REPUBLIC OF KENYA

National Environment Management Authority

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ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT FOR THE PROPOSED CONSTRUCTION OF THE KISUMU – MALABA STANDARD GAUGE RAILWAY PHASE 2C

Pursuant to Section 59 of the Environmental Management and Coordination Act CAP 387, the National Environment Management Authority (NEMA) has received an Environmental Impact Assessment Study Report for the above proposed project.

The proponent, **Kenya Railways Corporation (KRC),** proposes to construct the Standard Gauge Railway (SGR), Phase 2C, a track of approximately 107km from Kisumu to Malaba aimed at improving the regional connectivity from Mombasa to Malaba and Kampala with potential links to South Sudan, Rwanda and Democratic Republic of Congo.

The following are the anticipated impacts and proposed mitigation measures:

Impacts	Mitigation Measures/Controls
Vegetation Clearance/ Clearance of urban and farm trees	• Equipment and tools brought in for reuse from other project sites should be screened and cleaned of alien / invasive propagules to avoid introduction in the project area • Borrow sites should be inspected for invasive and colonizer propagules • Restrict vegetation clearing to demarcated project site boundaries. • Establishment of woodlots on affected farms to help restore tree cover. • Limiting clearing to the smallest area necessary for the project to reduce habitat loss and soil exposure. • Implement tree planting programs to replace cleared trees. • Work with farmers to promote agro forestry initiatives.
Disturbance of indigenous forests	• Align project elements (e.g. access roads, utility corridors) along disturbed or degraded areas. • Establish and maintain buffer zones around high-value conservation areas, riparian zones, and wetlands. • Safely relocate fauna from the project area in coordination with wildlife authorities, especially for species with limited mobility or breeding grounds. • Involve local communities in forest protection, replanting, and monitoring initiatives. • Provide support for non-forest-based income activities (e.g., beekeeping, agroforestry, eco-tourism) to reduce pressure on forest resources.
Loss of pasture for livestock and wildlife	• Incorporate wildlife corridors and livestock crossings (underpasses and overpasses) to ensure safe and uninterrupted movement to pasture areas. • Ensure transparent and timely disclosure of all relevant project information, particularly concerning activities that may affect local communities' rights, land use, and livelihoods. • Provide advance notice to local farmers, allowing sufficient time for the harvesting of grass
Oil Spillage	• Develop a site-specific SPCC plan. • Store oil and fuel in tanks or containers with bunds or drip trays capable. • Regularly inspect construction machinery for leaks in hydraulic systems, fuel tanks, and lubrication lines. • Ensure that all construction equipment is well-maintained to prevent accidental leaks.
Blasting and rock excavation	• Blasting should be carried out in accordance with a site-specific Blast Management Plan (BMP). • Establishment of blast exclusion zones with proper signage and fencing to restrict access during detonation. • Implementing dust suppression strategies, such as water spraying and wind barriers, should be implemented before and after blasting.
Poor disposal of excavated materials and equipment	• Separate excavated materials into reusable and non-reusable/spoiled materials. • Use inert excavated materials for backfilling, slope stabilization, or forming embankments. • Transport non-reusable materials to approved dumping sites. • Salvage metals, rubber parts, and electronics for recycling through licensed waste handlers.
Soil Erosion	• Conduct geotechnical and hydrological assessments to identify erosion-prone zones. • Develop erosion susceptibility maps to inform alignment design, cut-and-fill balances, and drainage planning. • Schedule earthworks during dry seasons to minimize rainfall-induced erosion. • Replant native grasses, shrubs, or fast-growing groundcover species as soon as construction is complete in each section.
Slope Destabilization	• Minimize the number of cut-and-fill earthworks by optimizing rail alignment and grading plans. • Install subsurface and surface drainage (e.g., French drains, interceptor ditches, and weep holes in retaining walls) to prevent water accumulation that weakens soil.
Climate change	• Minimize vegetation clearance by optimizing the construction corridor and integrating natural landscape features into the design where possible. • Implement carbon offset measures, such as reforestation or afforestation programs. • Incorporate climate resilience and low-carbon strategies into regional development planning to ensure that induced growth does not exacerbate environmental degradation
Dust Emission	• Clear only the areas required for immediate work to reduce the amount of exposed, dust-prone soil. • Apply water to lose soil prior to and during earthworks (excavation, grading, backfilling) to suppress dust at the source. • Regularly spray water or non-toxic dust suppressants on access and haul roads, especially during dry or windy conditions. • Minimize drop heights when loading or unloading fine materials like sand or ballast, and use enclosed conveyors or hoppers when available.
Hydrology and water quality degradation	• Install geotextile silt fences or sediment traps around exposed soils, stockpiles, and drainage paths to intercept suspended solids. • Construct temporary settling basins to capture and treat stormwater runoff from construction areas before discharge into natural water bodies • Treat wastewater from concrete batching, equipment washing, or drilling using sediment traps or pH neutralization before discharge. • Prohibit direct discharge of untreated wastewater or sewage into rivers, lakes, wetlands, or groundwater. • Maintain buffer zones (e.g., 30 meters) along rivers and streams to act as natural filters. • Avoid construction in or near wetlands; where unavoidable, apply wetland restoration and compensation measures.
Solid Waste Generation	• Prioritize options of waste reduction, reuse and recycling. • Soil emanating from excavations will be reused for landscaping followed by revegetation of the landscaped areas. • Contract a NEMA certified waste collection firm to collect solid waste for disposal
Noise and vibrations	• Plan high-noise activities during daytime hours (e.g. 08:00–17:00) to minimize impact on nearby communities • Use new or well-maintained machinery designed with noise-reducing features (e.g. mufflers, silencers, acoustic enclosures). • Erect movable noise barriers (e.g. acoustic curtains, sound-insulating panels) around high-noise equipment like generators and compressors. • Implement traffic management plans to reduce vehicle idling and control speeds on site to reduce noise and vibration from transport.
Disruption of Public Utilities	• Coordinate with utility service providers and local authorities to map existing underground and overhead infrastructure accurately, • Integrated comprehensive surveys and utility mapping, coupled with robust monitoring frameworks. • Prepare detailed relocation plans approved by utility providers and schedule works during off-peak hours or planned outages. • Install protective barriers, sleeves, or around utilities that are close to excavation or piling activities.
Poor site management and control leading to accidents and incidences	• Nominate persons with defined responsibility for EHS • Through relevant training, ensure everyone on site is aware of their responsibilities and liabilities with respect to the environment. • Through site induction, make staff and visitors aware of Project environmental issues and environmental standards.
Road Accidents	• Any abnormal loads for the project must be transported in line with the traffic rules, including public notification and use of escort cars. • Sensitize project staff on risks of over speeding while on site • Erect warning signs for approaching drivers at the points of entry to the project site
Disputes over employment	• Develop a grievance management system to manage grievances arising from the local labour force • Develop local labour recruitment plans, including disclosure of opportunities and partnership building with local support agencies / institutions.
Air Emissions	• Employ advanced engine technologies with Diesel Particulate Filters (DPFs), and selective catalytic reduction (SCR) systems to reduce NO_x and PM emissions. • Application of water sprays, chemical suppressants, and use of covered conveyors or enclosed handling facilities to reduce particulate matter during material transport and transfer operations. • Continuous ambient air quality monitoring near sensitive receptors and rail yard boundaries should be conducted to inform adaptive management
Solid Waste Generation	• Implement a comprehensive Waste Management Plan (WMP) encompassing waste minimization, segregation, and recycling strategies; • Training of staff and public awareness campaigns to reduce littering and promote responsible waste disposal; • Engagement with licensed waste handlers for safe disposal of hazardous wastes such as oils, solvents, and batteries in compliance with local regulations and international best practices.
Wildlife and Livestock accidents due to breached fence	• Conduct wildlife movement and behavior studies to identify high-crossing zones and optimize the placement of underpasses. • Utilize fencing materials that balance strength, flexibility, and visibility to reduce damage by animals and humans. • Design underpasses with appropriate dimensions, lighting, and natural substrate to encourage regular animal use. • Engage local communities and stakeholders in awareness programs to minimize human interference with fencing infrastructure.
Noise and Vibration	• Use ballast mats, under-sleeper pads, or floating slab track systems to absorb and dissipate vibration energy before it transmits to the ground. • Set speed limits in vibration-sensitive zones to significantly reduce both the amplitude and frequency of vibration. • Maintain appropriate setback distances between the railway and residential or sensitive land uses to prevent significant impacts. • Conduct noise and vibration monitoring to establish baseline levels and assess the effectiveness of mitigation measures as per EMCA (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009. • Workers performing in noisy working environment shall be provided with suitable ear protectors based on the expected noise levels
Climate change	• Adoption of low-emission locomotives, including electrified rail systems or hybrid alternatives to diesel engines. • Energy-efficient station infrastructure, powered by renewable energy sources (e.g., solar PV systems). • Afforestation or reforestation programs to offset unavoidable emissions and enhance carbon sequestration. • Integration of climate risk assessments into infrastructure design to ensure climate-resilient development and reduce vulnerability to climate variability.
Flooding/water ponding	• Integrate appropriately sized and strategically placed culverts, box drains, or small bridges along the embankment to allow unimpeded flow of water. • Ensure drainage structures are designed to handle peak flows based on historical flood data and climate change projections. • Consider vegetative stabilization techniques to improve slope integrity and absorb runoff. • Implement a maintenance schedule to inspect drainage structures for blockages or sedimentation and monitor embankment stability, especially during and after heavy rainfall.
Energy Consumption	• Use energy-efficient lighting (e.g., LED) in stations, offices, and maintenance yards. • Install solar panels at stations, signal systems, and maintenance yards for lighting and low-load applications. • Introduce or upgrade to electric or hybrid locomotives, where infrastructure allows.
Occupational Health & Safety of workers and visitors	• Ensure compliance with all standards and legally required health and safety regulations as per OSHA, 2007 revised in 2010. • Attach a full-time qualified safety and Health Officer • Provision of a standard First Aid kit and serviced Fire extinguishers at the railway stations at all times and train first aiders • Maintain an accident register and carry out accident and incidents investigations and implement corrective actions, • Installation and maintenance of warning signage and emergency contacts at appropriate locations depending on the hazards.

A full report of the proposed project is available for inspection during working hours at:

1. Director General
National Environment and
Management Authority (NEMA),
Popo Road, off Mombasa Road
P. O. Box 67839-00200,
NAIROBI.

2. County Director of Environment,
NAIROBI COUNTY.

A copy of the EIA report can be downloaded at **www.nema.go.ke**

NEMA invites members of the public to submit oral or written comments within **thirty (30) days** from the date of publication of this notice to the Director General, NEMA to assist the Authority in the decision making process for this project. Kindly quote **ref. No.NEMA/ENVIS/SR/00508**

Comments can also be e-mailed to **info@nema.go.ke**

Dr MAMO.B.MAMO EBS,
DIRECTOR GENERAL

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