employees and contractors; and
- Provide assurance to regulators, stakeholders and lenders that their requirements with respect to environmental and social performance are being managed.

Aligned with IFC PS1, as the Project owner TRC, is responsible for the development of an ESMS under which the SGR Project will be implemented and shall include:

- **Policy Statement** – which describes the environmental and social objectives which will guide the SGR Project in achieving environmental and social performance.

- **Process for Risk Identification** – which, in addition to the ESIA, shall include a defined process for evaluating and managing environmental and social risks through life of the SGR Project.
- **Management Programs** – for environmental and social performance execution which are, in part, detailed below.
- **Organisation Capacity/Competency** – demonstrated through clear division of responsibility and vetting of individual roles holding responsibility and accountability for environmental and social performance execution.
- **Emergency Preparedness and Response** – a plan which addresses how potential risk impacts resulting in emergency response will be managed for life of the SGR Project.
- **Stakeholder Engagement Program** – a program which includes stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and ongoing reporting to Affected Communities through life of the SGR Project.
- **Monitoring and Review System** – which will detail the process by which the SGR Project will monitor and measure the effectiveness of the management program, including compliance with any regulatory requirements, legal requirements and/or contractual obligations.

4 LEGAL AND INTERNATIONAL GOOD PRACTICE REQUIREMENTS

4.1 INTRODUCTION

This *Section* details the legislative and international good practice environmental and social requirements for the SGR Project. National (Tanzanian) laws of relevance to the successful implementation of environmental and social components of the SGR Project are presented in this *Section*. Furthermore, the applicable standards of international lending organisations are provided and their applicability discussed.

PLEASE NOTE:

Whilst this *Section* has been prepared with all due care by ERM, it does not constitute legal advice and should not be construed as such. Furthermore, the Tanzanian regulatory environment may be subject to changes to both regulatory instruments and authorities during the projected SGR Project life-cycle. It is therefore recommended that the regulatory framework is reviewed and assessed periodically.

The sourcing of legislation was limited to a desktop survey (ERM's EHS database and other available online sources) and reliance on in-country contacts.

4.2 INSTITUTIONAL FRAMEWORK

The overall authority and responsibility for implementation of environmental and social commitments will be TRC. During the construction phase of the SGR Project, the Contractor will execute these commitments under TRC's direction.

The ESMS associated with the SGR Project is described in *Section 3*. The ESMS will provide the mechanism for facilitating documentation of legal obligations in a legal register to be reviewed and updated periodically by the SGR Project.

A summary of organisations, other than TRC, that are relevant in terms of setting policies and enforcing applicable laws in relation to the SGR Project are provided in *Table 4.1*.

Table 4.1 Institutional Framework

Organization	Responsibilities/ Relevance
National Environmental Advisory Committee	The National Advisory Environmental Committee is comprised of members with experience in various fields of environmental management in the public and private sector and in civil society. The committee advises the Minister on any matter related to environmental management. Relevance: Technical Advisory Committee (TAC) review and advise the minister regarding the SGR Project ESIA and associated ESMMP if it complies with the law.
Minister Responsible for Environment	The Minister is responsible for matters relating to environment, including giving policy guidelines necessary for the promotion, protection and sustainable management of the environment in Tanzania. The Minister approves an ESIA and may also delegate the power of approval for an ESIA to the Director of Environment, Local Government Authorities or Sector Ministries. Relevance: Shall issue certificate and associated conditions for SGR Project ESIA and associated ESMMP.
Director of Environment	The Director of Environment heads the Office of the Director of Environment and is appointed by the President of the United Republic of Tanzania. Relevance: The TAC review and advise the minister regarding the ESIA and ESMMP and whether it complies with the law.
National Environment Management Council	The National Environment Management Councils (NEMC's) purpose and objective is to undertake enforcement, compliance, review and monitoring of ESIA's and to facilitate public participation in environmental decision-making. Relevance: Register and oversee the whole ESIA process; Controls the implementation of the ESMMP during and after construction of the SGR Project; monitors the effects of activities on the environment during and after construction and during operation.

4.3 NATIONAL REGULATORY FRAMEWORK

The Tanzanian laws that impose legal obligations in relation to the SGR Project are outlined in *Table 4.2*.

4.4 APPLICABLE LOCAL PERMITS

The potential permits required to conform to Tanzanian law, and the associated processes are summarised in *Table 4.3*.

Table 4.2 Tanzanian Policy Provisions, Legal Requirements and Applicability Thereof

Tanzanian Law / Policy	Applicability
TANZANIAN POLICY PROVISIONS	
National Environmental Policy (NEP) of 1997	The SGR Project and associated ESMP and Procedures will need to consider the environmental objectives set out in the Policy. Moreover, the Policy will need to consider the requirements around protection of wildlife resources, development of sustainable regimes for soil conservation and forest protection, and addressing the issues of poverty.
National Transport Policy (2003)	Implementation of the SGR Project will contribute towards improvement of the transport network within the country, which is in line with the objectives of this Policy.
National Mineral Policy (2012)	The SGR project involves mining activities such quarrying and gravel extraction activities from both existing and new borrow pits and quarries located within the Project area of influence. Accordingly the provisions of this Policy will need to be considered in the ESMP and associated Procedures.
National Construction Industry Policy (2003)	The SGR Project will need to consider the promotion and application of cost effective and innovative technologies and practices to support socio-economic development activities. TRC shall adopt this policy by using modern technology during construction but with emphasis on value for money for a cost effective project.
National Land Policy	All the land required for the SGR Project will need to be acquired in line with the provisions of this Policy. The provisions included in this Policy will be considered as part of resettlement planning for the SGR Project.
National Human Settlements Development Policy (2000)	Amongst other provisions, one of the objectives of this Policy is to improve the level of the provision of infrastructure (including transport infrastructure) and social services for the development of sustainable human settlements and to make serviced land available for shelter to all sections of the community. Implementation of the SGR Project will contribute towards improvement of the transport network within the country, which is in line with the objectives of this Policy.
National Gender Policy (2002)	With the Contractor and TRC being primary employers during the construction and operational phases of the SGR Project, they are bound by this law to abide to its stipulations on employee management and relations.
The National Water Policy (2002)	The Policy notes that inadequate communication systems (including railways) affect implementation of water resources management activities in terms of higher cost of monitoring, supervision, management, policing and data transfer. The SGR Project will facilitate the enhancement of water resources management within the Project area of influence. Moreover, the SGR Project crosses a number of rivers and streams. Therefore, in line with this Policy, the integrity of these water systems will need to be protected throughout the implementation of the SGR Project. This includes implementing proper waste management to prevent water pollution during both the construction and operation phases.

Tanzanian Law / Policy	Applicability
National Forestry Policy (1998)	The policy drives towards implementing the directives contained in the National Environmental Policy (1997) in regard with forest resources management. For instance, the National Forest Policy advocates and directs the conduction of EIA for development projects that will affect forest reserves including services crossing them (e.g. railways). The SGR Project will need to consider the provisions of this Policy, especially during construction phase.
National Agricultural Policy (2013)	Agricultural development depends heavily on good infrastructure, such as railways, roads, communication, energy, marketing facilities and efficient transport services. Good infrastructure and transport systems are essential elements for movement of agricultural produce, goods and services to and from rural areas that are vital stimulants to the development of the rural economy. Implementation of the SGR Project will contribute towards improvement of the transport network within the country, which is in line with the objectives of this Policy.
National Policy on HIV/AIDS (2001)	The SGR Project can be a precursor of incidents of HIV/AIDS due to the high influx of people into the area to seek for jobs. The situation can result in an increase in the incidence of diseases including STI, and HIV/AIDS. Implementation of the SGR Project will need to be carried out in a manner that does not compromise public health and safety.
The Wildlife Policy of Tanzania (2007)	The Wildlife Policy envisages addressing several national challenges. For instance, conserving representative areas of the key habitats with great biological diversity; continuing to support and where necessary, enlarge the protected area network as the core of conservation activities; integrating wildlife conservation with rural development; and minimizing human-wildlife conflicts whenever it occurs. The provisions included in this Policy will need to be considered in the biodiversity management measures included in the updated ESMP and associated Procedure for Biodiversity.
The National Livestock Policy (2006)	The Policy emphasises on the importance of value addition in the livestock market to access competitive markets and to prolong shelf-life of livestock products. Tanzanian population is expected to increase to 55.2 million by the year 2025 thereby significantly increasing demands for livestock and livestock products. There is therefore a need for special emphasis on improvement of livestock productivity. Good infrastructure and transport systems are therefore essential elements for movement of livestock products from rural areas to market. Implementation of the SGR Project will contribute towards improvement of the transport network within the country, which is in line with the objectives of this Policy.
The National Employment Policy (1997)	With the Contractor and TRC being primary employers during the construction and operational phases of the SGR Project, they are bound by this Policy to abide to its stipulations on employee management and relations.
National Health Policy (2003)	Implementation of the SGR Project will need to be carried out in a manner that does not compromise public health and safety. In particular, all the waste and emissions generated during Project implementation will need to be managed in an appropriate manner so as to prevent any associated public health risks.

Tanzanian Law / Policy	Applicability
Community Development Policy (1997)	Land is a resource that is mainly depended upon by local communities for their development, losing land may have severe consequences on community development. All the land required for the SGR Project will need to be acquired in line with the provisions of this Policy.
Cultural Heritage Policy (2008)	This Policy includes measures by which cultural heritage resources will be protected, managed, preserved, conserved, and developed. Moreover, the Policy provides an analysis of best practices for conducting research and conservation of cultural heritage resources. The provisions included in this Policy will need to be considered in the cultural heritage management measures included in the updated ESMP and associated Procedure for Cultural Heritage.
TANZANIAN LEGAL REQUIREMENTS	
Environmental Management Act No. 20 of (2004), Cap. 191	The SGR Project requires that an ESIA be undertaken. Accordingly, an ESIA study is currently being carried out in line with the requirements of this Act, and TRC shall be required to commit to implementing the ESMP and associated Environmental and Social Procedures and any other conditions as laid out by Minister Responsible for Environment, should an ESIA licence be issued for the SGR Project.
The Land Act No. 4 of 1999 and the Village Land Act No. 5 of (1999)	All the land required for the SGR Project will need to be acquired in line with the provisions of this Act. The provisions included in this Act will be considered as part of resettlement planning for the SGR Project.
The Railway Act, 2002	The Act was enacted in order to make better provisions for development and promotion of the rail transport service in Tanzania; and to establish TRC, to provide for regulatory framework of railway transport.
The Water Resources Management Act No. 11 of 2009	In accordance with this law, all water resources in mainland Tanzania shall continue to be public water and vested in the President as the trustee for and on behalf of the citizens. The power to confer a right to the use of water from any water resource is vested in the Minister responsible for water. The SGR Project will traverse a number of water resources and will have a duty to protect them and manage the use of water through the application of water use rights from the responsible Water Basins Offices.
Public Health Act 2009	Section 54 of this law states that "A person shall not cause or suffer from nuisance, likely to be injurious or dangerous to health, existing on land, premises, air or water". Implementation of the SGR Project will need to be carried out in a manner that does not compromise public health and safety. In particular, all the waste and emissions generated during Project implementation will need to be managed in an appropriate manner so as to prevent any associated public health risks.
Land Use Planning Act (2007)	The SGR Project entails defining a 30m (either side of the centreline) right of way. The Lands Act regulates all issues of land acquisition. All the land required for the SGR Project will need to be acquired in line with the provisions of this Act. The provisions included in this Act will be considered as part of resettlement planning for the SGR Project.
Occupation Safety and Health Act (2003)	The safety, health and welfare of all the workers associated with the SGR Project will need to be addressed in line with all the provisions of this Act throughout the Project lifecycle (construction and operational phases).

Tanzanian Law / Policy	Applicability
Local Government Laws (Miscellaneous Amendment) Act, 2006	The Act gives authority to local governments to regulate matters that are local. A pertinent example of such authority to the SGR Project is that the local government may opt to regulate extraction of minerals or building material, through their by-laws. Despite the authority of local governments the by-laws should not derogate any principal legislation e.g. in the case of extraction of material, the Mining Act. Moreover, the provisions included in this Act have been considered as part of stakeholder engagement process for the ESIA and will be considered during resettlement planning for the SGR Project.
The Standards Act No. 2 of 2009	An Act to provide for the promotion of the standardization of specifications of commodities and services, to re-establish the Tanzania Bureau of Standards (TBS) and to provide better provisions for the functions, management and control of the Bureau, to repeal the standards Act, Cap.130 and to provide for other related matters. This Act is relevant to the SGR Project as the quality of construction materials, and other products to be imported by Contractor during construction will have to abide to the standards set by TBS.
National Forest Act, 2002	In line with the provisions of this Act, an ESIA is currently underway for the SGR Project. TRC shall be required to commit to implementing the ESMP and associated Environmental and Social Procedures and any other conditions as laid out by Minister Responsible for Environment, should an ESIA licence be issued for the SGR Project. The permit requirement is applicable for private Project developers but does not apply to the Projects carried out by the Government. Government's obligation is limited with consulting to the relevant authority and conduct ESIA. TRC consulted TFS in 2017 and national ESIA process has been completed.
Explosives Act, 56/63	The SGR Project will need to obtain all the necessary permits required for import, purchase, storage and use of explosives for blasting.
Regional and District Act No 9, 1997	Provisions included in this Act have been considered as part of stakeholder engagement process for the ESIA and will be considered during resettlement planning for the SGR Project.
Mining Act No 4 (2010)	The Contractor associated with the SGR Project is required by law to apply for and secure mining permits for SGR Project quarries and borrow pits.
The Land Acquisition Act 1967	The SGR Project entails defining a 30m (either side of the centreline) right of way. The Lands Acquisition Act regulates all issues of land acquisition. All the land required for the SGR Project will need to be acquired in line with the provisions of this Act. The provisions included in this Act will be considered as part of resettlement planning for the SGR Project.
The Wildlife Conservation Act No 5/09 of 2009	This Act states that "A human activity, settlement or any other development that will adversely affect wildlife shall not be permitted within five hundred meters from the wildlife protected area borderline without the permission of the, Director." Construction of the SGR Project can be deleterious to the biological diversity of any place and any kind regardless whether the area is protected or not. The provisions included in this Act will need to be considered in the biodiversity management measures included in the updated ESMP and associated Procedure for Biodiversity.

Tanzanian Law / Policy	Applicability
Employment and Labour Relations Act No. 6 0f 2004	With the Contractor and TRC being primary employers during the construction and operational phases of the SGR Project, they are bound by this Act to abide to its stipulations on employee management and relations.
Engineers Registration Act and its Amendments 1997 and 2007	The Acts regulate the engineering practice in Tanzania by registering engineers and monitoring their conduct. It establishes the Engineering Registration Board (ERB). Laws require any foreign engineer to register with ERB before practicing in the country. All engineers who will be involved in the SGR Project including foreign engineers are bound by this Act to abide to its stipulations.
The Contractors Registration Act (1997)	The Contractors Registration Act requires contractors to be registered by the Contractors Board (CRB) before engaging in practice. It also requires foreign contractors to be registered by the Board before gaining contracts in Tanzania. All contractors (including subcontractors) who will be involved in the SGR Project are bound by this Act to abide to its stipulations.
The HIV and AIDS (Prevention and Control) Act of 2008	The SGR Project can be a precursor of incidents of HIV/AIDS due to the high influx of people into the area to seek for jobs. The situation can result in an increase in the incidence of diseases including STI, and HIV/AIDS. Implementation of the SGR Project will need to be carried out in a manner that does not compromise public health and safety.
The Industrial and Consumer Chemical (Management and Control) Act, 2002	The Act provides for among other issues, importation, transportation, storage, use and disposal of chemicals in Tanzania. The Contractor is required to obtain certificate from the Chief Government Chemist for importation, storage or disposal of any chemicals. Furthermore, the Contractor is required to comply with all provisions/regulations regarding packaging, handling, storage, use and disposal of chemicals, as set in this Act. The Minister appoints an inspector from time to time to ensure compliance. Failure to compliance might lead to revocation of the certificate.
The Petroleum Act, 2001	The SGR Project shall ensure that appropriate licences are acquired for the storage of petroleum products during project implementation.
The Surface and Marine Transport Regulatory Authority Act Cap 413 (2001)	The SGR Project will secure the necessary licenses and will adhere to the rules and regulations as set out by this Act.
The Tanzania Railways Corporation Act Cap 170	This Act establishes the Tanzania Railway Corporation which is mandated to operate the rolling stock for the public carriage of passengers or goods. TRC is the owner of the assets that are used by the Tanzania Railway Corporation, as such they have to work together to realise the objectives of the SGR Project.
The Railways (Licensing of Railway Operators) Regulations, 2006	The Regulations requires every operator to have a license in order to carry out the following activities (a) Passenger train service (b) Freight train service (c) Operation and maintenance of rail infrastructure. Operators using the SGR will need to secure the necessary licenses.
The Tanzania Railways Civil Engineering Manual (1998)	This Manual provides general instructions on what actions are required in case of accidents when the SGR becomes operational. The Manual provides general instructions to different people, provides guidance on immediate actions required at the site of accidents or obstructions, protection of the track at the site of accidents; fire precautions; employee responsibilities; power to enter upon non- railway land; pilferage from damaged wagons; restoration of traffic; provision for staff; records and reporting; watchmen and precautions before and during rains. This Manual therefore covers major components of

Tanzanian Law / Policy	Applicability
	accident preparedness and response, and will need to be considered during emergency preparedness planning for the operational phase of the SGR Project.
Antiquities Act (Act No. 10 of 1964) as amended (Act No. 22 of 1979)	The Antiquities Act is the principal cultural heritage legislation in Tanzania. The purpose of the act is to provide legal statutes for the preservation and protection of sites and articles of palaeontological, archaeological, historical, or natural interest. The provisions included in this Act will need to be considered in the cultural heritage management measures included in the updated ESMP and associated Procedure for Cultural Heritage.
The Tanzania 2025 Development Vision	Implementation of the SGR will contribute towards improvement of the transport network within the country, which is in line with the objectives of 2025 Development Vision.
The Explosives Regulations of 1964, GN 56/64	The SGR Project will need to obtain all the necessary permits required for import, purchase, storage and use of explosives for blasting.
Land (Assessment of the Value of Land for Compensation) Regulations, 2001	The SGR Project entails defining a 30m (either side of the centreline) right of way. This Regulation provide criteria for the assessment of compensation on land, as per market value for property. All the land required for the SGR Project will need to be acquired in line with the provisions of this Regulation. The provisions included in this Regulation will be considered as part of resettlement planning for the SGR Project.
Mining (Environmental Management and Protection) Regulations, 1999	The Contractor associated with the SGR Project is required by law to apply for and secure mining permits for SGR Project quarries and borrow pits.
Environmental Impact Assessment and Auditing Regulations (2005)	The SGR Project requires that an ESIA be undertaken. The ESIA has been undertaken to comply with the requirements of these Regulations. TRC shall be required to commit to implementing the ESMP and associated Environmental and Social Procedures and any other conditions as laid out by Minister Responsible for Environment, should an ESIA licence be issued for the SGR Project.
National Strategy for Growth and Reduction of Poverty (2005)	One of the objectives of this Strategy is to improve the quality of life and social wellbeing of those living in Tanzania. Development of relevant infrastructure to enhance market access is acknowledged as a requirement to achieve this. Implementation of the SGR Project will contribute towards relevant infrastructure to enhance market access within the country, which is in line with the objectives set out on this Strategy.
The Environmental Management (Air Quality Standards) Regulations, 2007	The objectives of this Regulation (amongst others) is to set baseline parameters on air quality and emissions and enforce minimum air quality standards. The standards set out in this Regulation will need to be considered when developing the Performance Criteria in the updated Air Quality and Emissions Procedure for the SGR Project.
The Environmental Management (Water Quality Standards) Regulations, 2007	Among others, the object of this Regulation is to enforce minimum water quality standards prescribed by the National Environmental Standards Committee. The standards set out in this Regulation will need to be considered when developing the Performance Criteria in the updated Water Quality Management Procedure for the SGR Project.

Tanzanian Law / Policy	Applicability
Solid Waste Management Regulations, 2009 GN. NO. 263	These regulations apply to all matter pertaining to waste management. They aimed among other things at setting standard for generation, storage, transport and disposal of waste and associated permitting requirements. The SGR Project, during the construction and operational phases, will generate wastes, which will need to be managed as per the guidelines in these Regulations. The updated Waste Management Procedure will need to consider these Regulations and for management of both non-hazardous and hazardous wastes.
The Environmental Management Regulations (Hazardous Waste Control), 2009	
Environmental Management (Soil quality standards) Regulations (2007)	This Regulation abstains the SGR Project from polluting soils and from discharging hazardous, waste, materials and chemicals on soils. The updated Pollution Prevention Procedure will need to consider this Regulation.
Environmental Management (Quality Standards for Control of Noise and Vibration Pollution) Regulations (2011)	The objectives of this Regulation (amongst others) is to set baseline parameters on noise and vibration emissions and enforce minimum emission standards. The standards set out in this Regulation will need to be considered when developing the Performance Criteria in the updated the Noise and Vibration Procedure for the SGR Project.
Environmental Management (Fees and Charges) Regulations (2009)	This Regulation requires the SGR Project proponent to pay prescribe fees and charges that NEMC is mandated to impose on the developer.

Table 4.3 Relevant Permits Required from Tanzania Authorities by the Proponent

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
Construction Phase	Environment	Environmental Management Act (2004)	NEMC	EIA Certificate/Permit	The EIA licence will give the decision criteria for NEMC

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Waste Management	Environmental Management (Solid Waste Management) Regulations (2008)	NEMC	Ensure that the contracted waste handlers (transport and disposal) are licensed by NEMC	The Regulations require licences or permits for • Any person wishing to deal in solid waste as collector, transporter, depositor or manager of transfer stations; and • Individuals and / or companies wishing to operate solid waste disposal sites (renewable every two years). • This licence is to be issued via the local government authority (LGA) after the completion of an Environmental Impact Assessment (EIA). • The Regulations require separation of solid waste at the source and collected into separate waste storage receptacles approved by NEMC or by the LGA • The Regulations promote the re-use, recycling and composting of waste whenever possible, and lists methods of treatment, recycling and final disposal for various types of waste in the First Schedule of the Regulations.

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Hazardous Waste Management	Environmental Management (Hazardous Waste Control and Management) Regulations (2008)	Vice Presidents Office – Division of Environment	Ensure that the contracted waste handlers (transport and disposal) are licensed by the Division of Environment under the Vice Presidents Office	• The Regulations define hazardous waste as any solid, liquid, gaseous or sludge waste which, by reason of its chemical reactivity, environmental or human hazardousness, its infectiousness, toxicity, explosiveness and corrosiveness, is harmful to human health, life or the environment. • Section 16 requires any person who intends to dispose of or treat hazardous waste to apply to the Director of Environment for a licence in the form set out in the Fifth Schedule to these Regulations; • Section 48 requires an EIA to be conducted for any hazardous waste treatment plant or disposal site in order for it to be licensed. The plant/site shall also be subject to an annual audit of the environmental performance to be reported to NEMC.
	Water Sector	Water resources Management Act, 2009	Ministry of water and Wami Ruvu Water Basin Office	Water Use Permit	The Company or person acting on its behalf should apply for a Water Use Permit before diverting or otherwise dealing with any water source.
	Water	Water resources Management Act, 2009	Wami Ruvu Water Basin Office	Groundwater Permit	The Company should apply for a ground water permit if it intends to construct, sink any well or borehole.
	Wastewater	Water resources Management Act, 2009; Environmental Management (Water Quality Standards) Regulations, 2007; Water Utilization (Control and Regulation) Act, 1974	Wami Ruvu Basin Water Basin Office	Discharge Permit	For discharge of treated effluents from sewage or wastewater treatment plants or from oil/water separators into any surface water or underground strata; Liquid effluent to be discharged in accordance with authorization issued by Water Officer (Regulation 12 (b)); Compliance with effluent standards and comply water quality standards set in the Regulations, if such Effluent standards are below those set in the Regulations.

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Occupational Health and Safety	Occupational Safety and Health Act (2003)	Occupational Safety and Health Authority (OSHA)	Certificate of Registration of a Workplace and annual Compliance license	The Company is apply for registration of workplace and obtain a compliance licence from the Chief Inspector before its operations commence.
	Fire Safety	Fire and Rescue Force (Safety Inspections and Certifications) Regulations, 2008	The Fire and Rescue Force	Fire Safety Certificate	The Fire Authority shall inspect premises and issue fire safety certificate. The certificate shall remain valid for one year.
	Explosives	The Explosives Act, Cap 45, R.E. 2002	Chief Inspector of Mines	License for Explosives Store; And requirements for Storage Boxes; Blasting Certificate License for Importation and transportation of explosives	Application to the Inspector for licensing building, structure or excavation as a licensing store. Application to be accompanied by plans and specifications in triplicate (Section 33). Application for blasting certificate to be made to Inspector. The certificate is valid for 5 years and may be renewed for further periods of 5 years (Section 42).
	Mining	Mining Act No. 4 (2010) and Mining Act, Cap. 123 (2017)	The Mining Commission	Mining license for quarries	The act requires a mining license for building material (included rock, stones, gravel, sand, clay volcanic ash or cinder)
	Chemicals	Industrial and Consumer Chemicals (Management and Control Act), 2003 - Industrial and Consumer Chemicals (Management and Control) Regulations, 2004	Chief Government Chemist	Certificate for production, importation, exportation, storing, transport or dealing in chemicals	It is prohibited to produce, export, import, and store, transport or deal in chemicals without a certificate. Application is made by filing the relevant form depending on the purpose for which the application is made. The application forms appear in Tenth Schedule. The Certificate is personal to the certificate holder named therein and is not transferable (Section 29, Regulation 4 & Tenth Schedule). Import/export chemicals through authorized ports of entry (Regulation 8).
Operation Phase	Environment	The Environmental Management Act, 2004; The Environmental Impact Assessment and Audit Regulations, 2005.	NEMC	Environmental Audit certificate	Annual, throughout the operations phase.

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Occupational Health and Safety	Occupational Safety and Health Act (2003)	Occupational Safety and Health Authority (OSHA)	Annual Compliance license	Compliance licence issued on an annual basis to certify that the workplace has been inspected and safe for working.
	Fire Safety	Fire and Rescue Force (Safety Inspections and Certifications) Regulations, 2008	The Fire and Rescue Force	Annual Fire Safety Certificate	Annually, The Fire Authority shall inspect premises and issue fire safety certificate. The certificate shall remain valid for one year.
	Solid Waste management	Environmental Management (Solid Waste Management) Regulations (2008)	NEMC	Ensure that the contracted waste handlers (transport and disposal) are licensed by NEMC	The Regulations require licences or permits for • Any person wishing to deal in solid waste as collector, transporter, depositor or manager of transfer stations; and • Individuals and / or companies wishing to operate solid waste disposal sites (renewable every two years). • This licence is to be issued via the local government authority (LGA) after the completion of an EIA. • The Regulations require separation of solid waste at the source and collected into separate waste storage receptacles approved by NEMC or by the LGA • The Regulations promote the re-use, recycling and composting of waste whenever possible, and lists methods of treatment, recycling and final disposal for various types of waste in the First Schedule of the Regulations.

Phase	Sector	Legislation	Authority	Permit/Licence	Comments
	Hazardous Waste Management	Environmental Management (Hazardous Waste Control and Management) Regulations (2008)	Vice Presidents Office – Division of Environment	Ensure that the contracted waste handlers (transport and disposal) are licensed by the Division of Environment under the Vice President's Office	• The Regulations define hazardous waste as any solid, liquid, gaseous or sludge waste which, by reason of its chemical reactivity, environmental or human hazardousness, its infectiousness, toxicity, explosiveness and corrosiveness, is harmful to human health, life or the environment. • Section 16 requires any person who intends to dispose of or treat hazardous waste to apply to the Director of Environment for a licence in the form set out in the Fifth Schedule to these Regulations; • Section 48 requires an EIA to be conducted for any hazardous waste treatment plant or disposal site in order for it to be licensed. The plant/site shall also be subject to an annual audit of the environmental performance to be reported to NEMC.

4.5 INTERNATIONAL REQUIREMENTS

4.5.1 The World Bank Group

The World Bank projects and activities are governed by Operational Policies designed to ensure that the projects are economically, financially, socially and environmentally sound. For projects that are not seeking financing from the World Bank their policies and procedures serve as relevant standards for international good practice.

The World Bank has ten environmental and social "Safeguard Policies" that are used to examine the potential environmental and social risks and benefits associated with World Bank lending operations. These safeguard policies include the following (please note that the safeguard policies in **bold** are considered relevant to the SGR Project):

1. **OP 4.01 – Environmental Assessment**;
2. **OP 4.04 – Natural Habitats**;
3. OP 4.09 – Pest Management;
4. **OP 4.10 – Indigenous Peoples (IPs)**;
5. **OP 4.11 – Physical Cultural Resources**;
6. **OP 4.12 – Involuntary Resettlement**;
7. **OP 4.36 – Forests**
8. OP 4.37 – Safety of Dams;
9. OP 4.60 **–** Projects in Disputed Areas; and
10. OP 4.60 **–** Projects in International Waters.

The requirements of each of the applicable polices is presented in *Table 4.4*.

Table 4.4 World Bank Group Environmental and Social Safeguard Polices

Policy	Applicability
OP 4.01 - Environmental Assessment (EA) with consideration of Annex A Definitions	The SGR Project poses a number of environmental and social risks (particularly biodiversity and social / resettlement) and impacts which will need to be appropriately managed. Appropriate management measures will need to be considered in the updated ESMP and associated Procedures. Moreover, as part of the ESIA process stakeholders at all administrative levels have been engaged, and will continue being engaged during the ESIA process and post-ESIA.
OP 4.04 - Natural Habitats	Following findings from baseline study, the SGR route passes through five ecoregions defined by WWF. Starting from the east, these are: Northern Zanzibar-Inhambane Coastal Forest Mosaic; Eastern Miombo Woodlands; Zambezian Flooded Grasslands; and Southern Acacia-Commiphora Bushlands and Thicket. In addition, The IUCN has compiled a global map of Key Biodiversity Areas (KBA), which include Important Bird and Biodiversity Areas (IBAs) and Alliance for Zero Extinction (AZE) Sites. An analysis of the project area reveals that all IBAs and AZE sites in the proximity of the project correspond to various gazetted protected areas, and mostly overlap with one another. This triggers OP 4.04. The provisions included in OP 4.04 will need to be considered in the biodiversity management measures included in the updated ESMP and associated Procedure for Biodiversity.
OP 4.10 – Indigenous Peoples	As part of the ESIA process for the SGR Project, the social impact assessment and intensive consultations conducted during fieldwork revealed that no indigenous people land or interests will be impacted by the SGR Project. Thus, OP 4.10 is not triggered.
OP 4.11 – Physical Cultural Resources	The main cultural property that will be infringed on by the SGR Project is graveyards. There are several locations where the SGR passes through private and public graveyards such as Gongo la Mboto and FFU in Dar es Salaam Region; Pugu in Coast Region; Ihumwa, Mnase and Kigwe in Dodoma Region. In this case, the OP 4.11 is triggered. The provisions included in OP 4.04 will need to be considered in the measures included in the updated ESMP and associated Procedure for Cultural Heritage.
OP 4.12 – Involuntary Resettlement	The SGR Project curvature has necessitated acquisition of more land along the entire corridor from Dar es Salaam-Morogoro - Makutupora. Therefore, some people will be resettled and their property affected. This triggers OP 4.12. The provisions included in this Policy will be considered as part of resettlement planning for the SGR Project.
OP 4.36 – Forests with consideration of Annex A Definitions	The SGR route passes in proximity to a few Forest Reserves. There are a number of larger protected areas in the greater vicinity, which potentially influences the biodiversity affected by the route. The SGR Project passes through the northern border of the Kazimzumbwi gazetted Forest Reserve, in the Pugu area of the Kisarawe District, Coast Region. The Project will not acquire any land from Forest Reserves. Thus, OP 4.36 (Forests) is not triggered by the project activities.

4.6 THE INTERNATIONAL FINANCE CORPORATION

4.6.1 Performance Standards

The International Finance Corporation (IFC), a division of the World Bank Group that lends to private investors, has released a Sustainability Policy and set of Performance Standards (PSs) on Social and Environmental Sustainability (January 2012). These Standards are used to evaluate any project seeking funding through the IFC.

The PSs are directed towards providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate and, manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of direct investments for the IFC (including project and corporate finance provided through financial intermediaries), the IFC requires that its clients apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced (IFC, 2012).

A number of lenders have adopted the IFC PSs. The applicability of each of the eight IFC PSs to the SGR Project, are presented in *Table 4.5*.

Table 4.5 International Finance Corporation (IFC) Performance Standards

Performance Standards	Relevance to the Project
IFC PS1: Assessment and Management of Environmental and Social Risks and Impacts	The SGR Project poses a number of environmental and social risks (particularly biodiversity and social / resettlement) and impacts which will need to be appropriately managed. Appropriate management measures will need to be considered in the updated ESMP and associated Procedures. Moreover, as part of the ESIA process stakeholders at all administrative levels have been engaged, and will continue being engaged during the ESIA process and post-ESIA.
IFC PS2: Labour and Working Conditions	Project workers (for all Project phases) will need to be provided with fair labour and working conditions. Moreover, the SGR Project will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the SGR Project work areas, including (amongst others) physical, chemical, biological, and specific threats to women. This will apply to all categories of workers irrespective of whether directly engaged by the developer or contractor (direct workers), engaged through third parties (contracted workers), and workers engaged by the client's primary suppliers (supply chain).
IFC PS 3: Resource Efficiency and Pollution Preventions	Development of the SGR Project will require a number of resources (such as water), which could potentially cause some negative environmental and social impacts. All required resources will need to be used efficiently and all wastes managed in accordance with the waste management hierarchy, where avoidance of waste generation is the first priority.
IFC PS 4: Community, Health, Safety and Security	Implementation of the SGR Project will need to ensure that the health, safety and security of all communities along its route are not compromised.
IFC PS5: Land Acquisition and Involuntary Resettlement	All the land required for the SGR Project will need to be acquired in line with the requirements of this PS. The requirements included in PS5 have will need to be included / considered during resettlement planning.
IFC PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Refer to Applicability of OP 4.04 in *Table 4.4*.
IFC PS7: Indigenous Peoples	Refer to Applicability of OP 4.10 in *Table 4.4*.
IFC PS8: Cultural Heritage	Refer to Applicability of OP 4.11 in *Table 4.4*.

4.6.2 IFC Environmental, Health and Safety Guidelines

The Environmental, Health and Safety (EHS) Guidelines are technical reference documents that address IFC's expectations regarding the environmental management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction and operation phases of the SGR Project. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards.

General EHS Guidelines exist which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. The following guidelines are applicable to the SGR Project, and will need to be considered when the ESMP and associated Environmental and Social Procedures are updated:

1. Environmental

1.1 Air Emissions and Ambient Air Quality
1.2 Energy Conservation
1.3 Wastewater and Ambient Water Quality
1.4 Water Conservation
1.5 Hazardous Materials Management
1.6 Waste Management
1.7 Noise
1.8 Contaminated Land

2. Occupational Health and Safety

2.1 General Facility Design and Operation
2.2 Communication and Training
2.3 Physical Hazards
2.4 Chemical Hazards
2.5 Biological Hazards
2.7 Personal Protective Equipment (PPE)
2.8 Special Hazard Environments
2.9 Monitoring

3. Community Health and Safety

3.1 Water Quality and Availability
3.2 Structural Safety of Project Infrastructure
3.3 Life and Fire Safety (L&FS)
3.4 Traffic Safety
3.5 Transport of Hazardous Materials

3.6 Disease Prevention
3.7 Emergency Preparedness and Response

4. Construction and Decommissioning

4.1 Environment
4.2 Occupational Health and Safety
4.3 Community Health and Safety

4.6.3 Industry Specific Guidelines

In addition to those EHS Guidelines presented above, further industry specific EHS guidelines applicable to the SGR Project are presented and discussed in further detail below.

Environmental, Health, and Safety 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 document is organized 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 guideline provides additional health and safety issues specific to railway operations (not addressed in general EHS guideline) include the following Train/worker accidents, Noise and vibration, Diesel exhaust, Fatigue, Electrical hazards, Electric and magnetic fields. These will need to be considered when the ESMP and associated Environmental and Social Procedures are updated.

The guideline also provided performance indicators and monitoring guideline for both environment and occupational health and safety.

IFC EHS Guidelines for Construction Materials Extraction

This guideline includes information relevant to construction materials extraction activities such as aggregates, limestone, slates, sand, gravel, clay, gypsum, feldspar, silica sands, and quartzite, as well as to the extraction of dimension stone. It addresses stand-alone projects and extraction activities supporting construction, civil works, and cement projects.

The guideline also provides a summary of EHS issues associated with construction materials extraction that occur during the operational,

construction, and decommissioning phases, along with recommendations for their management.

It also provide community health and safety issues specific to construction materials extraction projects primarily including land instability, water, explosives safety and decommissioning. Additional potential risks to community health and safety include risks from uncontrolled access to construction sites, exposure to waterborne, water-washed, and water-associated diseases from creation of water impoundments, and exposure to increased traffic of materials transport vehicles.

The guideline also provided performance indicators and monitoring guideline for both environment and occupational health and safety.

The requirements included in this guideline will need to be considered when the ESMP and associated Environmental and Social Procedures are updated.

5 IMPLEMENTATION OF THE ESMP AND ASSOCIATED PROCEDURES

5.1 OVERVIEW

During the course of the ESIA process, Project design decisions have been made, and others are, and will be, further suggested, taking into account the need to avoid, minimise and reduce negative environmental, socio-economic and health impacts, and the opportunity to enhance positive impacts.

To ensure that identified and unforeseen or unidentified impacts are detected and resolved, an initial ESMP and associated Procedures were previously developed for the SGR Project. As an outcome of the ESIA process, the existing ESMP and associated Procedures will need to be updated to include the measures identified in the ESIA – this is discussed in further detail in *Section* 7of this ESMMP. Moreover, the existing ESMP and associate Procedures will be supplemented with additional requirements as detailed design of the SGR Project proceeds prior to the commencement of the construction phase. Contractors and subcontractors will be required to develop their working methods having regard to these Procedures.

The existing ESMP and associated Procedures are an integral part of the ESMS (refer to *Section* 3) and act as the main vehicle for converting the findings of the ESIA into action.

5.2 INSTITUTIONAL FRAMEWORK

To ***implement*** the existing ESMP and associated Procedures, the institutional framework and specific roles and responsibilities for implementation need to be defined. The institutional framework for the construction phase is presented below:

5.2.1 TRC

The GoT through TRC is the contracting authority for the SGR Project. TRC was incorporated in the United Republic of Tanzania. Per the Railways Act of 2002 (Section 11), TRC has the power to develop, manage and maintain rail infrastructure and to provide rail transport services through Joint Venture, Concession or the like.

TRC is an autonomous entity established by the Government of the United Republic of Tanzania. TRC's roles and functions include:

- To develop, promote and manage the rail infrastructure assets in Tanzania;

- To secure and provide rail infrastructure;
- To manage residual assets and short term liabilities;
- To identify and develop new railway projects;
- To enter into agreement with other entities in order to secure the provision of rail transport services, whether by means of Concession, Joint Venture, Public-Private Partnerships or other means, and to this end to delegate its own function of providing rail transport services to one or more railway operators;
- To monitor the Concession Agreement;
- To upgrade the railway infrastructure beyond the level to be undertaken by the concessionaire; and
- To invest in railway assets and infrastructure, among others.

TRC is the legal owner and custodian of railway infrastructure and assets in Tanzania and essentially acts as the landlord to railway operators to whom railway transportation functions have been assigned. TRC's mandate includes:

- To acquire, develop and manage all railway infrastructure on behalf of the of the United Republic of Tanzania;
- To take over and manage assets and short term liabilities previously owned and operated by TRC; and
- To delegate the function of rail transport services to one or more railway operators.

5.2.2 Yapi Merkezi, as Contractor

The GoT, through TRC, awarded Yapi Merkezi to provide design services and actual construction of the SGR Project. The Project is being implemented under a design and build scenario. Yapi Merkezi in turn will employ direct hires and subcontractors for the construction of various aspects of the SGR Project.

As the Proponent, TRC is responsible for adherence of the SGR Project to local (Tanzanian) and international environmental, social, health and safety standards. Yapi Merkezi also has certain responsibilities in this regard pursuant to its contract with TRC.

Currently TRC has no ESMS in place; as such, the SGR Project ESMS will need to address the responsibilities of TRC and Yapi Merkezi in relation to adherence of the SGR Project to local and international environmental, social, health and

safety standards. The SGR Project will also need to monitor compliance with these responsibilities. The successful implementation of the ESMS requires a commitment from Yapi Merkezi and TRC as well as their employees and contractors. Within these structures, roles and responsibilities for the implementation of ESMP and associated Procedures, including monitoring and reporting, needs to be defined.

5.2.3 Subcontractors

Under their contracts, subcontractors will be responsible for managing potential environmental, social, safety and health impacts of their contract activities. To this end, subcontractors will need to:

- Demonstrate compliance with the EHS conditions, which apply under the contract;
- Demonstrate commitment to the ESIA, ESMP and associated Procedures in their management structure;
- Identify individuals responsible for overall environment, social, safety and health management; and
- Undertake regular environmental, social, health and safety inspections and provide reports to allow for the monitoring and evaluation of performance.

During construction, the SGR Project and subcontractors will be key implementers of mitigation measures, as defined in the ESMP and associated Procedures, and will also be responsible for compliance with the listed Performance Criteria (which will be provided in each Procedure).

5.2.4 Lender to the SGR Project

The Lender to the SGR Project is Standard Chartered Bank. It is anticipated that the Lender will use in-house environmental and social expertise or independent consultants, to monitor the SGR Project's performance against the applicable international standards, during all phases of the SGR Project.

5.3 CONTINUED STAKEHOLDER ENGAGEMENT

TRC and Yapi Merkezi will continue to engage with stakeholders throughout the life of the SGR Project. During construction, communication with local communities and other stakeholders will be undertaken.

The objectives of ongoing stakeholder engagement include:

- To **ensure understanding and awareness** by facilitating an open, culturally appropriate and inclusive approach to engagement that provides timely and accurate information in an accessible and transparent way to all stakeholders, regardless of their status.
- To **manage expectations and concerns** by providing a mechanism, which not only provides stakeholders an opportunity to freely provide comment and feedback but also allows the Project to respond to this feedback, thereby addressing concerns.
- To **manage risks through building sustainable relationships.** Stakeholder risks are widely recognised to be one of the key challenges facing large-scale development projects such as the SGR Project. Communities expect more open and transparent dialogue and longer term social commitments from companies. Engagement will allow the SGR Project to understand stakeholder interests and issues and work with stakeholders to find mutually acceptable ways to achieve or address these.
- To **create value** where engagement allows for partnerships to be developed for the mutual benefit of the Project and the stakeholders. This includes but is not restricted to corporate social investment activities. This relates also to seeking mutual benefit through design and operations by considering stakeholders and seeking their benefit in all the SGR Project activities.

5.4 KEY COMPONENTS TO THE IMPLEMENTATION OF THE ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

5.4.1 Overview

Mitigation, management, and monitoring measures are described in the ESIA in *Chapters 7, 8* and *9*, will be included in the SGR Project ESMP and associated Environmental and Social Procedures in the form of an update to these documents (described in further detail in *Section 6 and Section 7*). In addition to these commitments, other key components of the ESMS include training, audits and inspections and reporting. These measures all represent the ***doing*** (training), ***checking*** (audits and inspections) and ***acting*** (reporting) processes of the ESMS framework, as depicted in *Figure 3.1.*

5.4.2 Training

One of the most important mechanisms for the enhancement of the SGR Project's environmental and social performance will be the continued

implementation of a training programme for all SGR Project personnel including all subcontractors and third parties.

A Procedure for Training already exists for the SGR Project (*Environmental and Social Training Procedure - DSM-YME-AL-GL00X-G-EN-PRO-0018-1*). This Procedure currently provides a framework for responsibilities with respect to training; identifies (at a high-level) environmental and social training needs; and the process of maintaining a record of training given.

The existing Environmental and Social Training Procedure will be updated in such way that the Procedure includes the following key components of training requirements:

- Environmental and social policy of the SGR Project;
- Environmental and social requirements of the SGR Project and how these will be implemented and monitored on site;
- Contents and relevant requirements of SGR Project actions contained within the ESMP and applicable Environmental and Social Procedures;
- Environmental and social sensitivities of the SGR Project Footprint and surrounds;
- Procedures to be followed in the event of non-compliance with the environmental and social requirements;
- Process for addressing unforeseen environmental and social incidents; and
- Responsibilities with respect to environmental and social issues applicable to their roles.

These requirements should understood by all SGR Project personnel, including all subcontractors and third parties. Accordingly, training should include:

- Induction training for all staff including modules on: health and safety, environmental awareness, accommodation rules, worker code of conduct, stakeholder engagement, grievance mechanisms and cultural heritage awareness;
- Training on the EHS legal requirements and EHS compliance commitments of the SGR Project. It is critical that all staff on the SGR Project understand the laws and regulations and rules the SGR Project has committed to, and that staff understand the consequences of breaking these rules;
- Toolbox training for specific topics and tasks; and

- Training for individuals involved in tasks with specific responsibilities.

Refresher training programmes will also need to be implemented to ensure continual improvement in environmental awareness for all SGR Project personnel.

Training should be provided at each stage of the SGR Project, from initial establishment of logistical facilities through to construction and (to a lesser degree) operation. The training function will assist managers in developing and coordinating training programmes as required.

Training records should be maintained by the SGR Project and an assessment of the effectiveness of the training programmes should be included as part of the internal audit procedures.

5.4.3 Emergency Response and Incident Reporting

A Procedure for environmental emergencies already exists for the SGR Project (*Environmental Emergency Procedure - DSM-YME-AL-GL00X-G-EN-PRO-003-0*). This Procedure currently provides a framework for operating methods for emergency response; preventative management measures to be adopted in environmental emergency situations; planning for drilling operations; communication plan for environmental emergencies; and training and awareness measures.

The existing Environmental Emergency Procedure will be updated to include emergency response planning for all incidents such as, but not limited to:

- Work Place accidents;
- Traffic accidents;
- Wild fires;
- Flooding;
- Hazardous materials spills and containment; and
- Community and/or Employee uprisings or strikes etc.

Moreover, the section of the existing Procedure that details the process of communicating environmental damage will need to be expanded to include management procedures for **incidents**. An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment, property or production (or a combination thereof). It also

includes any significant departure from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential, or actual impacts, as a result of all such incidents.

All incidents will be investigated for identification of causes and preventative actions. The actions resulting from any formal or informal investigations will be used to update the Environmental Emergency Procedure.

5.4.4 Audit and Inspection

A Procedure for Environmental and Social Monitoring already exists for the SGR Project (*Environmental and Social Monitoring Procedure - DSM-YME-AL-GL00X-G-EN-PRO-0009-1*). This Procedure currently defines the programme for monitoring performance of the SGR Project in relation to a full range of voluntary or regulation-based environmental and social management commitments. Moreover, the Procedure defines audit and inspection responsibilities for the HSE Chief; Environmental Engineer; Environmental Technician; and Social Expert, and provides an environmental and social site inspection check list.

The existing Environmental and Social Monitoring Procedure will be updated to provide a more detailed audit programme that details the aspects to be audited, the area (relevant department or section), and the frequency of audits. The audits will be based on appropriate protocols prepared by the various environmental, social and health and safety functions.

Regular environmental, social and health audits and random spot checks will be undertaken by selected audit team members throughout all phases of the SGR Project. The audit and inspection frequencies will be defined, and may be increased or decreased according to the audit findings and degree of confidence in the audit programme, and will need to adapt to the SGR Project work scope and locations, and project activities (some of which will have higher risks). Audits will also assess compliance with agreed objectives and targets as well as the effectiveness of the SGR Project ESMP and associated Procedures and their implementation.
Audit findings will be reviewed by the applicable management functions and where corrective actions are deemed necessary; the relevant Procedures will be updated.

5.4.5 Reporting

The SGR Project will develop a system of internal reporting that allows for appropriate assessment of the effectiveness of the ESMS. Public reports will also be prepared on defined issues of interest or concern to local communities and /or stakeholders.

During the construction phase, Yapi Merkezi and its subcontractors should take all appropriate measures detailed in the SGR Project ESMS and related ESMP and Procedures to identify and document incidents of environmental, social and health and safety non-conformance. Non-conformity reports should be produced at an appropriate frequency to ensure non-conformances are corrected. Non-conformity reports should identify the nature of the non-conformities and any subsequent actions taken, and review the results or successes of any corrective actions taken. The resultant records will be reviewed in the appropriate management meetings so that required corrective actions can be taken, the results of any such corrective action can be recorded, and to increase management awareness of any opportunities for improvement.

These records are intended to facilitate the purposeful reduction of incidents of non-conformance, leading to a consequential reduction of the root causes of such incidents.

Section 7 presents the monitoring plan, which details parameters that will be monitored. The results from this data will be reviewed by TRC.

Annual reporting will be undertaken to review performance over the previous year and to set targets and objectives for subsequent years.

5.4.6 Management of Change

The ESIA process does not stop with the submission of the Final ESIA report. Therefore, the ESMS will require a mechanism to manage change. At times these changes may be material, potentially influencing the original findings of the ESIA, and hence, the basis for its approval. A change management system should ensure that changes to the scope of the SGR Project are subjected to a robust social and environmental assessment process that reviews the change against the ESMP and associated Procedures.

Project design changes may occur that need to be accommodated. Moreover, even with a final design and an unchanging environment, impacts are difficult to predict with certainty. Uncertainty stemming from on-going development of the SGR Project design is inevitable, and the social and biophysical environment

is typically variable from season to season and year to year. Similarly, the organisational structure and roles and responsibilities may also change as the SGR Project progresses. Where such uncertainties are material to ESIA findings, they will be clearly stated and conservatively approached ('the precautionary approach') in order to identify the broadest range of likely residual impacts and necessary mitigation measures.

Any changes to the scope of the SGR Project or new substantive environmental and social findings through ongoing monitoring will be evaluated for their degree of significance, and will be incorporated into the appropriate SGR Project documentation as follows:

- Minor changes will be reflected in updates to the ESMP and applicable Procedures; and
- Substantive design changes that might potentially alter the ESIA findings (i.e. those that result in changes to the predicted significance of environmental and social impacts) will be subject to re-assessment, further stakeholder consultation, supplementary reporting and revision of the Project's ESMP and applicable Procedures. Typically, such substantive changes will be submitted as an addendum to the ESIA.

6 ENVIRONMENTAL AND SOCIAL MANAGEMENT PROCEDURES

6.1 OVERVIEW

As mentioned in *Section 3*, the SGR Project has developed an overall ESMP and the following associated Environmental and Social Procedures:

- Air Quality and Emissions Procedure
- Water Quality Management Procedure
- Waste Management Procedure
- Pollution Prevention Procedure
- Environmental Emergency Procedure
- Code of Conduct Procedure
- Chance Find Procedure
- Environmental and Social Training Procedure
- Environmental and Social Monitoring Procedure
- Biodiversity and Ecological Protection Procedure
- Evaluating of Legal Compliance Procedure
- Noise and Nuisance Reduction Procedure
- Environmental Consents Procedure
- Stakeholder Engagement and Grievance Mechanism Procedure
- Integrated Pest Management Procedure
- Community Safety Management Procedure
- Erosion Control Procedure
- Aggregate Management Procedure
- Environmental Incident Response Procedure
- Environmental Impact Assessment Procedure
- Off-site Working Procedure
- Traffic Management Plan

Section 5.4.2 and *Section 5.4.3* references the Environmental and Social Training Procedure and Environmental Emergency Procedure respectively, and

provides detail of the aspects that need to be considered when these Procedures are updated.

Moreover, the audit and inspection commitments required for inclusion in the Environmental and Social Monitoring Procedure is defined in *Section 5.4.4*. *Section 7* also provides details that the Environmental and Social Monitoring Procedure will need to consider to ensure that the management measures identified and described in other Environmental and Social Procedures are implemented, and that these measures are effective at achieving an acceptable level of compliance.

In addition to those Procedures listed above, the following Plans and Procedures will be developed for the SGR Project:

- Biodiversity Action Plan
- Soil Management Procedure
- Surface and Groundwater Management Procedure
- Invasive Weed Management Plan
- Construction Site Rehabilitation Plan
- Contaminated Land Management Procedure
- Hazardous Material Management Procedure
- STD Management Plan
- Construction Camp Management Plan
- Security Management Plan
- Local Recruitment Procedure
- Environmental and Social Operation Management Plan
- Community Safety Operation Management Plan (including Emergency Preparedness and Response Plan)
- Cultural Heritage Management Plan
- Human Resources Policy, Labour and Employment Plan,
- Severance Management Plan,
- Worker Influx Management Plan,
- Subcontractor and Supply Management Procedure,
- Wetland Restoration Plan,

- Pugu Hills Monitoring and Management Plan, and
- Ruvu South Monitoring and Management Plan.

The existing Environmental and Social Procedures provide a framework for responsibilities with respect implementation and monitoring of measures; details of management / mitigation measures; monitoring and auditing requirements; and record keeping requirements. All Procedures will be updated to include the mitigation / management measures provided in *Chapters 7* to *9* of the ESIA and will include the detail provided in *Table 6.1*.

Table 6.1 Environmental and Social Procedure Detail

Objective	The management objective that applies to each aspect or impact.
Timing and Frequency	When the mitigation / management commitment is required – i.e. - during the detailed design phase, the pre-construction (site establishment) phase, or construction phase of the SGR Project, and the frequency the commitment is required.
Project Activity	The Project related activities resulting in the impact requiring mitigation.
Responsibility	The parties responsible for implementing the procedure.
Performance Criteria	Measurable performance criteria (outcomes) for each element.
Mitigation Measures	The strategies, tasks or action program (to nominated operational design standards) that will be implemented to achieve the performance criteria.

7 ENVIRONMENTAL AND SOCIAL MONITORING

7.1 OVERVIEW

As mentioned in *Section 5.4.4*, a Procedure for Environmental and Social Monitoring already exists for the SGR Project (*Environmental and Social Monitoring Procedure - DSM-YME-AL-GL00X-G-EN-PRO-0009-1*). This Procedure currently defines monitoring measures for –

- Biodiversity;
- Archaeological;
- Rehabilitation Works;
- Surface Water Quality;
- Wastewater Discharge;
- Air Quality;
- Noise;
- Potable Water;
- Groundwater; and
- Waste.

In addition to those monitoring measures listed above, it is recommended that monitoring measures for social are also developed. Social monitoring will be associated with land acquisition and involuntary resettlement; community health, safety and security; employment and procurement; and social cohesion and connectivity.

The purpose of the environmental and social monitoring programme is to ensure that management measures, identified and described in the Environmental and Social Procedures, are implemented and are effective at achieving an acceptable level of compliance with the SGR Project ESMP and associated Environmental and Social Procedures.

The Environmental and Social Monitoring Procedure will be updated to include the monitoring measures included in *Chapters 7* to *9* of the ESIA. Moreover, each monitoring measure provided will provide a detailed description of the measure that will be implemented; when the monitoring measure is required (i.e. - during the construction or operational phase of the SGR Project), and the frequency the monitoring commitment is required; the entities identified as

having the primary responsibility for the relevant measures; the timing and frequency that the monitoring measure will need to be undertaken; and the performance indicator(s) (the performance measurement used to measure / bench the level of success for a particular monitoring measure) of that particular monitoring measure.

Contractor work sites must be monitored during construction. The Contractor will be required to report on all outside of agreed parameters to TRC. TRC may undertake independent monitoring of selected parameters to verify the results of the Contractor and to audit the implementation of environmental mitigation measures contained in the ESMP and associated Procedures for the SGR Project.

The Minister Responsible for Environment holds the general responsibility for approval of the SGR Projects environmental license, and the NEMC's holds responsibility for application and verifying that applicable environmental guidelines are adhered to during Project implementation. The NEMC's role therefore is to evaluate environmental monitoring and environmental compliance documentation submitted to them, and they would not usually be expected to be directly involved in monitoring the SGR Project unless a specific, major environmental issue arose.

8 *ESMP MITIGATION MEASURES TABLE*

This ESMP table summarises all of the various mitigation measures as set out in the ESIA for the SGR Project. The table shows the responsible entities for implementation for each item, the required timing by which the measure must be implemented, the indicator to demonstrate completion, and the method of subsequent monitoring of completion.

The overall, ultimate responsibility for implementation of a given measure always rests with the Tanzania Railways Corporation (TRC) as the Project Owner and subsequent Operator, whilst certain activities related to the design and construction stages of the Project are in first instance the responsibility of Yapı Merkezi (YM) as the Project EPC Contractor. All contractors and subcontractors must adopt and comply with the policies and plans required as part of this ESMP.

As stated in the ESIA Report, the Project will be designed, built and operated in accordance with the applicable Tanzanian Regulations and the international standards and guidelines of the lending institutions, including IFC Performance Standards and EHS Guidelines. Together, the applicable standards for the Project are referred to in the ESMP as the Lender Standards.

This ESMP is split into four Chapters:

- Chapter 1 covers the Design Phase
- Chapter 2 covers the Construction Phase
- Chapter 3 covers the Operation Phase of the SGR
- Chapter 4 covers the Monitoring Plan

1. DESIGN PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
1.1 DESIGN REQUIREMENTS			
1.1.1 ECOLOGICALLY SENSITIVE AREAS			
The following mitigation measures will be applied: i. Land take from sensitive environmental features including watercourses and ecologically sensitive areas will be avoided or minimized. ii. A route-wide **Biodiversity Action Plan (BAP)** will be prepared to: o Identify specific locations to maintain ecological connectivity between habitats of moderate to high sensitivity to fragmentation. o Provide a suitable design for converting culverts and underpasses to be used by target species at critical wildlife corridors.	**YM** **YM**	Prior to relevant construction works Before financial closure	YM to check the designs to verify solutions as part of design approval process. BAP satisfactory to the Lenders is prepared plus supporting docs: • Monitoring Programme and Management Plan • Implementation Plan • Monitoring Reports • Training Programme
1.1.2 LAND ACQUISITION/ PHYSICAL AND ECONOMIC DISPLACEMENT			
The following mitigation measures will be applied: i. The Project will undertake consultation with communities in areas/access routes potentially affected during construction to establish the best alternative routes and measures that the Project should put in place to minimize impacts related to access restrictions. ii. The Project will seek to avoid or minimise the impact to services such as; irrigation channels, electric supply lines, water supply lines, telecommunication lines, etc. including assessing alternative locations of the alignment in these areas.	**TRC**	Prior to relevant construction works	Minutes of consultation meetings

1. DESIGN PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
iii. Affected public services will be properly identified through GPS mapping and satellite imagery. iv. Continued engagement as per the Informed Consultation and Participation Strategy (ICP) for IPs[1] with affected IPs will be required to ensure that underpasses, overpasses and livestock crossings are effectively communicated and utilized. This will inform the development of a Severance Management Plan[2] (SMP) as well as informing updates of the Project Design and the RAPs, as needed. Local tracks, routes and crossing points will be identified and mapped for both the wet and dry season using engagement (with communities and livestock grazers) and remote sensing. In addition, the infrastructure, services, water pans etc. that people are accessing will be mapped, and based on this information, crossing points will be identified. Where needed, tracks will also be upgraded near these crossing points to ensure continued safe access for people and livestock. In order to mitigate impacts to physical and economic displacement, a RAP will be prepared and the requirements defined in the RAP will be considered during the design.	**TRC**	ICP Strategy before financial closure SMP Within 120 Days after financial closure Before ECA Board approval	Severance Management Plan to be accepted by the Lenders. RAP to be accepted by the Lenders
1.1.3 SURFACE AND GROUNDWATER			
The Ruvu River floodplain is an important part of the river system; it provides flood storage during periods of high flows and acts as a deposition zone for sediment and nutrients. The Project design should consider the following mitigation measures to mitigate the potential impacts: i. The update of the flood estimation study and recalculation of the flood peaks to allow for sufficient capacity in the hydraulic structures.	**YM**	Prior to relevant construction works	YM to check the designs to verify solutions as part of design approval process.

[1] The Informed Consultation and Participation Strategy for IPs shall set out how IPs will be meaningfully consulted and informed about impacts and involved in the design of mitigation in accordance with the provisions of PS 1 and PS 7 (paragraph 10) and associated IFC Guidance Notes 1 and 7.

[2] The Severance Management Plan will, amongst other, map crossings and water points used by pastoralists through additional informed consultation and participation (ICP),

1. DESIGN PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
i. Using more than one method in flood peak estimation (Pegram and Parak, 2004) which is likely to be a combination of empirical, deterministic and flood frequency methods. Some of recommended methods for flood peak estimation for use in the Tanzania context are: o < 1 km² Rational Method – it is appropriate to use one method for minor catchments; o > 1-30 km² Rational Method and SCS-SA; o 30-200 km² TRRL East Africa Flood Model, Regional Pooled Flood Frequency Analysis and Rational Method; o >200-10000 km² Regional Pooled Flood Frequency Analysis and the Channel Geometry Method (Wharton and Tomlinson, 1999) as a check. ii. Best practice in bridge and culvert design prevents and limits erosion and sediment mobilisation and limits alteration to the flow regime in the operational phase, these measures for bridges include: o The bridge designed and constructed to accommodate all flow conditions; o The bridge aligned perpendicular to the watercourse; o The watercourse's natural hydraulic regime preserved as much as possible; o The piers and footings placed beyond the channel and above the high water mark to avoid constricting the channel and reducing the flow area; o Any piers and footings placed in the channel should be parallel to the flow to avoid directing flow onto the banks; o The minimum number of optimally shaped piers used to minimise eddying and scouring of the watercourse; o Erosion protection should be included if scouring is likely to occur. iii. Best practice culvert design practices provide good drainage, prevent erosion, and include the following: o Water velocities in the culvert should be similar to those at the site before the culvert was constructed; o There should also be no differences in the flow rates upstream, in and downstream of the culvert; o The culvert should not reduce the cross-sectional area of the channel and infilling of the channel should be avoided;			

1. DESIGN PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
○ The culvert designed so that its hydraulics is similar to that of the watercourse, with culverts with a natural bed preferred.			
1.1.4 NOISE AND VIBRATION			
It is anticipated that the operation of SGR will result in generation of noise and vibrations from a variety of sources. Normally, Railway noise is generated by the contact between wheel and rail during normal movement and braking; aerodynamic noise generated by the train pushing air and by the engine and cooling fans. The IFC EHS Guideline for Railways recommends the following strategies: Implementation of noise reduction or prevention measures at the source including: • Modern non-metallic disc brakes will be used, which can reduce rolling noise by 8-10 decibels (dB) compared to cast-iron block tread brakes utilized on older vehicles (non-metallic disc brakes also reduce wearing of wheels and rails). • The roughness of running surfaces will be reduced through regular maintenance of wheels and tracks, The following actions will be taken at sensitive locations where the predicted noise levels exceed or has potential to exceed as listed in ESIA Section 7.3.3 Table 7-14. These actions will keep the noise levels below the applicable national standards at the closest sensitive receptors to the source: • The receptors marked in red colors in ESIA Section 7.3.3 Table 7-14 will be subject to site visit and monitoring of background noise and site specific noise modelling. • In case the noise model indicates that the accepted noise levels are still higher than allowed, then noise abatement measures will be implemented (e.g. noise barriers along railways or next to receptor buildings, soundproofing, relocation of the sensitive receptor etc). • A "Noise Mitigation Monitoring Plan" will be developed for operation phase to confirm adequacy of mitigation measures for implementation during Operation.	**TRC**	To be determined based on the supplementary site specific modelling Within 90 days after financial closure	YM to check the designs to verify solutions as part of design approval process. Studies and mitigation measures to be accepted by the Lenders
1.1.5 WORKING ACCOMMODATION			

1. DESIGN PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
Worker housing compounds will be built and maintained at the construction camp areas. These are to be designed and operated in accordance with international best practice and the guidance document: Workers' Accommodation: Processes and Standards A Guidance Note by IFC and the EBRD, 2009.	**YM**	During construction	YM to audit the existing working accommodations against Lender Standards.
1.1.6 QUARRIES/BORROW PITS			
Existing Aggregate Management Procedure will be updated in accordance with Lenders Standards including the following measures: i. Design aspects that reduces additional work / excavation required for rehabilitation of the borrow pit and quarries. ii. The resultant shaping / forms of the benches and walls are appropriate to the surrounding natural landform. iii. Where applicable, rehabilitation of quarries and borrow pits will be conducted in parallel with the final extraction.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.1 SOIL MANAGEMENT			
A Soil Management Procedure will be developed considering the following information: i. Progressive rehabilitation measures should be implemented, beginning during site preparation. ii. Rehabilitation interventions in high priority areas (i.e. – areas where there is a low likelihood of natural revegetation or where areas are prone to erosion from surface runoff) should be prioritised. iii. Following completion of construction activities for a section of the proposed SGR and associate facilities, rehabilitation and stabilisation of all areas along that section impacted on by construction should be undertaken with no significant erosion events. iv. Rehabilitation effort for each section of the proposed SGR should be monitored at a frequency necessary to maximise rehabilitation success.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
During the construction phase, inspections will be carried out to identify areas where erosion is occurring as a result of construction activities. Such monitoring will be carried out on a daily basis during the rain seasons and on a periodically scheduled basis during the dry seasons. i. Should erosion events be identified, appropriate remedial action, including the restoration of the eroded areas, and where necessary, the relocation of the paths causing the erosion, should be undertaken. ii. Additional measures will be implemented in areas identified as having a high erosion potential. iii. Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind erosion, and shall not be contaminated. iv. Soil stockpiles should be in areas that are protected from construction activities and vehicle movement, human and livestock trampling etc. v. Soil stockpiles should be periodically dampened with dust suppressant or equivalent when necessary to avoid wind erosion. vi. Soil stockpile areas should be re-vegetated as soon as possible after use. vii. Surface water diversions should be installed around stockpiles so as to reduce risk of erosion during storm events. viii. Berms on the downslope side of stockpiles should be created to minimize soil loss or spread. ix. Minimise duration of topsoil stockpiles through implementing ongoing rehabilitation of works areas on completion of construction in each work area. Topsoil stockpiles should not be left for more than 6 months after which they will need upgrading. x. Land clearance should only be undertaken immediately prior to construction activities taking place there. xi. Unnecessary land clearance should be avoided.	**YM**	During construction	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
xii. Temporary access tracks should be aligned along contours to avoid cutting straight down steep slopes. xiii. Contour temporary access roads / laydown areas so as to minimise surface water runoff and erosion, especially on steeper slopes. xiv. Temporary access tracks should include sufficient culverts, especially on steeper slopes. xv. Unless foreign material such as aggregate needs to be inserted, after the installation of features requiring the excavation of a deep trench (*viz.* stormwater drainage pipes, services, etc.), soil should be replaced in the trench so as to mimic the pre-construction profile, (i.e.: subsoil placed at the base of the trench and topsoil above it, and should be compacted). xvi. Cut and fill slopes should be shaped and trimmed to resemble natural conditions, should not be excessively steep. Moreover, where the upper slope of cut face may erode, suitable stabilisation methods should be implemented. xvii. Cut slopes should have priority for spread of some topsoil or loose substrate to infill rock gaps in order to facilitate more rapid recolonization by naturally occurring flora species. xviii. Quarries and borrow pits should be located away from river systems. xix. Grievance redress mechanism for the project to be implemented and communicated to all surrounding communities, where impacts of erosion to their livelihoods (subsistence agriculture and to surface water) can be raised and addressed.			
2.2 GROUNDWATER MANAGEMENT			
A Surface and Groundwater Management Procedure will be developed including the following information: • The Project will need to consult with the Wami Ruvu Water Basin Office to obtain any groundwater permits/licenses required for the construction camps, in conformance to the requirements of the Water Resources Management Act of 2009. The Special Terms and Conditions associated with each Water Use Permit should be followed, and adherence to such should be monitored and confirmed through routine inspections and/or audits.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Measures that should be applied to mitigate against the impact of surface water flow and quality resulting from the SGR include those listed for soil erosion as defined in ESIA. • Assessments of the boreholes at Phase 1 water supply scheme and analysis of pump test data to avoid abstraction rates beyond the safe yield for each borehole; this to prevent subsequent impacts to sensitive social receptors. • Engagement with the local community and verification of registered and unregistered wells (including hand dug wells) surrounding the water resources used by the Project to ensure that local wells and boreholes are not negatively affected. • Provision of alternative water supplies to the local community in the case the Project affects the local sources of water supply in a negative way • Close monitoring of any grievances received related to community water supply. • Implementation of a surface and groundwater quality and water use monitoring programme. • The Project should develop and implement a grievance procedure in the event of any water reduction and subsequent water availability complaints being received. • maintenance of the following distances of waste water treatment infrastructure from boreholes and wells: o 50 meters from septic tanks, sewers; o 100 meters from pit latrines, soak-aways, trenches; and sub-surface sewage disposal fields. o 150 meters from cesspools, sanitary land field areas and graves. • The following measures will be implemented in the case construction is required to take place in wetlands and inside of a watercourse: o Prevention of sediment mobilisation in the construction phase by the use of silt traps and limiting work in the channel and not leaving bare soil exposed during the west			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
season. These silt traps would need to be cleaned regularly. Mitigation measures include: o Minimisation of in-stream works and timing of such works to avoid high flows. o Interception, channelling and/or discharge of surface water from sumps, excavations and exposed soil surfaces to silt traps or settlement lagoons. o Construction of silt traps, settlement ponds or hydrocarbon interceptors (either temporary or permanent) at sensitive outfalls at an early stage in the construction programme. o Construction of cut-off ditches to prevent surface water run-off from entering excavations. o Storage of fuel, oils and chemicals on an impermeable base, away from drains and watercourses. o Refuelling of plant and vehicles on impermeable surfaces, away from drains and watercourses; and o Provision of spill kits at high risk and/or sensitive sites.			
2.3 SURFACE WATER QUALITY			
A Surface and Groundwater Management Procedure will be developed including the following information: • The Project should consult with the Wami Ruvu Water Basin Office to confirm the need and applicability for water discharge permits/licenses necessary for the successful construction of the proposed SGR. Such discharge permits/licenses will be associated with effluent discharges (*viz.* stormwater and treated sanitary/domestic sewage). • Method Statements detailing spill emergency response and clean-up procedures for spills should be developed.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Training regarding proper methods for transporting, transferring and handling hazardous substances that have the potential to impact surface- and groundwater resources should be undertaken. • Areas where spillage of soil contaminants occurs should be excavated (to the depth of contamination) and suitably rehabilitated. If any other minor spillage occurs the spillage should be cleaned immediately and the contaminated area should be rehabilitated. All contaminated material should be suitably disposed of. • The washing of Project vehicles in any surface water bodies in and around the proposed Expressway should be prohibited. All Project vehicles should be washed at designated wash bays on site. These wash bays should include oil/grease and sediment traps for grey water. • The *ad hoc* maintenance of vehicles in and around the area of the proposed Expressway should be prevented. All vehicles should be maintained at a designated workshop. The workshop should include containment berms and an oil/grease trap. • All construction areas and associated facilities should be maintained in a good and tidy condition; debris and wastes should be contained in such a way that they cannot become entrained in surface run off during periods of heavy rain. • Where practical, exposed surfaces and friable materials should be covered / sheeted. • To the furtherest extent practicably possible, construction activities should be conducted > 60 m away from water bodies (in conformance to the requirements of the Water Resources Management Act, 2009), except where crossings are required. • Sufficient toilets at active work areas should be provided for site staff and workers and these should be serviced regularly by a competent and suitably qualified person. • The sewage treatment system should be managed in a manner that results in zero discharge of raw sewage to the environment, and if treated sewage is discharged into the environment then this should conform to recognised Tanzanian discharge standards prior to discharge (which will be prescribed in effluent discharge permits in Chapter 5 Monitoring Plan).			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• All wastewater which may be contaminated with oily substances should be managed in accordance with an approved Waste Management Plan, and no hydrocarbon-contaminated water should be released into the environment. • Fixed fuel storage infrastructure should be on flat, impermeable surface and surrounded by a bund with a volume of 110 percent of the volume of the storage tank(s), and fuel transfer at fixed stations should be performed on a concrete surface draining to a mechanical oil separator. • Position Construction Camps, laydown areas and access roads as far as possible from local streams and rivers (e.g. > 60 m away from water courses and on local high points, to minimise the risk of affecting surface water quality through the generation of silt (e.g.: by erosion) or waste (e.g.: from ablution facilities, refuelling of vehicles etc.). • Chemicals storage and dispensing areas should be located no less than 500 m from surface water bodies, and in no instance should they be located within floodplains. Storage should be on flat, impermeable surface and surrounded by a bund or enclosed storage. To avoid siltation of rivers and other surface water bodies, soil stockpile should be located away from surface water bodies.			
2.4 WATER FLOW			
A Surface and Groundwater Management Procedure will be developed including the following information: • The Project will need to consult with the Wami Ruvu Water Basin Office to obtain any water use permits required for construction, in conformance to the requirements of the Water Resources Management Act of 2009. • Where possible, in-stream construction activities should be scheduled for during the dry season. • Project infrastructure should be designed and located to minimise the impacts to natural water flow.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• To the furthest extent possible, the disturbance of the natural topography and catchment characteristics should be minimised (e.g. limit large-scale earthworks, vegetation removal, soil compaction etc.), so as to not alter the natural flow characteristics of the rivers. • Existing vehicles crossing points over rivers including bridges, fords, and causeways should be used as far as possible for temporary diversions in lieu of creating new crossings. • Should new crossings have to be established these should be designed and constructed to international standards to minimise the risk of erosion, such as making use of gabions, fascines, concrete blocks with openings, and soil retention baskets.			
2.5 WORKING AT WETLANDS AND WATERCOURSES			
To avoid impacts to wetlands, the following mitigation measures apply: • Development within 60 meter buffers from wetlands and streams need to be avoided (in compliance to Clause 34 of the Water Management Act of 2009 and the Tanzanian Environmental Management Act of 2004), and where non-essential developments exist, these need to be removed. • 60-meter buffers need to be delineated around all rivers, streams, water bodies and seasonal wetlands based on the high water mark during the high flow season. • No extraction of soil, dumping of surplus soil, equipment laydown areas, development of access tracks is to be allowed within those buffer areas, within the exception of the authorized SGR route and adjacent service road. • Stormwater management of construction sites should be planned in advance and implemented to separate clean and dirty water systems to avoid the transport of contaminants into aquatic systems. • Potential contaminated sites, such as fuel and chemical storage areas, heavy equipment parking and maintenance stations should be tested for contamination prior to closure, and remediated in a manner that addresses all hazardous chemicals identified in the test results.	**YM**	During construction	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Any contaminated sites that develop as a result of accidental spills should be remediated according to a Spill Management and Response Plan that will be developed. Spill response kits should be available at sites where there is a high risk of contamination from fuels, oils and chemicals.			
2.6 PROTECTED AREAS			
Details of mitigation measures are presented in the Biodiversity Action Plan (BAP), however the following list of measures have relevance to the Pugu Hills and Ruvu South Forest Reserves: • Limit the extent of the SGR footprint • Declare forest reserves as No Go Areas for workers during the construction phase • Respect buffer zones around rivers, streams, water bodies and seasonal wetlands • Minimise loss of fauna during vegetation clearing • Ban the use of illegal charcoal but promote sustainable charcoal production • Prevent contamination through good chemical handling • Revise the dust management programme and implement effective dust suppression • Develop and implement biodiversity protection policies • Enforce vehicle speed limits to protect fauna • Reduce light contamination at night • Rehabilitate disturbed terrestrial sites promptly • Restore destroyed and degraded wetlands • Develop and implement an invasive alien species control plan • Implement controlled access along the SGR service road during operations	**YM/TRC**	During construction/Operation	Measures implemented and reported in YM monitoring reports
2.7 LOSS OF NATURAL HABITAT			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
Details of mitigation measures are presented in the BAP, however the following list of measures have relevance to addressing the impacts associated with loss of natural habitat: i. Limit the extent of the SGR footprint ii. Respect buffer zones around rivers, streams, water bodies and seasonal wetlands iii. Minimise loss of fauna during vegetation clearing iv. Ban the use of illegal charcoal but promote sustainable charcoal production v. Prevent contamination through good chemical handling vi. Revise the dust management programme and implement effective dust suppression vii. Develop and implement biodiversity protection policies viii. Enforce vehicle speed limits to protect fauna ix. Reduce light contamination at night x. Rehabilitate disturbed terrestrial sites promptly xi. Restore destroyed and degraded wetlands xii. Develop and implement an invasive alien species control plan xiii. Implement controlled access along the SGR service road during operations	**YM/TRC**	During construction/Operation	Measures implemented and reported in YM monitoring reports
2.8 WILDLIFE CORRIDORS			
Details of mitigation measures are presented in the BAP, however the following list of measures have relevance to addressing the impacts associated with fragmentation of wildlife corridors: • Erect Elephant-proof Fencing of the SGR in the Ngerengere and Mkata Areas Elephant-proof fencing will be erected and maintained where there is potential elephant presence. The following recommendations are provided for elephant proof fencing:	**YM/TRC**	During construction/operation	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Elephant-proof fences need to electrified at all times. • Such fences need to be constructed with wooden poles, as metal and reinforced concrete posts disseminate the electrical current and sufficient voltage cannot be maintained. • Fences need to be erected with numerous high tensile steel wires rather than mesh fencing, as elephants quickly learn to push down mesh fences. • Maintenance needs to be sustained on an ongoing basis. Fence maintenance teams need to be established and resourced with the appropriate transport, equipment and training. • Maintain Permeability of Underpasses for Wildlife Movement o Bridges, culverts and underpasses must be monitored on a regular basis to ensure they are free of debris, and are not occupied by people, vehicles or other obstructions. o Install warning signs and speed control signs at all animal crossing corridors as identified by the design engineer and in consultation with local community.			
2.9 AQUATIC ECOLOGY			
Details of mitigation measures are presented in the BAP, however the following list of measures have relevance to protecting aquatic habitats: • Limit the extent of the SGR footprint • Respect buffer zones around rivers, streams, water bodies and seasonal wetlands • Prevent contamination through good chemical handling • Revise the dust management programme and implement effective dust suppression • Develop and implement biodiversity protection policies • Rehabilitate disturbed terrestrial sites promptly • Restore destroyed and degraded wetlands	**YM/TRC**	During construction/Operation	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Develop and implement an invasive alien species control plan			
2.10 CRITICAL HABITAT			
Details of mitigation measures are presented in the BAP, however the following list of measures have relevance to addressing the impacts to CH features: • Limit the extent of the SGR footprint as per procedures presented in the BAP. • Develop Pugu Hills and Ruvu South Management and Monitoring Plan in coordination with Tanzania Forestry Service Agency considering the guidance noted defined in BAP. • Declare the Pugu Hills and Ruvu South Forest Reserves as No Go Areas for workers during the construction phase. • Workers need to be vacated from old mining accommodation within the Pugu Hills Forest Reserve (at approximately km 24+000). • Respect buffer zones around rivers, streams, water bodies and seasonal wetlands. • Minimise loss of fauna during vegetation clearing. • Ban the use of illegally-sourced charcoal and locally harvested indigenous timber in and around the construction camps, but also develop strategies to promote sustainable charcoal production and procurement techniques. • Involve TRC and TFSA to implement a ban on the induced use of charcoal outside the perimeter of construction camps. • Provide alternative sources of energy (such as kerosene or electricity) and appropriate cooking devices to vendors catering for job-seekers at the gates of camps to compensate the ban on charcoal use. • Prevent contamination through good chemical handling. • Revise the dust management programme and implement more effective dust suppression strategies.	**YM/TRC**	During construction/Operation Within 180 Days after financial closure	Measures implemented and reported in YM monitoring reports Plans to be accepted by the TFSA and approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Develop and implement biodiversity protection policies. • Enforce vehicle speed limits to protect fauna. • Reduce light contamination into natural habitats at night. • Rehabilitate disturbed terrestrial sites promptly. • Restore destroyed and degraded wetlands along the SGR route, based on delineation exercises for each wetland and a professionally and comprehensively developed Wetland Restoration Plan by the Project considering the requirements in BAP. • Develop and implement an invasive alien species control plan. • Implement controlled access along the SGR service road during operations. • Erect elephant-proof fencing of the SGR in the Ngerengere and Mkata areas. • Maintain permeability of underpasses for wildlife movement.		Before financial closure	Plan approved by YM Senior Management
2.11 INVASIVE ALIEN SPECIES			
i. An invasive alien species management plan will be developed for the Project to guide the control of IAPs. ii. Biological control measures would only be applied if these specific measures have been approved for application in Tanzania. Alternatively, labour intensive manual control of IAPs would be applied in preference to application of herbicides or other chemicals. iii. All Plant Material that is removed through control measures is to be burnt on Site iv. Vehicles and construction equipment will be kept clean and washed regularly to minimise distribution of seeds and invasive plant material. v. Tyre checks of vehicles should be conducted daily to check that seeds, thorns and vegetative material is not being distributed.	**YM/TRC**	During construction/Operation	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
vi. Source areas such as quarries, borrow pits, vehicle parking and construction camps should be kept clean of invasive species to minimise the presence of seeds that can be dispersed unintentionally. vii. Disturbed areas would need to be rehabilitated at the earliest opportunity to minimise the establishment of IAPs. viii. Regular and ongoing monitoring of the presence of invasive species should be conducted within construction and rehabilitated sites and invasive species removal operations implemented according to the results, based on areas as per the above objectives.			
2.12 CONSTRUCTION SITE REHABILITATION PLAN			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
Construction Site Rehabilitation Plan will be developed considering the requirements defined in BAP including but not limited to the following: i. Rehabilitation of construction sites including affected wetlands ii. Undertaking of re-vegetation progressively with cover crop and native endemic species. iii. Use of suitable plant species (high survival rate, successful at erosion control and low maintenance requirement, co-existence with existing natural flora) at cut and fill slopes in the route. iv. Implementation of protection measures to prevent soil erosion after the finalization of the earth work where required such as: o use of hydroseeding; o use of erosion-control blankets or mats; o re-naturation as soon as feasible. v. Aftercare and monitoring.	**YM**	Before financial closure	Plan approved by YM Senior Management
2.13 CONTAMINATED LAND MANAGEMENT			
A Contaminated Land Management Procedure will be developed including the following information: i. Risk assessment to assess potential for presence of soil contamination on the RoW of the Railway according to best practice (including consultation with the owners of the relevant sites and local authorities) and to identify further measures as necessary. ii. Measures to handle contaminated soil if encountered during Construction, such as: o reporting to the local responsible authorities o conducting further measures as agreed with the authorities and local enterprises o assessing if lightly contaminated material could remain in place o appropriate removal/storage, treatment and disposal of contaminated soils	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
○ training of construction staff to recognize and appropriately handle contaminated land when encountered during construction activities.			
2.14 AIR, NOISE AND VIBRATION			
Existing Air Quality and Emissions Procedure, Noise and Nuisance Management Procedure will be updated in accordance with Lenders Standards including the following measures: ○ Procedures for regular inspection and maintenance of all machinery and vehicles to reduce noise, dust and gas emissions from vehicles and work machinery. ○ Measures to minimizedirt and noise from transport vehicles such as : ○ use of railway alignment and dedicated site access roads to reduce project traffic routing through community areas whenever possible. ○ implementation of speed limits for trucks while travelling to and from construction sites (Within settlements and on village roads of poor condition: 30 km/h , elsewhere 50 km/h). ○ Where night-time work is necessary, any essential transport through or near villages will be done at slow speeds to minimize noise/nuisance to local villagers ○ prohibition of engines running while waiting. ○ covering of loads and installation of wheel washing equipment for all vehicles leaving the site. The Project should implement the following dust mitigation/management measures: ○ Unpaved roads and other dust generating areas should be controlled by water spraying under dry weather conditions. ○ A grievance procedure in the event of any dust complaints being received should be developed and implemented. ○ Speed limits should be set to as low as possible on unpaved roads ○ Work vehicles should be kept sufficiently clean to avoid tracking dirt around and off the site.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
○ Work vehicles transporting friable materials should be kept adequately covered to prevent materials being spread around and off the site. ○ Where feasible, surface binding agents should be used on exposed open earthworks. Upon completion of earthworks, stabilization of surfaces (i.e., establishing vegetative cover, or placing ground cover) should occur as soon as possible ○ Drop heights of material should be minimised. ○ Stockpile should be managed in accordance with the mitigation/management measures provided for Impacts on Soil Erosion. In addition, stockpiles should be located as far away from receptors as possible. ○ Issue and ensure use of appropriate PPE such as dust masks. The Project should implement the following noise mitigation/management measures: ○ Measures to minimize the noise from equipment: ○ The Project should develop and implement a grievance procedure in the event of any noise complaints being received. ○ Site management should periodically check the site and nearby residences (or other sensitive land uses) for noise related issues so that solutions can be efficiently and timeously applied. ○ Where feasible and reasonable, the dropping of materials from height should be avoided. ○ Where feasible and reasonable, metal-to-metal contact on equipment should be avoided. ○ Where feasible and reasonable, mobile plant clustering near residences and other sensitive land uses should be avoided. ○ Periods of respite should be provided in the case of unavoidable maximum noise level events. These respite periods should be negotiated with the relevant local stakeholders.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
o Regular inspection and maintenance of all machinery and vehicles. o Installation of silencers or acoustic enclosures on machinery, where applicable, such as installation of suitable mufflers on engine exhausts and compressor components as well as the use of portable sound barriers around equipment like generators. o Less annoying alternatives to conventional audible reversing alarms should be used (such as visual and/ or broadband noise emitting models i.e., 'squashed duck') that provide a safe system of work. Furthermore, where possible the Project work sites should be configured to maximise forward movements of mobile equipment. o Where feasible and reasonable, alternatives to diesel and petrol engines and pneumatic units should be used (such as hydraulic or electric-controlled units). o Where feasible and reasonable, small equipment e.g. hand tools should be placed in an acoustically treated enclosure. o Where feasible and reasonable, the throttle settings on plant and machinery should be reduced and equipment and plant should be turned off when not being used. o Wherever possible, avoiding Project traffic routing through community areas and the implementation of speed limits for all construction vehicles. o Limiting hours of operation for specific equipment or operations (e.g. trucks or machines operating in or passing through community areas). o Restricting noise levels from longer term construction activities to 60 dB LAeq during the daytime, and 35 dB LAeq at night as far as is practicable, or to other standards that have been agreed with the local authority. o All potentially impacted receptors should be informed of the nature of works to be carried out, the expected noise levels and duration, as well as contact details for an appropriate representative that be contacted in the event of a complaint. All complaints should be managed as part of the Projects external feedback and grievance mechanism.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
o Noise monitoring should be implemented if persistent noise complaints are received. o Provide and enforce the use of appropriate hearing protection personal protective equipment (PPE) to all personnel working in noisy zones. o Measures to minimize vibration from construction activities: o identification of buildings located within 50 m of significant sources of vibration ahead of construction works. Preparation of documentation for each of the identified buildings including photographs and sensitivity evaluation. o monitoring of vibration on commencement of relevant construction activities to identify additional mitigation measures where necessary. *Mitigation of Noise at Construction Camps and Construction Plants* In addition to the general noise mitigation measures above, recommended management measures to mitigate adverse effects of noise at Construction Camps and Construction Plants include: o Careful siting of Construction Camps and associated plants is the most effective mitigation in terms of noise impacts. Care should be taken to site Construction Camps and associated plants at least (preferably more than) 180 m from sensitive receptors (health and educational facilities, residential homesteads) where applicable. o Working during daytime hours only at the plant. o Storing excavated material (with cover to avoid dust erosion), or use of buildings / structures or temporary noise barriers to form a noise barrier between the Construction Camp and any noise sensitive receptors. o Shutting down of machines in intermittent use in the intervening periods between work (or throttle them down to a minimum). o Positioning of all ancillary plant (e.g. crushers, mixers, loaders, generators, compressors, etc.) so as to cause minimum noise disturbance.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
o Providing acoustic enclosures, if necessary. o Minimizing drop height of materials. o All employees are to be provided with, and are to wear, appropriate hearing protection in recognised noise zones. *Mitigation of Noise at Active Work Sites along the Proposed SGR Alignment* o As the proposed construction moves along the alignment, potentially affected receptors should be identified prior to construction work approaching the residential area. o During the construction phase, the noise level should be monitored. Noise monitoring should include operator noise measurements at the closest and most affected receptors identified. Monitoring should be undertaken by suitably trained environmental personnel at intervals of at least once every 2 weeks while construction activities are occurring. *Mitigation of Noise at Quarries and Borrow Pits* The following measures for quarry and borrow pit operation should be followed to mitigate adverse noise impacts: o Appropriate consideration must be given in the blasting design o Consider social issues in designing the transport routes for construction vehicles carrying materials and spoil to and from quarries and borrow pits. Transport routes should (as far as possible) avoid residential areas. This not only for noise impacts, but to reduce other impacts such as dust exposure and health and safety risks associated with heavy vehicle movement. o Method statements for each quarry and borrow pit site should be developed. These method statements should include plans to retain rock structures as noise barriers between the quarrying area and any potentially affected noise receptor.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
o Night-time operation should be minimized where receptors are located close by. o Hammers should be shielded by noise screens in order to avoid significant increase in noise impacts on communities situated in the vicinity. o All employees are to be provided with, and are to wear, appropriate hearing protection in recognised noise zones.At quarry or borrow pit sites, supervision of the subcontractors who run these sites should be performed to ensure that legislative requirements are complied with. *Vibration Mitigation Measures at Quarry Sites* o The Project should develop and implement a grievance procedure in the event of any vibration complaints at quarry sites being received. o Mechanical ripping should be used to the furthest extent possible, to minimize the use of explosives. o Blasting should be limited to dedicated blasting times based on the activity. These times should be negotiated with the affected communities to protect the people and minimize nuisance. o Instead of using secondary blast, hydraulic hammers or other mechanical methods should be used to improve rock fragmentation and minimize fly-rock risks. o Method Statement(s) should be produced for all activities associated with blasting (transport, handling and use of explosives) together with emergency preparedness procedures. o The Project should consider the use of delayed, micro-delayed, or electronic detonators to reduce individual charge mass to safe limits. o At quarry sites, and if blasting is required during earthworks, close monitoring/supervision will be undertaken to ensure that legislative requirements and blasting permit conditions are complied with; if the standards are exceeded additional measures will be investigated to reduce vibration impacts.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.15 CLIMATE/CARBON EMISSIONS			
Mitigation of GHG emissions during construction can be achieved through a series of following measures: i. utilising the wood for commercial timber and fuelwood rather than clearance by fire ii. timber survey to be carried out to estimate the amount of commercially viable timber that could be recovered from the areas that will be cleared of vegetation during construction. iii. Favour the use of raw materials that are easier to transport (lighter less volume) plus consideration for on-site assembly of parts. iv. Reducing and / or optimising the quantities of construction material transported v. Management of transport logistics to ensure efficient carriage of raw materials. vi. Management of voids and compaction of loads to ensure maximum safe payloads are transported. vii. Reducing vehicle idling times through focus on scheduling of construction operations. viii. Consideration for sourcing of materials from suppliers closest to the construction site ix. Prioritise the use of fuel efficient transportation and construction vehicles and ensure regular maintenance of vehicles x. Consider using a less carbon intensive fuel (eg a biofuel blend), if available xi. Provide efficient driving guidelines to transportation and construction vehicle drivers, to promote fuel efficiency. xii. Ensure that on-site power generation is designed, sized and operated for emissions performance as well as reliability.	**YM**	During construction	Measures implemented and reported in YM monitoring reports Fuel consumption records
2.16 WASTE MANAGEMENT			
Existing Waste Management Procedure will be updated in accordance with Lenders Standards including the following measures: i. Application of waste hierarchy to avoid, segregate, re-use, recycle wastes as much as possible and as last option safely dispose wastes.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
ii. Training of construction staff to ensure safe management of all types of waste preventing harm to themselves, the environment and the public. iii. Collection and segregation of waste according to its type, whether it is re-usable, recyclable, non-hazardous or hazardous waste. iv. Storage of wastes according to international best practice (IFC EHS General Guideline). Apply additional measures for storage of hazardous wastes (such as use of secondary containment, access restriction, provision of PPE etc.) as necessary to prevent harm to construction staff, environment and public. v. Usage and labelling of designated waste collection containers and storage areas for different kinds of wastes (hazardous and non-hazardous). vi. Re-use of excavated soils in the Project area as far as possible and seeking alternative uses for surplus spoil where practicable (e.g. landscaping and earth works for other projects) to minimise the requirements for off-site disposal. vii. Transportation of waste in marked vehicles designed appropriately to the type of waste to minimise the risk of release of materials (hazardous and non-hazardous materials) and windblown debris. Training of drivers in handling and disposal of their cargo and the documentation of the transport describing the nature of the waste and its degree of hazard. viii. Disposal of wastes at licensed waste management sites; prior to selection a due diligence review will be undertaken to understand if the sites are materially compliant with Project requirements.			
2.17 HAZARDOUS MATERIAL MANAGEMENT			
A Hazardous Materials Management Procedure will be developed including the following information: i. Procedures for handling and storage of hazardous materials in accordance with manufacturer's instructions.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
ii. Register of hazardous materials and identification of dangers posed by hazardous materials within the Project site. i. Storage of fuels, oils and hazardous materials on a suitably sized impervious and bunded base. ii. Use of drip trays for fuelling. iii. No fuelling of vehicles or equipment will take place within excavated areas, if practically feasible. iv. Training of on-site personnel on the presence, handling, transport and disposal of hazardous materials and on emergency response management. v. Provision of personal protective equipment (PPE) to staff who are required to handle certain chemicals. vi. Ensure proper ventilation when handling with hazardous materials. vii. Protection of public from major hazards associated with hazardous materials incidents or process failure, as well as nuisance issues related to noise, odours, or other emissions.			
2.18 TRAFFIC MANAGEMENT			
Existing Traffic Management Plan will be updated in accordance with Lenders Standards including the following measures: i. Arrangements and routes for unusual/ wide loads (if required) will be agreed in advanced with the relevant authorities, and the appropriate permit will be obtained for the use of public roads. ii. Establishment of RoW site speed limits, vehicle inspection requirements, operating rules and procedures (e.g. prohibiting operation of forklifts with forks in upper position). iii. Development of a plan for checking and training truck drivers regarding speed limits routing rules, duration of driving. iv. Improvement of local traffic signage (where necessary). Usage of signs (reflective signs and/or flashing lights for night) and traffic cones and positioning of flag persons to indicate road work in progress and to inform and warn equipment operators and workers.	**YM**	Before financial closure	Plan approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
v. Training of Pedestrian workers to work safely around trucks and operating equipment and provide constant warnings to each other in the event of being in risky locations or conditions. vi. Training of drivers and operators to obey signals, be aware about blind spots and other pedestrian workers while sharing the same working site, and check their vehicles or equipment whenever needed. vii. Informing drivers about the site traffic rules including speed limits, approved access routes, etc. A map that shows all the access roads that exist or to be constructed for the project will be prepared and distributed to relevant drivers. viii. Ensuring drivers undergo medical surveillance. ix. Restricting the circulation of delivery and private vehicles to defined routes and areas, giving preference to 'one-way' circulation, where appropriate. The Project will ensure that all driver candidates meet specific requirements, including but not limited to: o possessing a valid licence to drive each type/class of vehicle required; o minimum 2 years driving experience; o an accident-free driving record; o pass an eye chart exam; and o attend and complete the Yapi Merkezi driver safety training. The Project will conduct an ongoing **Community Traffic Safety Awareness Campaign** during the construction period, particularly in those communities where construction vehicles will be most active. The awareness training will be repeated in villages as construction moves into their areas.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.19 CULTURAL HERITAGE MANAGEMENT			

To minimize the potential impacts on Cultural Heritage Resources, the Project will develop a Cultural Heritage Management Plan (CHMP) that is aligned with IFC PS 8 and the Tanzania Antiquities Act; also, the existing Chance Find Procedure (DSM-YME-AL-GL00X-G-EN-PRO-0004-0) needs to be updated accordingly.
 	
The CHMP and updated CFP should address, among other issues, the provisions of the Law on Protection of Cultural Heritage and international treaties and include the following elements:
 	
• Continuous stakeholder engagement prior to construction in line with actual construction progress to identify historically and culturally significant built and living heritage sites along the Project right-of-way and procedures to work with stakeholders to avoid, minimize, and/mitigate direct and indirect impacts.
• Engagement with Chololo, Mnase, Msamalo, and Chimwaga village leaders to agree on the actions to be taken before and during the removal of Baobab trees.
• Continuous engagement with the community along the SGR alignment about the intangible resources (such as celebrations, festivities, ceremonies, etc.) and re-schedule the construction activities considering their feedback.
• Operation of the updated Chance Find Procedure including:
  • Provision for a professional archaeologist(s), employed by the Project and holding a valid archaeological license, to monitor ground disturbing construction activities to identify archaeological resources;
  • Stopping the activities and evaluation of the find;
  • Taking necessary actions to secure the finding;
  • Informing the appropriate government ministry or department and follow their instructions.
	YM	Before financial closure	Plan approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Training for all Project staff and subcontractor to foster their awareness on the importance of protecting cultural heritage and the Project's commitments to avoid, minimize, and/or mitigate impacts to cultural heritage resources. • Marking of Vulnerable Cultural Heritage Sites where required. • Development and implementation of an Operation Phase Vibration-Monitoring Program for any built heritage resources within 30 m of the right-of-way to assess potential short, medium, and long-term impacts and develop appropriate measures to avoid, minimize, and/or mitigate vibration impacts.			
2.20 ACCESS AND SEVERANCE			
The Project will undertake consultation with communities in areas/access routes potentially affected during construction to establish the best alternative routes and measures that the Project should put in place to minimize impacts related to access restrictions. Continued engagement as per the Informed Consultation and Participation Strategy (ICP) for IPs[1] with affected IPs will be required to ensure that underpasses, overpasses and livestock crossings are effectively communicated and utilized. This will inform the development of a Severance Management Plan[2] as well as informing updates of the Project Design and the RAPs, as needed. Severance Management Plan (SMP) will include an implementation plan including the actions, responsibilities, timing and the budget. The SMP shall: • set out separate components for the management and monitoring of impacts on IPs • incorporate specific measures to avoid and minimise Project impacts on Affected Communities of IPs that have been demonstrably developed through ICP of affected IPs	**YM**	ICP Strategy before financial closure SMP Within 120 Days after financial closure	SMP to be accepted by the Lenders.

[1] The Informed Consultation and Participation Strategy for IPs shall set out how IPs will be meaningfully consulted and informed about impacts and involved in the design of mitigation in accordance with the provisions of PS 1 and PS 7 (paragraph 10) and associated IFC Guidance Notes 1 and 7.

[2] The Severance Management Plan will, amongst other, map crossings and water points used by pastoralists through additional informed consultation and participation (ICP),

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• specify how IPs will be engaged and involved in decision-making about the location and design of both construction-phase and operations phase crossings and water points, and • set out any impact monitoring requirements. As a part of SMP, the following actions will be taken: i. Local tracks, routes and crossing points will need to be identified and mapped for both the wet and dry season using engagement (with communities and livestock grazers) and remote sensing. In addition, the infrastructure, services, water pans etc. that people are accessing will be mapped. Based on this information, crossing points will be identified. Where needed, tracks will also be upgraded near these crossing points to ensure continued safe access for people and livestock. ii. The project proponent will monitor the success of any new tracks or crossing points through engagement and implement any corrective measures as needed. iii. The Project will adequately engage with affected households based on the principles of informed consultation and participation regarding severance impacts and mitigation. iv. **Existing Grievance Mechanism** will be updated in accordance with Lenders Standards whereby affected people can raise issues and concerns associated with severance during construction and operation, including any unforeseen impacts. v. During construction, temporary crossing points will be provided for communities. The distance between the crossing points may vary depending on the Section and existing land uses but should not require people to walk more than an additional 2 km to access services, except in special cases to be agreed with villagers. vi. The nearest component of the SGR route is located approximately 17.5 km from the Mikumi National Park boundary. This national park is not expected to be directly impacted by the project, but the route does intersect a wildlife migratory corridor, which may influence the wildlife populations of this park, which must be considered.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
vii. Borrow pits and quarries created during construction have the potential to act as water pans for the community. Such pits will be assessed on a case by case basis to determine if it is appropriate to leave them to form pans taking into account existing surrounding land uses, land ownership and the potential for human – wildlife conflict (as wildlife may also access such pits) bringing them in close proximity with humans and livestock. viii. Restoration Planning for construction sites, Construction Camps, laydown areas etc. will be undertaken early to ensure that any facilities that are damaged or become inaccessible during construction can be restored as early as possible.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.21 TRANSMISSION OF VECTOR BORNE AND COMMUNICABLE DISEASE			
The following mitigation measures will be applied: i. Pre-employment medical screening will be done for workers which will cover applicable diseases. Individuals found to be suffering from communicable diseases will need to seek treatment prior to mobilisation to site. However, no one should be denied employment because of their health status as long as they are able to undertake the required duties (following treatment if relevant). ii. Workers will receive training as part of their induction and then at least every 6 months on potential high risk communicable and vector borne diseases, symptoms, preventative measures and transmission routes as well as treatment options. This will be particularly important for diseases with which non-local workers are unfamiliar and in case of any emerging disease outbreaks. iii. In the event of a new disease, increased transmission or outbreak compared to the baseline, the Project will interact with local health care facilities and workers to ensure there is an appropriate response in place. This may involve community education and awareness, training of health care workers etc. iv. **Existing Worker Code of Conduct** will be updated in accordance with Lenders Standards providing a camp code of behaviour including worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities. This would apply to all Project workers and visitors to any Construction Camps. v. Accommodation will be provided to workers in accordance with international good practice on workers' accommodation, including IFC standards to prevent transmission of diseases associated with poor living conditions. vi. For all contractors and sub-contractors, at worker accommodation and sites the following will be implemented at a minimum in order to minimise disease transmission: o Providing workers with appropriate sanitary facilities which are appropriately designed to prevent contamination.	**YM**	Prior to employment Before financial closure	Check relevant records and make sure that all measured have been implemented and reported in YM monitoring reports Approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
o Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area. o Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds. o Ensuring the worker camp is kept clean and free from any accumulation of wastes as well as supplied with clean potable water. o Ensuring appropriate food preparation and monitoring measures are in place. o Providing insecticide-impregnated bed nets as a physical barrier to repel and kill mosquitos for workers that have been provided accommodation. o Monitoring to ensure that all standards are being met by the relevant departments. vii. The workforce will be provided with access to treatment at health facilities on site/ at camps. The requirements for these health facilities will be based on a risk assessment taking into account access to existing health facilities and travel time to facilities that offer international standards of care. Access to health care will include direct employees, sub-contractors and employees of the supply chain working on based on site. viii. The Project will prepare and implement a vector borne disease management plan focussing on malaria, which includes vector control, avoidance, diagnosis, treatment and training. ix. The Project will monitor the emergence of major pandemics through World Health Organisation (WHO) alerts and in the event of a pandemic review mobilisation and demobilisation of ex-patriate Project personnel and / or implement appropriate control measures and Emergency Response Plans.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.22 TRANSMISSION OF SEXUALLY TRANSMITTED DISEASES			
The following mitigation measures will be applied: i. Code of Conduct will be implemented for worker-community interaction and on-site behaviour. ii. The Project will develop an STD Management Plan designed to minimise the spread of HIV infection and other STDs. The plan should be prepared with the assistance of a specialist in sexually transmitted diseases. A typical plan would include, among other things, the following measures: o an HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STDs, to employees, through workshops, posters and informal information sessions; o encouragement of employees to determine their HIV status; o supply of condoms/ femidoms at the construction site(s)/ Construction Camps; and o development of a comprehensive **Construction Camp Management Plan**, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site. iii. As part of STD Management Plan, information will be provided to workers on STD prevalence rates in Tanzania and/ or the relevant Counties as well as the expectations of local communities if a women is made pregnant by a worker (e.g. marriage, financial implications etc.). iv. Workers will have access to confidential health care for the treatment of STDs through medical facilities/ health care at Project sites. v. The Project will partner with other NGOs support the provision of information, education and communication campaigns around safe sexual practices and transmission of STDs. These activities will focus in locations where construction camps are located or where drivers (construction and supplier drivers) rest.	**YM**	Prior to employment Before financial closure	Check relevant records and make sure that all measured have been implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
vi. The Project will consult with local leaders such as Area Chiefs and village elders, amongst others. The consultations will aim at finding ways of ensuring social vices such as prostitution are minimised either through punitive or rehabilitative measures. vii. Grievance Mechanism will be implemented, whereby affected people can raise issues and concerns associated with social vices, prostitution and the behaviour of workers and drivers.			
2.23 COMMUNITY HEALTH, SAFETY AND SECURITY			
Existing **Community Safety Management Procedure** will be updated in accordance with Lenders Standards to set out the security measures, particularly for the Construction Stage of the Project (e.g. access control by fencing of construction section in the vicinity of settlements or communities),. i. **Injuries to Community Members**: In the event of an accident in which a community member is harmed, the project proponent will assume the responsibility for transporting the injured person to an appropriate health facility capable of dealing with the injuries, and should cover the cost of the person's medical treatment. ii. Accident reporting and investigation procedures will be developed to determine root causes and identify corrective measures to reduce the risk of the accident happening again. iii. Grievance Mechanism will be implemented, whereby affected people can raise issues and concerns associated with vehicle movements, driver behaviours and report accidents or damage to property they feel are caused by Project vehicles. iv. Project security will comply with Tanzanian laws and regulations as well as the requirements of the Voluntary Principles for Security and Human Rights. The security will include, among other things, selection or personnel based on a careful background screening, training with regards to human rights requirements, and monitoring of performance. v. The Project will implement a **Security Management Plan** containing measures to protect the Project facilities and personnel against potential violent protest or social unrest and to train security personnel in safeguarding of community human rights.	**YM**	Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
vi. High-risk or value elements of construction sites will be fenced to minimise the risk of trespass and robbery. In addition, clear and visible signage will be put in place where appropriate to advise community members of the risk of site trespass. vii. Local community members will be disclosed prior to the commencement of the construction phase so that they are aware of presence and role of security guards, the risk of site trespass and how to interact with the Project in the event of any concerns or issues. viii. The Project will consult with local leaders such as Area Chiefs and village elders. The consultations should be aimed at finding ways of ensuring site trespass and robbery are minimised either through punitive or rehabilitative measures. ix. The Project will implement the Grievance Mechanism to address any security and safety related grievances. Raise awareness to communities regarding the Grievance Mechanism to deal with community concerns and issues in a timely manner to avoid issues escalating. This will include the use of the Community Liaison Officers (CLOs) who will be present around the Project Site pre and during construction.			
2.24 SOCIAL COHESION			
In order to minimise negative impacts from influx/ community cohesion, **Worker Influx Management Plan** will be prepared including the following mitigation measures to be applied: i. The Project will consult with local leaders such as Area Chiefs and village elders, amongst others. The consultations will be aimed at finding ways of ensuring social cohesion is maintained and that people have equal access to development benefits. ii. The Project will develop and implement a grievance mechanism to address any grievances related to social cohesion and equitable sharing of benefits including recruitment of employees.	**YM/TRC**	Before financial closure	Plan approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
iii. The Project will communicate its recruitment strategy early and broadly to minimise opportunistic migration this should include: a. no hiring of job seekers on site or at the gate; b. no procurement on site or at the gate; c. employment selection should involve local leadership to verify people are from the area; and maximising local content in procurement i.e. from local people and towns, whenever possible, and whenever project requirements are met. **Information Meetings**: Information meetings will be held with Local Government and District leadership, explaining the negative impacts of population influx, the company's recruitment policy and verification process for appointing only local people for unskilled work, harnessing their support to reduce influx of work and opportunity seekers. Community leaders and residents may have expectations that the proposed Project will play a supporting and developmental role within the area and that the Project will have other positive economic benefits. In order to encourage realistic expectations, close communication will be maintained between local communities and the Project to manage such expectations.			
2.25 LOCAL RECRUITMENTAND PROCUREMENT			
The following mitigation measures will be applied: • The Project will prioritise the recruitment of workers and procurement of goods and services from within the Districts then to national companies. This will not apply to the provision of highly technical equipment. • The Project will develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The policy will be shared with the local community members and leadership. • **Human Resources Policy**, **Labour and Employment Plan** shall be developed by Yapi Merkezi which outlines the percentage of skilled, semi-skilled and unskilled employment that should be sourced from the Locations and Districts along route. For unskilled	**YM/TRC**	Before financial closure	Plan approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
workers this target should be set as high as possible ie at least 90%. The procedure will also include requirements for recruitment of vulnerable groups (women, indigenous people and disabled workers) to ensure equal opportunities, involvement of local Chiefs in ensuring local employment is achieved, no hiring of workers at the gate etc. The requirements of this procedure will form part of the Conditions of Contract with sub-contractors. • Yapi Merkezi will notify identified representatives of the District Government and Local Administration (i.e. the Location Chiefs) of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced. • Employment and procurement opportunities will be publically advertised in appropriate newspapers, public libraries, District Offices and Chiefs Offices and in all relevant languages in a timely manner, to allow fair competition. • There will be no requirement for applicants to make payments for applying for, or securing, employment on the proposed Project. • The Project will ensure that recruitment procedures are transparent and monitored to ensure that those recruited present their actual experience, geographical location, health status, and age and that requirements for local employment are being met. • The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of their contracts. • The Project will provide training on health and safety and quality standards required by the Project for provision of goods and services to the Project to ensure that local businesses have the opportunity to benefit. • The Project will ensure that contracts are unbundled to allow a number of small businesses to provide goods and services rather than the supply being monopolised by one larger sub-contractor.			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
2.26 LABOUR AND WORKING CONDITIONS			
The Project will develop a **Human Resources Policy**, **Labour and Employment Plan** including **Worker Grievance Mechanism**. These requirements will also be passed on to any sub-contractors. Key issues with the Human Resource (HR) management will include, but not be limited to the following: • Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc. • Provision of reasonable working conditions and terms of employment. • Provision of adequate accommodation (where relevant). • Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination on any aspects. • Provision of adequate welfare facilities on site. • Implementation of a grievance mechanism for the Project workers. • Adoption and implementation of a sexual harassment policy. • Adoption of open attitude towards freedom of association. The Project will develop a H&S programme which will include risk assessments (such as working at heights, confined space machine guarding), work permit systems and a H&S management system, in line with industry best practice, including worker performance safety tracking (safety observations) to assure worker safety. All workers will receive induction and continuous training regarding this system.	**YM/TRC**	Before financial closure	Plan approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
Sub-Contractor and Supplier Management The Project will develop a **Subcontractor and Supply Management Procedure** including but not limited to the following: • Subcontractor and Supplier Contracts will make explicit reference to the need to abide by Tanzanian law, international standards (in particular IFC PS 2) and the ratified ILO conventions and the Project Proponent's policies relating to health and safety, labour and welfare standards. • As part of the subcontractor and supplier selection process, Yapi Merkezi will take into consideration performance with regard to worker management, worker rights, health and safety as outlined in Tanzanian law, international standards and the Proponent's policies. • Yapi Merkezi will provide support to sub-contractors and suppliers to ensure that labour and working conditions are in line with Tanzanian legislation and IFC PS 2 through gap analysis, awareness raising and information provision, as necessary. • Regular checks / audits by Yapi Merkezi will be undertaken to ensure the relevant labour laws are adhered to at all times. *Workers' Rights* • Yapi Merkezi will ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, religion or sexual orientation. • All workers (including those of subcontractors) will, as part of their induction, receive training on worker rights in line with Tanzanian legislation to ensure that positive benefits around understanding labour rights are enhanced. This process will be formalised within the Code of Conduct that would be provided by Yapi Merkezi. • All workers (including those of subcontractors and suppliers) will have contracts, which clearly state the terms and conditions of their employment and their legal rights. These		Before financial closure	Procedure approved by YM Senior Management

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
contracts will be aligned with Tanzanian labour law, the ILO core conventions and the requirements of IFC PS2. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. Contracts will be in place prior to workers leaving their home location if applicable. • The Project will put in place a worker grievance mechanism that should be accessible to all workers, whether permanent or temporary, directly or indirectly employed. The worker grievance mechanism will be open to Yapi Merkezi and the subcontractor workforce in the event that their grievance is not adequately resolved by their direct employer. Yapi Merkezi will then have the authority to act to resolve this grievance. • All workers (including those of Yapi Merkezi and the subcontractor) will have access to training on communicable diseases and STDs and community interactions in general. • Accommodation will be provided to workers in accordance with international good practice on workers' accommodation, including IFC standards to prevent transmission of diseases associated with poor living conditions. • Yapi Merkezi will undertake surveillance and assurance that no children or forced labour is employed directly, and to the extent possible by third parties related to the Project and primary suppliers where such risk may exist. • Yapi Merkezi will prioritise the recruitment of workers and procurement of goods and services from within the Districts first, and then on to national companies. This will not apply to the provision of highly technical equipment. • The Project will develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The policy should be shared with the local community members and leadership. • Yapi Merkezi will notify identified representatives of the District Government and Local Administration (i.e. the Location Chiefs) of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local			

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced. • Employment and procurement opportunities will be publically advertised in appropriate newspapers, public libraries, District Offices and Chiefs Offices and in all relevant languages in a timely manner, to allow fair competition. • The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of their contracts.			
2.27 LIVING HERITAGES			
The following mitigation measures will be applied: i. All Project staff and subcontractor will get training to foster their awareness on the importance of protecting cultural heritage and the Project's commitments to avoid, minimize, and/or mitigate impacts to cultural heritage resources. ii. Graves will be relocated and all relocation activities will be aligned with Tanzania Law and the RAPs prepared for this project; and iii. Compensation for the relocation of graves, if necessary, will be paid before construction starts. iv. Local stakeholders will be engaged to identify historic and culturally significant built heritage and living heritage resources near the Project Area. If it is determined that the Project will negatively impact the visual setting of significant resource, the Project will work with local cultural heritage stakeholders to resolve impacts through landscaping, planting screening vegetation, etc. v. Local stakeholders will be engaged to identify cultural heritage resources along the Project right-of-way. If construction of the Project will temporarily or permanently restrict stakeholder access to resources, the Project will work with the local community to avoid restrictions or to provide alternative access.	**YM**	Prior/During construction	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
vi. Project will engage with village leaders of Chololo, Mnase, Msamalo, and Chimwaga to agree on the actions to be taken before and during the removal of Baobab trees.			
2.28 CUMULATIVE IMPACTS			
The Project Manager of SGR should liaise closely with counterparts at MGR to communicate and coordinate their construction activities accordingly to avoid exacerbating impacts due to overlapping work activities. For instance; in case a camp is not required by MGR anymore, it may be handed over to SGR which reduces the disturbance of additional ground and footprints of the Project.	**YM**	Prior/During construction	Minutes of MGR/SGR meetings
2.29 ECOSYSTEM SERVICES			
Details of mitigation measures for management of ecosystem services are presented in the BAP, however the following list of measures have relevance to ecosystem services associated with the SGR: • Respect 60-meter buffer zones required by the Tanzanian Environmental Management Act of 2004 around rivers, streams, water bodies and seasonal wetlands • Development within 60 meter buffers need to be avoided, and where non-essential developments exist, these need to be removed. • No extraction of soil, dumping of surplus soil, equipment laydown areas, development of access tracks is to be allowed within those buffer areas, within the exception of the authorized SGR route and adjacent service road. • Restore destroyed and degraded wetlands based on the field delineation of wetlands and development of a comprehensive wetland restoration plan • Specific access across the SGR to reach water and grazing resources needs to be provided through the provision of overpasses and underpasses, and the confirmation of such through targeted stakeholder engagement, specifically with the Maasai and the Bargaig communities in the: o Magindu and Miziguni Villages in Kibaha District, Costal Region; o in Kinonko and Kidugalo Villages, Morogoro Rural District, Morogoro Region; and	**YM**	Prior/During construction	Measures implemented and reported in YM monitoring reports

2. CONSTRUCTION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
○ Manyuki, Parakuyo and Mbwade villages in Kilosa District, Morogoro Region. • Prevent contamination through good chemical handling • Revise the dust management programme and implement an effective dust suppression startegy • Potential contaminated sites such as fuel and chemical storage areas, heavy equipment parking and maintenance stations, or those that develop as a result of accidental spills, should be tested for contamination prior to closure, and remediated according to a comprehensive Spill Management and Response Plan. • Develop and implement an invasive alien species control plan • Declare forest reserves as No Go Areas for workers during the construction phase • Ban the use of illegal charcoal but promote sustainable charcoal production. • Rehabilitate disturbed terrestrial sites promptly. • Implement controlled access along the SGR service road during operations			

3. OPERATION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
3.1 ENVIRONMENTAL AND SOCIAL OPERATION MANAGEMENT			
An **Environmental and Social Operation Management Plan (ESOMP)** will be prepared to detail how the mitigation identified in the ESIA will be delivered during operation. The ESOMP will set out the procedures to be followed (and those responsible for implementing the actions) to achieve the mitigation of the impacts. The ESOMP will detail: • The approach to training and regular awareness-raising with respect to environmental and social issues. • Mechanisms for inspections and monitoring of compliance with the ESOMP and its associated procedures. Compliance with the ESOMP will be a monitored in each subcontract area. • Methods to monitor grievances. • Development of "Noise Mitigation Monitoring Plan" to confirm the adequacy of implemented mitigation measures during the design and construction. • Mitigation measures to adapt Climate Change Risks as defined in 3.6	**TRC**	Prior to operation	Procedure approved by TRC Management
3.2 COMMUNITY HEALTH, SAFETY AND SECURITY OPERATIONS MANAGEMENT PLAN			
A separate **Community Safety Operation Management Plan** will be produced to address the mitigation measures required during the operation of the railway, aimed at protecting the community and livestock from accidents with trains. The Plan should be in line with the IFCs EHS Guidelines for Railways, and will address the following aspects: • General Operational Rail Safety (train collision preventive systems, inspection and maintenance of the rail lines, safety programmes, etc.) • Transport of Dangerous Goods (safe handling and transportation of dangerous goods, safe packaging to prevent leakages, spill prevention and response procedures, emergency preparedness and response, safe refueling requirements, etc.) • Level Crossing Safety measures (installation of automatic gates at crossing locations, signals and warning systems, etc.)	**TRC**	Prior to operation	Plan approved by TRC Management

3. OPERATION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Pedestrian Safety (installation of warning signs, fencing, barriers, monitoring systems, alarm systems, community awareness training, etc.) The Plan also should include; • Community Safety Training Programme to raise awareness amongst the communities with respect to the risks of the railway such as unauthorized railway crossings, electrical risks, livestock crossings, etc. • Emergency Preparedness and Response Plan to address the actions to be taken in case of accidents, spills, floods, etc.			
3.3 WASTE MANAGEMENT			
Waste Management Procedure will be developed including the following information: • Development of a plan available to all staff at service areas, showing where different types of wastes can be deposited. • Regular inspections of sites to ensure waste facilities are correctly used and are kept clean and tidy. • Maintaining full records of the type, quantity, composition, origin, disposal destination and method of transport for all wastes. Collecting solid wastes on a regular basis and disposing appropriately at a designated disposal site. • Training of the personnel on proper collection and disposal of solid wastes. • Selection solid waste containers such that they are not affected by weather conditions and will prevent the waste from being spread around. • Labelling solid waste containers according to the waste to be disposed in it. Proper labelling will also prevent any hazardous waste to be disposed together with non-hazardous solid wastes. • Application of reuse/recycling methods to minimise solid waste generation. • Using certified/licensed facilities for final disposal of solid wastes, which cannot be reused/recycled.	**TRC**	Prior to operation	Procedure approved by TRC Management

3. OPERATION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Prevention of disposal of solid waste outside the designated sites and into any surface or groundwater source, or any other location that would potentially affect the environment and human settlements.			
3.4 LANDSCAPE MANAGEMENT			
Landscape Management Procedure will be developed including the following information: • Monitoring of the growth development, condition and general appearance of the vegetation planted along the railway • Management of hedges and trees and maintenance of grass. • Where initial plantings were not successful, replacement plantings will be carried out. As applicable, vegetation at the entrance of culverts (or grown into culverts) will be cut / trimmed to ensure that the functions of the structure for water and animal passage are preserved.	**TRC**	Prior to operation	Procedure approved by TRC Management
3.5 GREEN HOUSE GAS EMISSIONS			
GHG emissions associated with the operational phase of the SGR Project are primarily associated with the use of electric rolling stock (EMUs) and locomotives. A small number of measures for supporting the further efficiency of operations are as follows: • Prioritization of the procurement of highly efficient locomotives • Undertaking the selection and procurement of all traction units on a lifecycle cost of ownership basis • Minimising idling time all locomotives • Providing comprehensive efficient driving guidelines to locomotive operators, to promote fuel efficiency.	**TRC**	Prior to operation	Procedure approved by TRC Management
3.6 CLIMATE CHANGE RISK MANAGEMENT			
The following adaptation measures will be implemented during operation phase of SGR: • Carrying out regular checks to identify potential damage and stress as a result of thermal expansion before major damage to infrastructure occurs such as bridge failure.	**TRC**	Prior to operation	Procedure approved by TRC Management

3. OPERATION PHASE	RESPONSIBILITY	TIMING	INDICATORS FOR COMPLETION
• Checking the bridge footings for scour, and remove any debris which builds up which could increase the rate of scour. • Ensuring that fire policy is in place, and staff are trained and practise drills. • Ensuring any cut throughs, bridges and passes are stable, by undertaking surveys and then installing measures which reduce the risk of landslides such as rock anchors and retaining walls. • Clearing the roads or tracks of debris and repairing urgently to reduce disruption to operation as much as possible			

4. ENVIRONMENTAL MONITORING PLAN				
	RESPONSIBILITY	**LOCATION**	**FREQUENCY/TIMING**	**THRESHOLD LEVEL[1] (IF APPLICABLE)**
4.1 WASTEWATER DISCHARGES TO WATER BODIES – SURFACE WATER RUNOFF				
Construction Phase: Parameters defined in Tanzania Water Resources Management Act No. 11 of 2009. River crossings testing for low flow and high flow conditions (seasonal) - tested routinely during construction and operation phases. Operation Phase: • metals (lead, zinc, copper, cadmium, chromium, and nickel) • particulate matter • nutrients and herbicides used for management of vegetation in the right-of-way • contaminants of ecological concern (pesticides, sediment load and contaminants).	**YM** **TRC**	Upgradient and downgradient locations of stream Upgradient testing will inform of baseline conditions for surface water quality. Downgradient testing locations selected based on risk assessment, pending on receptors sensitivity (e.g. ecological and/or water resources).	The testing frequency will be selected based on the risk assessment of the downgradient receptor sensitivity (e.g. ecological and/or water resources);	As defined in Tanzania Water Resources Management Act No. 11 of 2009 Upgradient Conditions (reference)

[1] Unless not specified otherwise in permits/licenses, whichever of EU, IFC EHS Guidelines and national threshold levels is most stringent, applies.

4. ENVIRONMENTAL MONITORING PLAN

	RESPONSIBILITY	LOCATION	FREQUENCY/TIMING	THRESHOLD LEVEL[1] (IF APPLICABLE)
4.2 WASTEWATER DISCHARGES TO WATER BODIES-DIRECT OUTFALL				
Parameters defined in Tanzania Water resources Management Act, 2009; Environmental Management (Water Quality Standards) Regulations, 2007; Water Utilization (Control and Regulation) Act, 1974 Domestic wastewater treatment plants (Table 21.1 and IFC EHS General Guideline): • BOD • COD • TSS • pH • Total nitrogen • Total phosphorus Oil Water Separator in line with vehicle maintenance repairs (Table 18): • Oil and grease NH4-N • CN^- • Total Chromium • Fish biotesting • pH Batch Plant and related washing activities • pH • temperature <u>Operation Phase</u>: Domestic wastewater treatment plants (Table 21.1 and IFC EHS General Guideline): • BOD • COD • TSS • pH • Total nitrogen	**YM** **TRC**	Domestic wastewater Treatment Plants, oil water separators at construction Camps and project site areas during construction phase Wastewater generated during concrete batch plant operations and washing of cement trucks Domestic wastewater Treatment Plants, oil water separators at resting and maintenance areas and repair activities during operation phase	Based on permitting requirements	Domestic wastewater treatment plants (Tanzania Water resources Management Act, 2009; Environmental Management (Water Quality Standards) Regulations, 2007; Water Utilization (Control and Regulation) Act, 1974 and IFC EHS General Guidelines) Oil Water Separator in line with vehicle maintenance repairs (Table 18)

4. ENVIRONMENTAL MONITORING PLAN				
	RESPONSIBILITY	**LOCATION**	**FREQUENCY/TIMING**	**THRESHOLD LEVEL[1] (IF APPLICABLE)**
• Total phosphorus Oil Water Separator in line with vehicle maintenance repairs (Table 18): • Oil and grease NH4-N • CN^- • Total Chromium • Fish biotesting • pH				
4.3 WATER USE AT PROJECT FACILITIES				
Quantity of water abstracted from groundwater/surface water sources or water supply from utilities providers.	**YM**	At each Project facility with water supply from indicated sources	Ongoing, reported monthly	As specified in site permit/license, if applicable
Water quality in case of supply from own source. Parameters as per applicable permits/licenses/regulations and type of use (e.g. potable/ sanitary/ industrial.	**YM**	From each own source	Ongoing, reported monthly, unless otherwise specified in any permit/license	
4.4 SOIL				
Paremeters defined in Tanzania Environmental Management (Soil quality standards) Regulations (2007).	**YM**	At sites of suspected contaminated land including: • areas of known or suspected third-party contamination areas where spills/contamination occurred during construction (excluding minor	Before construction works initiation After construction works finalization	Risk-based with consideration of the provisions of the Tanzania Environmental Management (Soil quality standards) Regulations (2007).

4. ENVIRONMENTAL MONITORING PLAN				
	RESPONSIBILITY	**LOCATION**	**FREQUENCY/TIMING**	**THRESHOLD LEVEL[1] (IF APPLICABLE)**
		spills, where visual observation confirms complete removal of contaminated soil)		
4.5 AIR EMISSIONS FROM CONSTRUCTION EQUIPMENTS				
Visual inspections of dust generation and dust suppression controls	**YM**	Project sites and impacted third party sites, such as adjacent receptors or along site access routes	Daily or more frequently during high risk, dry and windy conditions.	N/A
Emissions from stationary/non-stationary sources	**YM**	Project site	Continuously	Unless not specified otherwise in permits/licenses, whichever of EU, IFC EHS Guidelines and national threshold levels is most stringent, applies.

4. ENVIRONMENTAL MONITORING PLAN				
	RESPONSIBILITY	**LOCATION**	**FREQUENCY/TIMING**	**THRESHOLD LEVEL[1] (IF APPLICABLE)**
4.6 NOISE EMISSIONS AND VIBRATION FROM CONSTRUCTION EQUIPMENT				
Noise levels monitoring	**YM**	At sensitive receptors (as identified in ESIA and pre-construction surveys)	As necessary, risk-based pending on works performed During planned out of hours works	Unless not specified otherwise in permits/licenses, whichever of EU, IFC EHS Guidelines and national threshold levels is most stringent, applies.
Vibration monitoring	**YM**	Inside representative occupied properties that are within 100 m of major vibration-generating activities (e.g. driven piling or vibro-compaction)	As necessary, risk-based pending on works performed	Unless not specified otherwise in permits/licenses, whichever of EU, IFC EHS Guidelines and national threshold levels is most stringent, applies.
4.7 BIODIVERSITY MONITORING				
In accordance with Biodiversity Action Plan	**YM**	Overall	Before and during construction works	N/A
In accordance with Biodiversity Action Plan	**YM**	Overall	Before and during construction works	N/A