

UNITED REPUBLIC OF TANZANIA

MINISTRY OF TRANSPORT



Railways Street/Sokoine Drive;

P. O. BOX 76959, Dar es Salaam, Tanzania

Tel: +255 (22) 2127403; Fax No: +255(22) 2127404

E-mail: md@rahco.go.tz

TATHMINI YA ATHARI ZA KIJAMII NA KIMAZINGIRA

MUHTASARI USIOKUWA WA KIUTENDAJI

MRADI WA KUJENGA MIUNDOMBINU YA KUDHIBITI ATHARI ZA MAFURIKO KWENYE RELI YA KATI - KATI YA KILOSA NA DODOMA (174KM), TANZANIA

Submitted to

National Environment Management Council
Regent Estate Plot No. 29/30
P.O Box 63154 Dar es Salaam, Tanzania
Tel Dir: +255 22 2774852
Tel: +255 22 2774889
Mob: +255 713 608930
Fax: +255 22 2774901
E-mail: dg@nemc.or.tz
Website: www.nemc.or.tz

Consultant

JSB
EnviDep Ltd.

*Environment and Development Management
Consultants*
Ubungo Plaza, 5th Floor
P.O Box 32312, Dar es Salaam (T)
Tel. +255 22 2461261, Mobile: +255757768737
E-mail: envidep@gmail.com

JUNE 2016

MUHTASARI USIOKUWA WA KIUTENDAJI

Jina la Mradi: Athari Kwa Mazingira na Jamii mradi wa hatua za utatuzi juu ya mafuriko yanayoikumba Reli ya kati – Kilosa mpaka Dodoma (174 km) katika Jamuhuri ya Muungano wa Tanzania

Mwenye Mradi: RELI ASSETS HOLDING COMPANY LIMITED (RAHCO)
Railways Street/Sokoine Drive;
S.L.P 76959,
Dar es Salaam, Tanzania
Simu: +255 (22) 2127403;
Nukushi: +255(22) 2127404
Barua pepe: md@rahco.go.tz
Kwa mawasiliano: Eng. Maizo Mgedzi

Wataalamu Washauri wa Mazingira:

JSB EnviDep Ltd.

Ubungo Plaza, Ghorofa ya tano.

S.L.B. 32312, Dar es Salaam; Simu: +255 22 2461261, +255 757 768737

Barua pepe: envidep@gmail.com (Tovuti: www.jsbenvidep.com)

Kwa mawasiliano: Prof. Jamidu Katima

Muhtasari na Uthibitisho wa Mradi

Kutokana na kuharibika kwa miundombinu na viwango vya ufanisi wa uendeshaji, ubebaji mizigo unaofanywa na Reli (TRL) umekuwa ukipungua zaidi ya miaka kutoka tani milioni 1.6 mwaka 2002 hadi tani milioni 0.15 mwaka 2013. Sababu za msingi za kuzorota kwa ufanisi ni pamoja na kutokuwepo na matengenezo duni. Aidha, mafuriko ya mwaka 2010 yaliharibu sehemu ya mfumo wa reli ya kati, kati ya Kilosa (katika Mkoa wa Morogoro) na Gulwe (mkoani Dodoma) na kupelekea kusimamisha huduma za treni kati ya Dar es Salaam na Dodoma kwa zaidi ya miezi mitatu. Mafuriko haya yamekuwa yakitokea mara kwa mara, na hivi karibuni yametokea mwezi Januari 2016. Ili kukidhi ukuaji unaotarajiwa wa kubeba mizigo kama matokeo ya utendaji mzuri wa uchumi, Benki ya Dunia, kwa kushirikiana na Reli Assets Holding Company (RAHCO) walifanya Upembuzi yakinifu (FS) kwa ajili ya maandalizi ya "Tanzania Intermodal na Reli Development Project (TIRP)" wa kukarabati kipande cha Dar es Salaam-Isaka. Aidha, Serikali ya Jamhuri ya Muungano wa Tanzania (URT) imeandaa mpango wa "Matokeo Makubwa Sasa (BRN)" katika sekta ya "Usafirishaji inayoitwa Long-Term Perspective Plan (LTPP)", na "Mpango wa Maendeleo wa Miaka Mitano", na pia " Mpango wa Miaka 10- ya Sekta ya usafirishaji na Uwekezaji Awamu ya 2 (TSIP2)", yote ikiwa na lengo la kujenga ushindani wa kuaminika katika mfumo wa usafiri. Ambapo mfumo wa usafiri wa reli umepewa kipaumbele cha juu kwa lengo la utekelezaji wa haraka juu ya athari zinazokuwa zinajitokeza.

Japan International Cooperation Agency (JICA) imetambua umuhimu wa kukarabati Reli ya Kati kutokana na matokeo ya " Kina ya Mpango wa Usafiri na maendeleo ya biashara Tanzania" wa (2011-14) unaofadhiliwa na JICA. Serikali ya Japan hatimaye ulifanya "Utafiti juu ya mradi wa kuiboresha reli ya Kati pamoja na ufanisi wa nishati" wa (2012-13), ambao ulibainisha kuwa tatizo la mafuriko linaloikabili maeneo kati ya Kilosa na Gulwe linaweza kuwa tatizo kubwa ya Reli Kati, na hivyo ilipendekeza kwamba hatua za utatuzi wa

mafuriko juu ya Reli ulinzi kuwa litatatuliwa kwa msaada toka Japan, ambayo inayosaidia na Benki ya dunia kupitia - TIRP

Hatua zilizopendekezwa za utatuzi wa mafuriko ni uchepushaji wa baadhi ya kipande cha Reli iliyopo takribani(25km) - hatua hii itahusisha uhamishaji wa reli mbali na maeneo yanayo kabiliwa na mafuriko na kuihamisha katika maeneo ya muinuko; Ulinzi wa kingo za Mito- hii itahusisha ufungaji wa gabions au matofali ya saruji ili kulinda kingo za mito dhidi ya mmomonyoko; huhamisha welekeo wa Mto - hii litahusishakubadili welekeo wa mto katika Mto Mzase na Maswara - hii itahusisha kubadilisha njia ya reli 60 hadi 80 ratili (lb) katika urefu wa 15km; Kufuatilia rectification - hii ni pamoja na kazi madogo madogo kama vile nafasi ya ballast, na sleepers, fixing connectors; Ujenzi wa barabara ya muda - hii itasaidia kuyafikia maeneo kwa uharaka kupata na pia itahusisha ujenzi wa barabara ya muda ya takribani 96km; na ujenzi wa Makazi – Makazi hayo yatatumiwa na wakazi watakao hamishwa kutoka Kijiji cha Maguru.

Ili kuidhi matakwa ya Kimazingira ya JICA pamoja na Jamuhuri ya Muungano wa Tanzania, Kampuni ya JSB- EnviDep ya Dar es Salaam imepewa kazi ya kufanya Tathmini ya Athari za Mazingira na kijamii kwa hatua zilizopendekezwa za utatuzi wa mafuriko juu ya Reli kama sehemu ya upembuzi yakinifu wa mradi mzima.

Taarifa juu ya Mazingira ya Eneo la Mradi

Sehemu kubwa ya mradi huo upo katika Wilaya ya Kilosa na Wilaya ya Mpwapwa, ambayo zina tabia tofauti za kimazingira. Kwa upande wa Kilosa hali ya hewa ambayo ni baridi. hali ya hewa ni ya kitropiki savannah (baridikavu msimu), Inagusa wastani wa miezi nane ya mvua (Oktoba - Mei), na mvua kila mwaka kuanzia kati ya 1,000 hadi 1,400mm, Wastani wa joto ni kawaida kati ya 25 ° C katika mji Kilosa na hasa hasa katika mwezi Machi (30°C) na mwezi Julai (19 ° C). Kilosa ina mito kadhaa mikubwa ikiwa ni Wami na Ruaha; Plateau ambayo iko katika kaskazini ya wilaya, na urefu wa karibu 1,100m, ina sifa ya mabonde na milima na pia eneo ni la rutuba, Ardhi katika Kilosa kimsingi kimsingi imegawanyika katika makundi matano: ya kilimo (37.5 per cent), asili ya malisho (33.5 per cent), Mikumi National Park (asilimia 22.5), hifadhi za misitu (asilimia 5.5) maeneo ya mijini, maji na mabwawa (asilimia 1). Shughuli za kilimo na ufugaji zinafanywa kwa ujumla, kuna maeneo ambayo ni ardhi kijiji na ardhi binafsi, wakati hifadhi ya mbuga ya Mikumi na za misitu ni maeneo yanayolindwa na na kumilikiwa na serikali.

Wilaya ya Mpwapwa ni moja ya wilaya sita mkoani Dodoma, iko kilomita 120 kutoka Manispaa ya Dodoma. IPO kati ya latitudo 6°00 'na 7°30" Afrika ya Equator na kati Longitude 35°45' na 37° 00' Mashariki ya Greenwich. Mpwapwa ina msimu mfupi wa mvua ambayo huanza katika miezi ya Desemba na kuishia mwezi Aprili. Mvua ni kati ya 600 - 700mm kwa mwaka. wastani wa kima cha chini cha joto ni 15.5oC, mwezi wa baridi huwa Agosti (13.8°C). Wastani kiwango cha joto ni 27.5°C, mwezi wa joto huwa ni Novemba (30.2°C).

Eneo la mradi kutoka Kilosa mpaka Ihumwe ambapo reli hupita ina sehemu mbili tofauti za kimazingira: Kilosa mpaka Gulwe na Gulwe mpaka Ihumwe. Kilosa mpaka Gulwe: Reli kutoka Kilosa mpk Gulwe inapita katika bonde iliyoambata na safu za vilima; upande wa kushoto (Milima ya Rubeho) na upande wa kulia(Milima ya Ukaguru) mpaka kuelekea Kaskazini Magharibi. Milima imejumuishia miamba ya wazi na baadhi ya maeneo ya kina kirefu chenye udongo mwepesi,athari nyingine iliyobainishwa ni juu ya uoto wa asili . Gulwe mpaka Ihumwe : sehemu hii haipo kati ya safu ya milima lakini ina sifa ya mteremko

mdogo kuelekea Mashariki na Kusini Mashariki. Mteremko m umeundwa / kutengenezwa kwa mchanga mwepesi kutoka Kaskazini na Kaskazini Magharibi.

Kihaidrolojia, eneo la mradi liko ndani ya bonde la mto Wami / Ruvu upande wa mashariki wa Tanzania. Bonde la Wami limefika hadi latitudo kati ya 5° na 7°, Kusini na kati ya 36° na 39° longitude, Mashariki. Maji uso rasilimali katika eneo hili kwa hiyo inaongozwa na mito ya asili. Sifa nyingine ya maji ni mabwawa yakutengeneza na mwanadamu pamoja na mabwawa ambayo mengi huwa na uhusiano na mito ya asili iliyopo. Mto Kinyasungwe katika mkoa wa Dodoma ndo wenye chanzo kikubwa cha maji katika eneo la mradi. Ni mto wa msimu unaotoka maeneo kame ya mkoa wa Dodoma na unapita kusini-mashariki na kumwaga maji yake katika Mto Mkondoa. Mito mingine katika mwambao huo ni Mzase, Sikoko, Kidibo, Maswara na Mangweta. Kabla tafiti za maji zilizofanywa katika eneo la mradi walibainisha kuwa juu ya tatizo la udongo ni kutokana na mtiririko wa maji kutoka juu kuelekea chini. Taarifa za athari za maji ni pamoja na ukataji miti na kilimo kisicho endelevu na ufugaji katika maeneo ya bonde pamoja baadhi ya sehemu. Matumizi mengine ni pamoja na kuogelea, usafirshaji wa magogo wakati wa msimu wa mvua, shughuli za ujenzi hasa matofali na maisha ya viumbe vya majini. Rasilimali chini ya ardhi katika eneo la mradi ni kutokana na kuwepo kwa visima vifupi na virefu. Visima vipo kwa wingi na wakati wa utafiti hali hii zaidi ilionekana katika mwambao wa mto Mkondoa (Kilosa) kuliko Kinyasungwe (Dodoma).

Katika eneo la mradi, samaki wanaopatikana kwa wingi ni aina ya kuyu wadogo, kambale, perege na ningu. Ila pia kuna mkunga na mbalafu. Kati ya samaki hawa ni samaki jamii ya ningu na kuyu wadogo na mkunga ndio wenye tabia ya kusafiri masafa marefu. Samaki wakubwa wakubwa walipatikana kwenye eneo la bwawa la Gulwe. Mbali na samaki wanyama wengine wanaopatikana mitoni ni Kenge, fisi maji, nyoka na mamba ambao hawa wanawanaopatikana tu katika mto Lumuma. Kutokana na mmomonyoko wa udongo unaotokea majira ya masika, mito ya Kinyasungwe na Mkondoa hupokea tope jingi linaloletwa na maji ya mvua. Tope hili hufanya maisha ya viumbe wa majini kuwa magumu kwa vile huchafua na kugandisha matamvua yanayotumiwa na samaki kupumua majini. Hivyo aina ya samaki wanaopatikana katika mito ya Kinyasungwe na Mkondoa ni wale tu amabo wanaweza kustahimili hali ngumu ya mazingira.

Eneo la mradi linaangukia katika uoto unaojulikana kama Zambezia na Masai-Somali yenye mimea kadhaa ya asili. Eneo hili lina matingatinga na mashamba yenye mimea isiyokuwa ya sili ya hapa, mazao ya chakula, miti aina ya miombo, miti inayoota kando ya mito na mimiea inayyopendelea maeneo yenye chumvi chumvi. Pia katika Msitu uliopo kati ya Kitete na Gulwe kuna aina fulani ya miti ya Migunga (*Acacia commiphora*) ambayo iko katika kundi la mimea inayoelekea kutoweka, na miti mingi inayotumika kwa dawa za asili.

Aina kumi na moja ya wanyama aina ya jamii ya vyura, aina 23 wa jamii ya reptilia, aina 26 wa jamii ya mammalia, na aina 126 za ndege walipatikana katika eneo la mradi. Eneo hili limeshavurugwa sana kutokana na shughuli za binadamu zinazoathiri maeneo wanayokaa wanyama. Wanyama wanaoonekana kwa wingi ni pamoja na ngedere, nyani, nguchiro, vicheche, nyoka na mijusi. Kati ya hawa wanyama ni aina chache tu za mijusi wanaojulikana kama “*Tachylepis magaritifera*” na “*Acanthocercus articollis*” na aina mbili tu za ndege akiwemo Kasuku anayejulikana kama “*Agapornis fischeri*” na hondohondo anayelitwa “*Tockus ruahae*” ndiyo wako katika kundi la wanayama wanaoeleka kutoweka.

Hali ya kiutamaduni ya Mikoa ya Morogoro na Dodoma hasa Wilaya za Kilosa na Mpwapwa Wilaya bado kiasi haijulikani. tafiti zilizofanywa katika maeneo hayo wakati wa miaka ya 1980 na 1990 umebaini vifaa vya utamaduni bado ni vile vya miaka ya zana za mawe “Stone Age (SA)”, vyungu vya zama za vyuma “Iron Age (IA)” na viashiria vya chuma smelting shughuli kale kuwa ni pamoja na slag, tuyeres na tanuu. Hali hii ya utamaduni ilifanyika katika haya maeneo kati ya karne ya 6 na karne ya 15AD. Pia baadhi ya kazi za sanaa hasa utengenezaji wa vyungu kina “Tiw / Tana variants” walivipata kutoka mji wa Dakawa zinaonyesha mwingiliano kati ya pwani na mikoani. Kwa mfano Mkadage, sehemu moja kubwa ya makumbusho ya kufua vyuma ili bainishwa. Kutawanywa kwa makazi na pia nako kulibainishwa katika kijiji cha Munisagara. Wakati vigae vichache vya kati ya karne ya 17 na 19 wavilipatikana katika pointi ya 0268109/9253800. Kama Mkadage na Munisagara, lakini kijiji cha Kikundi walionekana kuwa tajiri katika suala la akiolojia. Vigae vya vipindi tofauti kuanzia karne ya 8 hadi 18 vilionekana katika maeneo ya jirani ambapo Reli itahamishiwa.

Athari za mazingira zilizobainishwa ni pamoja na: mmomonyoko wa udongo - sehemu ya kati ya Kilosa na Gulwe imekuwa ikiathirika kwa kiasi kikubwa na mmomonyoko wa udongo kando kando ya mto kutokana na mtiririko wa maji (kusambaa kwa mto), kiasi , kasi ya maji ya mto kwamba zinazo bomoa kingo za mito na hivyo kuongeza mmomonyoko .; Matope - matope pia alioneka kuwa ni tatizo kubwa katika eneo la mradi. Matope huathiri vipimo vya mto, na kusababisha mifereji ya maji kando ya reli kuziba. Ardhi kuyumba baadhi ya maeneo (maporomoko ya ardhi n.k.)

Aina ya makabila katika eneo la utafiti zinaweza kugawanywa katika aina mbili, k.m. kati ya wale walipo Kilosa na Dodoma. Kilosa kuna mchanganyiko wa makabila, Ukweli huu ni sambamba na historia ya wilaya hii kuwa ni moja ya maeneo yaliyopkuwa na mashamba makubwa ya mkonge tangu kipindi cha ukoloni. Iliyochukulia kuwavutia wafanyakazi wahamiaji kutoka sehemu mbalimbali za Tanzania. Kwa sababu hii, kuna msururu wa vikundi vya makabila katika eneo hili , ambayo ni: Hehe, Ha, Sagara , Kaguru , Gogo , Sukuma / Wanyamwezi na wafugaji wa Kimasai na Mang'ati, n.k Tofauti na Kilosa, (ambapo kuna msururu wa makabila) eneo katika Dodoma inaongozwa na kundi moja kikabila ambayo ni wa Gogo na pia kuna makundi mengine ya kikabila kama vile Hehe na Wanyamwezi

Kilimo ni shughuli kuu ya kiuchumi katika eneo la mradi na kufuatiwa na ufugaji.Mazao ya kudumu na msimu vyote vinalimwa Kilosa.Mazao hayo ni pamoja na ndizi, mahindi, maharage ya soya , alizeti, ufuta , vitunguu, maembe,miwa n.k.katika Mpwapwa kwa upande mwingine, mvua ni duni- na hunyesha mara moja kwa mwaka. Hivyo kilimo ni kwa msimuna pia hulima mazao ya msimu hasa mahindi , karanga ; alizeti nk katika miji yote miwili Kilosa na Mpwapwa teknolojia ya kilimo bado ni ya chini. Ufugaji ni shughuli ya pili ya kiuchumi katika eneo la mradi, Ufugaji upo zaidi Dodoma kuliko Kilosa kutokana na ya hali ya hewa ya ukavu ya Dodoma ambayo inawafanya kilimo kwao ni kipindi tu cha msimu

Katika eneo lote la mradi, matukio ya uhaba wa chakula yamebainishwa. Uhaba wa chakula Kilosa ulitokana na mafuriko ya mto Mkondoa ambayo ilisemekana yaliondoa mazao yote yanayolimwa katika bonde la mto. Aidha, kupungua kwa kina cha Mto Mkondoa kutokana na matope imesababisha uwezekano wa shughuli za uvuvi katika mto huo kuwa mdogo zaidi na kuchangia kwa ukosefu wa chakula na kipato. Katika Dodoma kwa upande mwingine, na hasa Godegode, Gulwe na Kisisi,uhaba wa chakula umetokana na ukame wa mara kwa mara ambayo huaribu mazao kabla ya kukomaa.

Ushirikishwaji wa wadau wa mradi katika mchakato wa tathmini ya mazingira

ESIA ilihusisha pamoja na kushauriana na wadau mbalimbali katika ngazi mbalimbali ikiwa ni pamoja na mamlaka ya kitaifa, Wilaya, na jamii. Mbinu shirikishi ikiwa ni pamoja na mikutano ya wadau, uchunguzi, na mahojiano vilitumiwa. Taarifa nyingine muhimu zilipatikana kwa njia ya majadiliano na watoa habari husika na kwa kupitia upya, nyaraka mbalimbali zinazohusiana na mradi

Matarajio chanya

- Fursa za ajira kwa wenyeji
- Urahisi wa usafirishaji wa watu na bidhaa
- Kuongezeka kwa kipato cha kila mwananchi

Masuala yote yaliyotolewa na wadau, bila kujali umuhimu yote yamezingatiwa. Orodha ya wenyemradi, Washauri welekezi, Mamalaka huska na wadaun wengine na mashirika mbalimbali

Washauri welekezi waliweza kuongea na baadhi ya wadau:

Ngazi ya Kitaifa

- Wizara ya Ujenzi, Uchukuzi na Mawasiliano
- Wizara ya Ardhi Nyumba na Makazi
- Wizara ya Maliasili na Utalii
- SUMATRA

Ngazi ya Mkoa

- Ofisi ya mkuu wa Mkoa Morogoro
- Ofisi ya katibu Tawala Mkoa wa Morogoro
- Ofisi ya mkuu wa Mkoa Dodoma
- Ofisi ya katibu Tawala Mkoa wa Dodoma

Ngazi ya Wilaya

- Ofisi ya Mkurungezi wa halmashauri ya Kilosa
- Ofisi ya Mkurungezi wa halmashauri ya Mpwapa
- Maafisa wa ngazi mbalimbali halmashauri ya Kilosa wa: Ardhi, Maendeleo ya Jamii, Maliasili, Mhandisi
- Maafisa wa ngazi mbalimbali halmashauri ya Kilosa wa: Ardhi, Maendeleo ya Jamii, Maliasili, Mhandisi

Ngazi ya Kata

- Watendaji wa kata za: Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe
- Kamati za maendeleo ya Kata: Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe

Ngazi ya Kijiji

- Watendaji wa Vijiji vya: Munisagara Village, Mzaganza Village, Kikundi Village, Godegode na Gulwe
- Kamati za maendeleo ya vijiji: Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe

Watu binafsi

Waganga wa kienyeji

Maoni ya wananchi

Kutokana na mashauriano masuala yafuatayo ya usimamizi wa mazingira na kijamii pamoja na mradi yalitolewa :

- Upotevu wa uoto wa asili na wanyamapori kutokana na kipindi cha maandalizi ya eneo wakati wa hatua za utatuzi wa mafuriko / kazi ya ujenzi
- uchafuzi wa hewa kutokana na shughuli matengenezo ya reli
- kupoteza kwa ardhi ya kilimo na makazi
- Kuingilia mpangilio wa kijiji makazi na mazingira kwa ujumla
- Kuongezeka kwa matukio ya ajali
- Kuongezeka kwa maambukizi ya VVU kutoka kwa wageni / hatimaye ongezeko la wanaosumbuliwa UKIMWI katika eneo la mradi
- Uharibifu kutoka vifaa vya ujenzi

Maelezo ya madhara makubwa

Usanifu / utekelezaji

- Misukosuko ya ardhi / mmomonyoko wa udongo katika eneo la mradi na nje ya eneo - hii ini suala la muhimu kwa kuzingatia kwamba eneo hilo linakabiliwa na mmomonyoko wa udongo, maporomoko ya ardhi na uoto wa asili vimekuwa vikikatwa baadhi ya maeneo
- Kupoteza / uharibifu / usumbufu wa uoto wa asili na viumbe hai zivilivyomo ndani ya ukanda mradi ambazo ziko katika takwimu IUCN na CITES
- Kutililisha /kumwaga mafuta na nishati katika mazingira ya maji – kumwaga mafuta ndani ya vyanzo vya maji itakuwa na athari kubwa juu ya viumbe na mazingira ya majini
- Uchafuzi wa ardhi na maji ya pamoja na uchafu na taka nyingine - taka kuingia katika maji itakuwa athari m kwa viumbe waishio majini

Awamu ya ujenzi

- kuharibika kwa ubora wa hali ya hewa & mchango wa mabadiliko ya tabia nchi kutokana na kutolewa kwa vumbi ,gesi chafu na uchafu mwingine noxious hewa - kutakuwa na vifaa vingi vitakavyo tumia mafuta na kusafiri katika barabara mbovu - hivyo kusabaisha kutolewa kwa vumbi na gesi nyinginizo baadhi ambazo zina kiasi kikubwa cha athari mbaya kwa afya.

Athari za kijamii

Uchaguzi wa eneo /Uandaaji wa Eneo

- kubadilisha muundo wa idadi ya watu na ubora wa maisha kutokana na utohoaji wa maeneo - baadhi ya wanakijiji katika kijiji cha Maguru watahamishwa . Watu wengine watapoteza mali zao, ardhi na vipato kutokana na matokeo ya mradi
- hatari kwa afya na usalama kutokana na shughuli za Ujenzi - Wafanyakazi na wasio wafanyakazi watakuwa katika hatari za kelele , mitetemo na ajali n kutokana na shughuli za ujenzi huo

Awamu ya Ujenzi / Utumiaji

- Hatari kwa Jamii : ajali za barabarani, Hatari ya binadamu- binadamu ya maambukizi ya magonjwa (HIV nk) - kutakuwa na utitiri wa wafanyakazi kutoka sehemu mbalimbali za Tanzania . Watakuwa wakiishi bila familia zao. Hii inaweza kuwa kichocheo cha mahusiano ya karibu pamoja na wananchi
- Kupoteza kwa maisha na mali kutokana na ajari au kuanguka kwa treni, mgongano na treni ikawa ni matokeo ya kuongezeka kwa foleni za treni - hii inaweza kutokea

kama hakutakuwa na udhibiti mzuri wa injini, na muungiliano wa watu, hasa kwa kuzingatia kwamba mradi utasababisha kuongezeka kwa masafara wa treni.

- Ongezeko la shinikizo la ziada la madai ya huduma za kijamii na rasilimali (kuongeza watumiaji wa maji, watumiaji wa choo) - kuongezeka kwa idadi ya watu kutapelekea kuongezeka kwa mahitaji ya huduma za jamii.
- Kuongezeka kwa masafa ya treni na kwa hiyo kurahisisha usafiri kwa abiria na mizigo
- Uharibifu na wizi wa miundo / vifaa na vitu vinavyobebeka - hii ilisemekana kuwa ni tatizo kubwa kwa watu kuharibu miundombinu ya reli kwa kuvitumia kama vyuma chakavu. Biashara ya vyuma chakavu kuongeza hivyo itaendelea kuwa tatizo kwa miundombinu ya reli.

Athari chanya

- Kuongezeka kwa masafa ya treni na kwa hiyo kurahisisha usafiri kwa abiria na mizigo
- Uimala wa barabara kutoka kubeba mizigo mizito kama ilivyo utaratibu wa sasa
- Kuongezeka kwa mapato ya wauzaji wa ndani
- Fursa za ajira
- Kuongezeka kwa mapato na kuboresha vipato kutokana na ongezeko la uzalishaji wa shughuli za kilimo, za biashara, kutokana na harakati za watu ndani ya mkoa na n watu kutoka nchi zinazopakana
- Kuboresha faraja kwa abiria kutokana na kuongezeka kwa masafa ya treni
- Kuboresha ubora wa mazingira na muonekano pamoja na uimara wa kingo za mito

Mapendekezo na mpango kwa ajili ya kukabiliana na athari / usimamizi wa mazingira na kijamii

kipengele cha Mradi wa /Athari	Hatua za uthibiti / Mpango wa Usimamizi
USANIFU/UTEKELEZAJI WA MRADI	
Athari # 1: misukosuko / mmomonyoko wa udongo katika ndani na nje ya eneo la Mradi	Hatua zifuatazo zitatekelezwa : <ul style="list-style-type: none"> ▪ Kutekeleza hatua za udhibiti na ukarabati wa mmomonyoko wa udongo wa ardhi katika maeneo yote ya mradi na maeneo ya nje ya mradi ▪ Kuhakikisha udhibiti mkubwa wa malori, magari kuendesha tu ndani ya eneo la mradi ▪ Kila inapowezekana shughuli za ujenzi zifanyike katika kipindi kisicho kuwa (kmvua na upepo) ili kuzuia mmomonyoko wa udongo ▪ RAHCO watafuatilia maeneo yote yaliyo wazi katika kipindi cha mvua katika kipindi cha awamu ya utekelezaji wa mradi
Athari # 2: uharibifu / Hasara / usumbufu wa uoto wa asili na aina za viumbe hai.	Hatua zifuatazo zitatekelezwa : <p>Uoto wa Asili</p> <ul style="list-style-type: none"> ▪ Kuanzisha/ kutekeleza na Kuendeleza mpango wa kuifadhi viumbe hai na uoto wa Asili. ▪ Kuwafundisha wafanyakazi kuepuka kukata miti na misitu pamoja na uharibifu wa udongo katika maeneo ya maradi <p>Hatua za uthibiti</p> <ul style="list-style-type: none"> ▪ Kuepuka maeneo maalum ya mazalia ya wanyamapori ▪ Kama eneo kubwa la mamalia iko ndani eneo la ujenzi . <p>Hatua za kupunguza makali ya kelele</p> <p>Mkandarasi atakuwa akitekeleza hatua zifuatazo:</p> <ul style="list-style-type: none"> ▪ Kutumia mitambo na vifaa katika hali ya utulivu na kuepukana mbio na kelele kubwa ▪ Kuendeleza na kutekeleza utendaji bora - mbinu ya kufanya kazi ▪ Kuzuia masaa ya kazi - ujenzi ufanyike wakati wa mchana hasa katika sehemu za makazi
Athari # 3: Kupungua kwa maliasili katika vyazo	RAHCO watasimamia <ul style="list-style-type: none"> ▪ Kuhakikisha kwamba vifaa vya ujenzi kama vile mchanga, changarawe, mawe ya asili, na vinanunuliwa kutoka makampuni ya machimbo ya mawe na mchanga yaliyosajiliwa ▪ Kumsimamia Mkandarasi ili kuepuka juu manunuzi ya kupitiliza ya vifaa vya ujenzi

<p>Athari # 4: Kuharibika kwa ubora wa hewa & mchango wa mabadiliko ya tabia nchi kutokana na kutolewa kwa vumbi, gesi</p>	<p>Hatua zifuatazo zitatekelezwa :</p> <ul style="list-style-type: none"> ▪ Tumia njia bora za usimamizi wakati wa uchimbaji, kupakia na kusafirisha malighafi. ▪ Mafunzo kwa dereva ili kupunguza uzalishaji (hewa chafu , kuzima injini wakati magari hayatumiki). ▪ Matengenezo ya injini Mara kwa mara (kila mwezi)
<p>Athari # 5: kutiririsha kwa mafuta na vimiminika vingine katika maeneo ya mito</p>	<p>Hatua zifuatazo zitafuatwa :</p> <ul style="list-style-type: none"> ▪ Uhifadhi wa mafuta na vimiminika vingine vihifadhiwe angalau umbali wa mita 30 kutoka katika mito ▪ Vifaa vya mafuta visivyohamishika viwekewe mfumo wa kuweza kutambua kama kuna kutoka uvujaji wa mafuta ▪ Kufanya matengenezo mara kwa mara na ukaguzi wa vifaa ili kupunguza uwezekano wa wa kuwepo na uvujaji
<p>Athari # 6: Uchafuzi wa maji kutokana uchafu wa vimiminika na udongo</p>	<p>Hatua zifuatazo zitatekelezwa :</p> <ul style="list-style-type: none"> ▪ Kuzuia uzalishaji wa taka na sumu ▪ Punguza kiasi cha uzalishaji wa taka kwa kurejeshwa, kutumia tena. Hii ni pamoja nakuzalisha nishati ambayo yanaweza kupatikana kutokana na taka. <p>Hatua nyingine maalum za udhibiti ni :</p> <p>Kutumia baadhi ya vifusi katika kujazilizia kwa kuvimwaga katika barabara za vijijini</p> <p>Taka za Sumu :</p> <ul style="list-style-type: none"> ▪ Taka za sumu zitakusantwa na kusafirisha Dar es Salaam kwa ajiri ya kutupwa katika maeneo yaliyowekwa kisheria ▪ Kabla ya kuondoa taka ,hakikisha ,kiasi , ujazo ,aina ya taka vimeorodheshwa pamoja na jina la mpelekaji wa hizo taka na eneo zitakazo tupwa taka vyote vimebainishwa .Kazi hiyo itafanywa na Meneja <p>Hakikisha wataalamu wameelezwa juu ya sheria ya Usimamizi wa Mazingira (wa taka za sumu) kama ilivyoielezwa katika. Environment Management (Hazardous Waste Control and Management) Regulations, 2008</p>
HATUA YA UJENZI	
<p>Athari # 7: misukosuko wa Ardhi / mmomonyoko wa udongo</p>	<p>Mbali na hatua za kukabiliana na athari # 1 zilizotajwa kufuatia hatua za utekelezaji pia kutakuwa na :</p> <ul style="list-style-type: none"> ▪ RAHCO itaangalia suala la usimamizi wa ardhi na kudhibiti mmomonyoko wa udongo katika hatua za zabuni ▪ RAHCO itaanzisha mipango ya usimamizi wa maeneo yake ya machimbo, na vyanzo vipya ya vifaa vya ujenzi ▪ RAHCO itatoa uangalizi na usimamizi pamoja na ufuatiliaji wakati na baada ya utekelezaji wa mradi
<p>Athari # 8: Kuharibika kwa ubora wa hewa & mchango wa mabadiliko ya tabia nchi kutokana na kutolewa kwa vumbi, gesi</p>	<p>Hatua za kukabiliana na Athari ni kama ilivyobainishwa katika Athari # 4</p>

<p>Athari # 9: : Kuharibika kwa ubora wa ardhi na maji na rasilimali zilizomo kutoka na uchafuzi (taka , mafuta nk)</p>	<p>Mbali na hatua za utatuzi zilizobainishwa katika Athari # 5 na Athari # 6 ,Mkandarasi pamoja na RAHCO watachukua hatua za usimamizi za ziada:</p> <ul style="list-style-type: none"> ▪ Kuendeleza na kutekeleza mradi - Mpango maalum wa usimamizi wa Taka / (i) kubaini ni aina gani ya taka ngumu au za kimiminika na makundi ambayo yatazalishwa na mradi (taka ngumu/nyepesi ; ; taka zisizooza (chuma, plastiki) , na taka za sumu (mafuta , oil / mashine maji maji nk); . (ii) kubaini njia za kupunguza kiasi cha taka kwa kuzitumia tena au kuzirejelesha (iii) kuanzisha teknolojia ya kukamata na kuondoa vifaa na mchanga visivyohitajika kabla ya kuingia katika njia ya maji
<p>Athari # 9: Inaendelea</p>	<p>Taka zisizo kuwa hatarishi – hatua za utatuzi zilizoelezewa katika athari # 6 pia zitafuatwa</p> <ul style="list-style-type: none"> ▪ Makambi ya Ujenzi yatawekwa vyoo / na mabafu kuoga ▪ Mapipa Maalum ya kutupa taka na mfumo wa ukusanyaji wa taka utawekwa ili kuhakikisha taka zinatupwa sehemu sitahiki <p>Taka hatarishi - hatua za utatuzi zilizoelezewa katika athari # 6 pia zitafuatwa</p> <ul style="list-style-type: none"> ▪ Wakati wa ujenzi mashine zote zitakazo kuwa zinatumia dizeli na petroli kutakuwa na vifaa na chombo maalumu cha kukusanya mafuta yanayowangika
<p>Athari # 10: misukosuko ya muda mfupi /ya ndege na wanyama kutokana na kelele</p>	<p>Mbali na hatua za utatuzi zilizobainishwa katika Athari # 2,Mkandarasi pamoja na RAHCO watachukua hatua za usimamizi za ziada:</p> <ul style="list-style-type: none"> ▪ Wakati wa awamu ya ujenzi vifaa vya ujenzi , makambi ya ujenzi, maegesho na karakana ya maeneo yapaswa awekwe umbali mkubwa kutoka makazi ya watu ▪ Ikiwa eneo limebainika lina viumbe hai hivyo mpango maalumu wa kuvilinda utafuatwa ▪ Baada ya kukamilika kwa shughuli za ujenzi miti ote iliyokatwa itapandwa upya, udongo wa juu inatakiwa kurejeshwa, miti inatakiwa kupandwa kando kando ya reli.
ATHARI ZA KIJAMII	
HATUA ZA UCHAGUZI WA ENEO/ UTEKELEZAJI WA MRADI	
<p>Athari # 11: Uharibifu wa rasilimali za utamaduni na mambo ya kale</p>	<p>Wakati wa utekelezaji wa kazi za ujenzi hasa uchimbaji katika maeneo ya mradi na maeneo ya karibu ukaguzi / ufuatiliaji wa sehemu za kitamaduni ziangaliwe kwa ukaribu</p> <ul style="list-style-type: none"> ▪ Matokeo ya ukaguzi inatakiwa yaandikwe katika ripoti ujenzi ▪ Ikitokea wakati washughuli za ujenzi eneo la kitamaduni limegundulika , RAHCO (au / na Mkandarasi wake) ni wajibu kisheria kuacha shughuli ambazo zinzweza kuharibu eneo hilo,na kuwajulisha kwa maandishi Mkurugenzi wa Rasilimali ya mambo ya kale na Utamaduni katika Idara Mambo ya Kale , Wizara ya Habari na Utamaduni . Mkurugenzi inatakiwa kuthibitisha alichokigundua na kuwajulisha RAHCO au / na Mkandarasi wake) kuhusu matokeo ya alichokigundua kwa maandishi ndani ya wiki mbili baada kufanya utafiti
<p>Athari # 12: Mabadiliko au muundo wa idadi ya watu na ubora wake wa maisha kutokana na utwahaji wa Ardhi</p>	<p>Ili kukabiliana na athari zinazohusiana na utwahaji wa ardhi na mabadiliko ya matumizi ya ardhi RAHCO inatakiwa kutekeleza hatua zifuatazo , kabla ya utekelezaji wa mradi kuanza ;</p> <ul style="list-style-type: none"> ▪ Watu Walioathirika watatakiwa kufidia kama ilivyopendekezwa katika Mpango wa Makazi Mapya (RAP) ▪ Kuhakikisha watumiaji wanashirikishwa katika hatua za kupanga, kubuni, na utekelezaji wa mradi. ▪ Kuhakikisha wanawake na makundi maalumu wasinyimwe haki zao za msingi kutokana na mradi. Kuhimiza waathirika kujiunga na (VICOBA) kama njia ya kulinda fedha zao. <p>Kupopteza Ardhi na Mali</p> <ul style="list-style-type: none"> ▪ ili kupunguza athari za kuhamisha watu RAHCO wameandaa mpango maalumu wa awali wa kuhamisha watu na mali zao kama njia ya utekelezaji ▪ Mawasiliano baina ya waathirika juu ya kuwahamisha yafanyike mara kwa mara juu ya muda wa kuwahamisha,kwa nyongeza wafanyakazi wa reli wafundishwe juu ya mpango huu wa kuhamisha watu na mali zao ▪ Ili kuondoa athari hasi juu ya kuharibu mahusiano yaliyokuwepo baina ya wanakijiji wakati wa kuwahamisha watu basi kipaumbele kifanyike kwa kutafuta eneo amabalo litaweza kuwahamishia jamii yote husika ▪ Ili kukabiriana na maoni ,dukuduku za wanajamii basi uandaliwe mpango maalumu wa kushughulikia kero katika hatua za awali za mradi
HATUA YA UJENZI	

<p>Athari # 13: Ujenzi hatari ya afya na usalama kipindi cha ujenzi</p>	<p>Ili kupunguza athari hizi RAHCO itamlazimu kuipatia kampuni ya ujenzi kupitia masharti ya mkataba wa kufanya shughuli zifuatazo:</p> <ul style="list-style-type: none"> ▪ Kuendeleza na kutekeleza Mipango ya afya ya umma na Usalama na Ujenzi Afya na Usalama – mipango hiyo inapaswa kushughulikia masuala ya vumbi na kelele. ▪ Wafanyakazi wanapaswa kuvaa maski maalum hasa wale wafanyakazi ambao watakuwa wakifanya kazi katika maeneo yatakayo zalisha vumbi. ▪ Ikiwezekana epuka kufanya shughuli za ujenzi wakati wa usiku ▪ Kuanzisha mpango wa kupokea na kushughulikia malalamiko dhidi ya wananchi na wafanyakazi juu ya kero za kelele na vumbi zizkazo tokana na shughuli za ujenzi <p>Hatua za ziada ni pamoja na:</p> <ul style="list-style-type: none"> ▪ Kuepuka na kupunguza uchafuzi wa mazingira na kuhakikisha usalama wa mazingira ya wafanyakazi na ya makazi kwa kuhakikisha vifaa vinakuwa katika hali nzuri. ▪ Kuendeleza na kutekeleza mpango wa utekezaji shughuli za ujenzi : ambayo itakuwa mara kwa mara inaangalia masuala ya kumwagilia baadhi ya maeneo , hasa katika kipindi cha ya ukavu na upepo , kufufanya ukarabati hasa
<p>Athari # 14: uharibifu wa Muda wa shughuli za kijamii na kiuchumi</p>	<p>Wakati wa kipindi cha ujenzi Mkandarasi inampasa kufanya yafuatayo ili kutoweza kungilia shughuli za kijamii na kiuchumi :</p> <ul style="list-style-type: none"> ▪ Kuhakikisha shughuli za ujenzi zinafanyika katika maeneo ya karibu na eneo kla mradi ▪ Kufata na kuendeleza utendaji bora wa kazi ,mfano kuepuka kuzalisha kelele zisizo za msingi ▪ Zuia kufanya shughuli za ujenzi nyakati za usiku ▪ Baanisha njia sahihi ya kupitisha vifaa vya ujenzi na iwe inalingana na matakwa ▪ Tumia magari na maroli kwa kiwango cha chini iwezekanavyo
<p>Athari # 15: Kupoteza muonekano kutokana na utupaji wa taka usio kuwa na mpangilio</p>	<ul style="list-style-type: none"> ▪ Hatua za udhibiti ni kama zilivyobainishwa katika athari # 6 & 9
<p>Athari # 16: Kero na usumbufu kutokana na kelele / mitetemo (inayozidi kiwango) kutokana na shughuli za ujenzi</p>	<ul style="list-style-type: none"> ▪ Hatua za udhibiti ni kama zilivyobainishwa katika athari # 10
<p>Athari # 17: Hatari kwa Afya na Usalama na Usalama (HSS)</p>	<p>Ilikuhakikisha Afya na Usalama kazini zinazingatiwa RAHCO itatakiwa afanye yafuatayo:</p> <ul style="list-style-type: none"> ▪ Kuajiri wafanyakazi waliopitia mafunzo/mwenye ujuzi ▪ Kutoa vifaa vyenye ubora na mazingira bora ya kazi ▪ Kutoa vitendea kazi na kuhimiza matumizi yake ▪ bandika alama inayoonyesha kujiadhari na hatari katika lugha inayoeleweka na picha ▪ kuzingatia muda wa kazi kwa wafanyakazi wa kufanya kazi (masaa 8 kwa siku) ▪ Weka vifaa sehemu salama na mipaka katika maeneo yoyote hatarishi. ▪ Kuweka kanuni bora za utendaji wa kazi : Kuhakikisha utendaji wa kiafya na usalama unaohitajika ni ule wa kigeni ▪ Kuweka muongozo wa kiafya na usalama ndani ya eneo la mradi ▪ Kazi ya kubomoa na kujenga inapaswa apewe mjenzi wa daraja la kawanza ili kuzuia hatari isiyohitajika kiafya. ▪ Kazi zifanyike kuzingatia viwango bora vya OSHA kwa ajili ya usalama wa wafanyakazi. ▪ Kuwaelimisha wafanyakazi juu ya kazi hatarishi za ujenzi

<p>Athari # 18:</p> <p>Hatarishi kwa Jamii kutokana : ajali barabarani,maa mbukizo ya virusi vya ukimwi(STD,HI V, n.k) magojwa mengine kutokana na milipukom ya taka</p>	<p>Ilikuhakikisha hatari kwa Afya na Usalama zinazingatiwa RAHCO itatakiwa afanye yafuatayo:</p> <ul style="list-style-type: none"> ▪ Kuajiri wafanyakazi waliopitia mafunzo/mwenye ujuzi ▪ Ushirikishwaji wa taasisi zinazotoa mafunzo juu ya afya ya jamii juu ya kupunguza/kuondoa magonjwa na kuweka njia za kuzuia maambukizi kwa ajili ya afya ya jamii ▪ Kusisitiza upunguzaji wa spidi za magari ▪ Kubainisha eneo la ujenzi na liwe mbali na jamii <p>Hatua nyinginezo ni:</p> <ul style="list-style-type: none"> ▪ Mpango wa kutekeleza Afya na Usalama uwekwe ili kuzuia athari katika kuharibu barabara za vijijini kutokana na magari makubwa ▪ Mpango wa usalama wa magari ,kuyazuia yatumie njia iliyobaininishwa ili kuzuia muingiliano wa barabara za wananchi ▪ Kuanzisha mfumo wa kupokea na kushughulikia kero kutoka kwa wananchi
<p>Athari # 19:</p> <p>Uharibifu wa miundombinu / wizi wa vifaa na vitu vinavyobebeka</p>	<p>Ili kukabiliana na tatizo la wizi wakati wa awamu ya ujenzi, Mkandarasi atafanya</p> <ul style="list-style-type: none"> ▪ kuimarisha mfumo wa usalama ▪ Kuimarisha doria maeneo ya mradi
UTUMIAJI WA RELI	
<p>Athari # 20:</p> <p>Kumwaga mafuta na vimiminika katika mazingira ya maji</p>	<p>Ili kulinda mazingira kutokana na umwagikaji wa mafuta wakati wa uendeshaji TRL itakuwa inatekeleza hatua zifuatazo:</p> <ul style="list-style-type: none"> ▪ Mafuta yatakuwa yanaifadhiwa tu katika maeneo yaliyotengwa. ▪ Uhifadhi wa mafuta utatunzwa angalau mita 30 kutoka katika usawa wa mto ▪ Kuwa na utaratibu wa kufanya matengenezo mbali na mito angalau mita 30 na kutupa taka katika sehemu sahihi ▪ Kufanya matengenezo mara kwa mara na ukaguzi wa injini ili kupunguza uwezekano wa uvujaji . wa mafuta
<p>Athari # 21:</p> <p>Uchafuzi wa hali ya hewa</p>	<p>Hatua za utatuzi zilizo bainishwa katika athari # 4 & 8 pia zitatumika</p> <p>Hatua nyinginezo ni kama :</p> <ul style="list-style-type: none"> ▪ Matengenezo ya treni ,reli na magurudumu ▪ Speed of trains may be restricted when passing the sensitive areas; kazi ya treni izingatiwe inapopita maeneo nyeti(makazi) ▪ Miundo mbinu saidizi ijengwe kando kando mwa reli
<p>Athari # 22:</p> <p>Afya na Usalama wa wafanyakazi pamoja na Umma</p>	<p>Hatua za utatuzi zilizo bainishwa katika athari # 17 pia zitatumika pamoja na jitihada za kupunguza hali hatarishi ya ajari kwa wafanyakazi wakati wa uendeshaji wa reli:</p> <ul style="list-style-type: none"> ▪ Kuanzisha na kuendeleza Programu ya Usalama kwa mujibu wa kanuni za kimataifa ▪ Kuhakikisha kila meneja na wafanyakazi wanapewa mafunzo kabla ya kufanya kazi yoyote, na kufanya mafunzo angalau mara moja kila mwaka na pia hii itolewe kwa vibarua ▪ . Wafanyakazi wa[pewe mda wa kupumzika wakati wa usiku kwa muda wa wingi kulingana na viwango vya kimataifa vya ajira ili kupunguza ajari ambazo zinaweza kutokea kutokana na kuchoka
<p>Athari # 23:</p> <p>Kupoteza kwa maisha na mali kutokana na kuanguka kwa treni au kugongana</p>	<p>Ili kuepuka hatari kwa Jamii pamoja na mali zao kipindi cha uendeshaji wa reli RAHCO na TRL watafanya yafuatayo</p> <ul style="list-style-type: none"> ▪ Matumizi ya madaraja yatapendekezwa ▪ Kuwekwe alama za kuonyesha kuwa treni inapita na ukaguzi wa mara kwa mara ▪ Increase the security at all railway stations ▪ Kuendelea kutoa elimu kwa wasafiri juu ya hatari ya kupanda treni ikiwa katika mwendo ▪ TRL itaanzisha mpango wa usalama unaolingana na matakwa ya kimataifa ▪ Alama zinazoonekana za kuonyesha kuwa eneo ni ra reli ▪ Kuweke uzio au viziwi vingine katika eneo la reli ili kuzuia watumiaji wengine wasio husika wasiweze kufika katika eneo ▪ Stesheni zitengenezwe kwa mfumo unao ruhusu mfumo mzuri wa kuingia ,kutoka na kupishana kwa treni ▪ Elimu iendelee kutolewa kwa jamii inayoishi karibu na reli juu ya hatari za kukatisha reli

<p>Athari # 24: Shinikizo la ziada juu ya huduma za kijamii (ongezeko watumiaji wa maji , watumiaji wa vyoo)</p>	<p>RAHCO atakuwa kutekeleza hatua zifuatazo</p> <ul style="list-style-type: none"> ▪ Kuhakikisha kuna vyoo vya kutosha na vyoo katika vyote vituo ♣ ▪ Kuhakikisha upatikanaji wa maji safi katika vituo vyote ▪ Kujenga chumba cha kusubiri abiria ▪ Kujenga eneo la mgahawa kwenye vituo
<p>Athari # 25: Uharibifu wa miundombinu / wizi wa vifaa na vitu vinavyobebeka</p>	<p>Ili kuzuia matukio ya wizi RAHCO watatumia hatua zifuatazo:</p> <ul style="list-style-type: none"> ▪ Kuimalisha ulinzi katika eneo la reli ▪ Ushirikiano pamoja na wananchi ili nao waweze kutoa ushirikiano katika kulinda hiyo miundo mbinu ▪ kuimalisha programu ya kuisadia jamii na maelewano mazuri baina ya jamii
<p>MATUKIO YA ASILI NA YATOKANAYO NA BINADAMU</p>	
<p>Athari # 26: Uharibifu wa miundombinu ya reli kutokana na majanga asilia</p>	<p>Kutokana na dhumuni la mradi ni kutatua ufumbuzi wa mafuriko yanayo ikumba reli hatua zifuatazo zitafuatwa:</p> <p>RAHCO wataanzisha programu ya kushughulikia majanga amabayo itahusisha:</p> <ul style="list-style-type: none"> ▪ Kuanzisha mfumo wa kuweza kubaini majanga ▪ Kuweka njia za kukabiliana na majanga hatarishi ▪ kuweka teknolojia ya kutoa viashiria endapo kuna uwezekano wa kutokea kwa majanga ▪ kuanzisha mfumo wakuenza kubaini mitetemo pamoja na ufatiliaji wa mito na mabonde ▪ kuanzisha programu ya kuwafundisha wafanyakazi juu ya kukabiliana na hayo majanga ▪ Elimu kwa wananchi juu ya njia sahihi za kufanya shughuli zao za kilimo
<p>Athari # 27: Uharibifu wa mazingira kutokana na ajali za treni</p>	<p>RAHCO kwa kushirikiana na Shirika la Reli atatekeleza hatua zifuatazo:</p> <ul style="list-style-type: none"> ▪ Kuendelea kufanya utafiti na ufuatiliaji kupata sababu za kuanguka kwa treni - k.m. Kuanguka kwa treni kunatokana na ubovu wa njia ya reli, wingi wa mabehewa yanaovutwa na kichwa kimoja cha treni na umbali ambao treni inatembea ▪ Kutekeleza hatua za kiusalama ambazo zitaepusha kugongana kwa treni – kwa mfano kudhibiti mwenendo wa treni ▪ Kufanya ukaguzi wa mara kwa mara kwenye reli na kuhakikisha hakuna uharibifu wowote kwa kuzingatia viwango vya kimataifa ▪ Kutekeleza mkakati wa jumla wa kulinda usalama k.m Mkakati wa Usimamizi wa Njia za Reli uliotengenezwa na Umoja wa Kimataifa wa Mashirika ya Reli. <p>Ajali zitokanazo na usafirishaji mizigo hatarishi</p> <ul style="list-style-type: none"> ▪ Shirika la Reli litatengeneza mkakati wa kuhakiki aina ya mizigo inayosafishwa ▪ RAHCO itatengeneza mkakati wa kudhibiti mmwagoko wa kemikali ili kuhakikisha utayari wa kushughulikia ajali <p>Mimea</p> <ul style="list-style-type: none"> ▪ Shirika la Reli na RAHCO watengeneza mkakati wa kufanya matengenezo ya kurudishia mimea pale ambapo kutatokea ajali ▪ Kuwapa mafunzo ya mara kwa mara jinsi ya kushughulikia ajali
<p>Athari # 28: Kuharibika kwa reli kutokana na kufurika bwawa la Gomber</p>	<p>RAHCO itaendelea kuwasiliana na wanaotekeleza mradi wa bwawa la Gombe ili kuhakikisha mradi haingiliani na reli</p>
<p>Athari Chanya</p>	
<p>Athari # 29: Ongozeko la usafiri wa uhakika wa abiria na mizigo</p>	<p>Ili kuhimarisha faida zitakazo tokana na huu mradi TRL na RAHCO watafanya:</p> <ul style="list-style-type: none"> ▪ Kuwekeza kwenye miundombinu ya reli kwa kununua vichwa vya treni kwa wingi na kuimarisha maisha ya wafanyakazi kwa ujumla

Athari # 30: Kuimalisha barabara kutokana na kupitisha magari ya mizigo kama inavyofanyika kwa sasa	<ul style="list-style-type: none"> ▪ Ili kuongeza matumizi ya kutumia reli kwa kusafirisha mizigo yafuatayo itabidi yafanyike ▪ Serikali ya Tanzania iweke sheria ya kusafirisha mizigo kwa kutumia reli badala ya kutumia barabara
Athari # 31: Kuongezeka kwa kipato kwa wananchi	<p>Ili kuongeza kipato kwa wananchi kutokana na kufanya manunuzi ya vifaa vya ujenzi na bidhaa nyinginezo hatua zifuatazo zitafanywa:</p> <ul style="list-style-type: none"> ▪ RAHCO na TRL wataanzisha mikataba ya kufanya manunuzi kwa kuwapa kipaumbele wazawa ili kuwapa nyaja za kununua mahitaji yote yanayohitajika katika kipindi chote cha ujenzi na utumiaji wa reli .
Athari # 32: fursa ya Ajira	<p>Ili kuchochea fursa za ajira hatua zifuatazo zitafulatwa:</p> <ul style="list-style-type: none"> ▪ RAHCO na TRL wataanzisha mpango wa kuajiri nguvu kazi kwa kuwapa kipaumbele wazawa. ▪ Taarifa juu ya fursa za ajira zitapelekwa kwa uongozi wa endapo watahitajika kupitia kwa mkandarasi
Athari # 33: Ongezeko la kipato kutokana na fursa za kusafirisha mazao ya kilimo nje na ndani ya nchi	Kama ilivyoeneshwa katika athari # 29
Athari # 34: Kuongezeka starehe ya usafiri kutokana na kuwepo treni za mara kwa mara	Kama ilivyoeneshwa katika athari # 29
Athari # 35: Kuongezeka muonekano mzuri baada ya kuzuia mmomonyoko wa kingo za mito	<ul style="list-style-type: none"> ▪ Kingo za mito kutengenezwa kama ilivyo kwenye mpango wa mradi
Athari # 36: Uwezekana wa kuzuia mafuriko kutokana na bwawa la maji Gombe	<ul style="list-style-type: none"> ▪ Kama ilivyoeneshwa katika athari # 28
KUKAMILIKA KWA MRADI	
Athari # 37: Uharibifu wa mazingira kutokana na utupaji wa taka kiholela	<ul style="list-style-type: none"> ▪ Hatua za utatuzi ni kama zilivyobainishwa katika Athari #6 na 9
Athari # 38: Kukosekana kwa ajira kutokana na kumalizika kwa mradi	<p>Ili kupunguza athari za kupoteza ajira hatua zifuatazwo zitaanzishwa</p> <ul style="list-style-type: none"> ▪ Kampuni itahakikisha kuwa taratibu za Mfuko wa Hifadhi ya Jamii (NSSF) zinafuatwa. Kwa kuwasajiri na kuchangia michango yao ▪ TPA itahakikisha Waajiriwa wanajengewa uwezo, kabla ya kustaafu, wa kujajiri au kuweza kuajiriwa sehemu nyinginezo

Athari # 39: Kukosekana kwa mapato ya serikali	<ul style="list-style-type: none"> ▪ Serikali kutengeneza mpango mbadala kuhakikisha mapato ya serikali hayapungui
Athari # 40: Uharibifu wa barabara kutokana na mizigo kusafirishwa kwa barabara	<ul style="list-style-type: none"> ▪ Serikali kuhakikisha malori ya mizigo hayazidi uzito unaoruhusiwa

Mpango Pendekezwa wa Kudhibiti Na Kukagua Athari za Mazingira Na Jamii

Ripoti ya tathmini inatoa muhtasari wa kudhibiti athari za mazingira na jamii. Ambao umebainisha vigezo vya kimazingira vitakavyo dhibitiwa. Pia inatoa kiwango cha udhibiti, maeneo ya udhibiti na inaonyesha majukumu kwa wausika. Gharama pendekezwa ya mpango wa udhibiti ni takribani dola za kimerekani Tsh 21,000,000 kwa shughuli za mara moja, na Tsh 134,400,000 kwa mwaka. Ili kuhakikisha kwamba hatua za kudhibiti zinatekelezwa Afisa Mazingira mteule atakuwa na kazi, ya kufuatilia utekelezaji wa mradi. RAHCO itafanya ukaguzi wa mazingira wa mradi kama ilivyoelezwa katika sheria ya Mazingira kipengele cha 191.

Ukamilishaji wa Mradi:

Ripoti ya tathmini umeandaa mpango wa kumalizika kwa mradi .Mpango umeelezea

Hatua mbalimbali za kumalizika kwa mradi, ikiwa ni kubainisha wadau mbalimbali na Taasisi sinazohusika na kutoa vibali,na Makampuni yanayo husika kuondosha taka zote kama vyuma na taka nyinginezo yatatafutwa ndani ya kipindi hicho. uondosha wa taka zote.Mpango wa utekelezaji wa uondosaji wa mradi utazingatiwa na kufanyiwa kazi na taasisi zinzo toa vibali ,mwaka mmoja kabla ya mradi kufungwa. Inakadiriwa kuwa kutekeleza mkakati wa kuepusha athari hasi za kijamii na kimazingira utatumia Tsh. 167,000,000 (kwa shughuli za mara moja) na Tsh 245,000,000 kwa mwaka. Mpango huu utatumika mpaka mradi ukamilike na kukubaliwa na maamlaka huska ndani ya mwaka kabla ya kumalizika kwa mradi

Hitimisho

Utekelezaji wa hatua za utatuzi wa mafuriko juu ya reli ya kati utasababisha athari hasi na chanya kwa pamoja. Hakuna athari itakayoshindikana kutatuliwa, athari nyingi zinaweza kuboreshwa . Hata hivyo, kutakuwa na idadi ya watu wengi ambao wataathirika na mradi kwa kuchukuliwa maeneo yao. RAHCO imeandaa mpango wa awali wa kuamisha makazi ili kupata taarifa za awali juu ya idadi ya watu pamoja na mali zao.Mpango kamilifu wa kuamisha watu na mali zao utafanyika kabla ya mradi kuanza

Majina ya Washauri

No.	Majina ya Washauri	Nafasi / Eneo la utaalamu	Sahihi
-----	--------------------	---------------------------	--------

1.	Prof. Jamidu H.Y. Katima	Kiongozi Mshauri na Mhandisi Mazingira	
----	--------------------------	--	--

2.	Ms. Saada K. Juma	Usimamizi wa Mazingira na Mipango	
----	-------------------	-----------------------------------	--

3	Eng. Gastory Leonard	Water Resources Management / Irrigation Specialist	
---	----------------------	--	--

4.	Mwajuma Nuru	Mwanasosholojia	
----	--------------	-----------------	--

EXECUTIVE SUMMARY

Project Title: Environmental Impact Statement for the Proposed Flood Protection Measures for Central Railway Line – Kilosa to Dodoma Section (174 Km) in the United Republic of Tanzania

Proponent: **RELI ASSETS HOLDING COMPANY LIMITED (RAHCO)**
Railways Street/Sokoine Drive;
P. O. BOX 76959,
Dar es Salaam, Tanzania
Tel: +255 (22) 2127403;
Fax No: +255(22) 2127404
E-mail: md@rahco.go.tz
Contact Person: Eng. Maizo Mgedzi
One Bandari Road Kurasini

EIA Consultants: JSB Envi-Dep Ltd.
Ubungo Plaza, 5th Floor,
P.O Box 32312
Dar es Salaam, Tanzania
Tel. +255 22 2461261; Mobile: +255757768737
E-mail: envidep@gmail.com (www.jsbenvidep.com)
Contact Person: Prof. Jamidu Katima

A brief outline and justification of the proposed project or undertaking

Due to deteriorating Tanzania Railways Limited (TRL) infrastructure and inefficient operating standards, the freight traffic carried by TRL has been declining over the years from 1.6 million tons in 2002 to 0.15 million tons in 2013. The primary reasons for the deterioration include deferred maintenance and inadequate rolling stock. In addition, the 2010 floods between Kilosa (in the Morogoro Region) and Gulwe (in the Dodoma Region) damaged part of the central railway system, halting train services between Dar es Salaam and Dodoma for more than three months. These floods have been recurring, the recent one being in January 2016. In order to meet the envisaged growth of cargo transportation as a result of the good economic performance that has been registered over the years, the World Bank, in collaboration with Reli Assets Holding Company (RAHCO) carried out a Feasibility Study (FS) for the preparation of “Tanzania Intermodal and Rail Development Project (TIRP)” to rehabilitate the Dar es Salaam–Isaka section. In addition, the Government of the United Republic of Tanzania (URT) has prepared the “Big Results Now (BRN)” initiative, the “Transport Sector Long-Term Perspective Plan (LTPP)”, the “Five Year Development Plan”, as well as the “10-Year Transport Sector Investment Programme Phase 2 (TSIP2)”, all with the goal of creating a competitive and reliable transport system. In all of these plans, railway transport systems are given a high priority with the aim of implementing rapid, high-impact, fixes.

The Japan International Cooperation Agency (JICA) has recognized the importance of rehabilitating the Central Railway Line based on the results of the JICA-funded “Comprehensive Transport and Trade System Development Master Plan in Tanzania” (2011-14). The Japanese Government subsequently conducted “The Study on the Central Corridor Railway Revitalization and Energy Efficiency Project” (2012-13), which identified that the flood prone area between Kilosa and Gulwe could be the biggest bottleneck of the entire Central Railway Line, and thus recommended that flood protection measures be a candidate for Japanese assistance, which will complement the World Bank-assisted TIRP.

The proposed flood protection measures are Rerouting part of the existing railway line (25km) – this measure will involve shifting the railway line away from most flood prone areas to elevated areas; River bank protection – this will involve installation of gabions or concrete blocks to protect river banks against erosion; Channel works – this will entail river training at River Mzase and Maswara; Renewal of rails / track materials – this will involve changing the weight railway track from 60 to 80 lb for about 15km; Track rectification – this will include minor works such as replacing ballast, and sleepers, fixing connectors; Construction of temporary access road – this will be necessary to access the sites to be protected and will involve constructing a temporary road of about 96km; and Housing land development – this will be used by the residents that will be relocated from Maguru Village.

In order to comply with both JICA and URT environmental requirement, JSB- EnviDep Ltd. of Dar es Salaam was commissioned to carry out Environmental and Social Impact Assessment for the proposed flood protection measures as part of the feasibility of the whole project.

A brief description of the project environment;

The major part of the project is found in Kilosa District and Mpwapwa District, which have different environmental characteristics. On one hand Kilosa District experiences climatic condition which is humid. The climate is characteristically tropical savannah (winter dry season), with a subtropical dry forest bio-zone. It experiences an average of eight months of rainfall (October – May), with mean annual rainfall ranging between 1,000 to 1,400mm in the southern flood plain, while further north (Gairo Division) has annual rainfall ranging from 800 to 1,100mm. The average annual temperature is typically 25°C in Kilosa town with extremes in March (30°C) and July (19°C). Kilosa has three distinct topography of the district varies significantly and can be divided into three zones, namely the Flood plain which *is* comprised of both flat and undulating plains extending to the foothills in the west, with an altitude of about 550m. It has several rivers, the major ones being the Wami and the Ruaha; the Plateau which is situated in the north of the district, with an altitude of around 1,100m, and characterised by plains and hills and is made up of moderately fertile, well-drained sandy soils; the ***Highlands which*** runs from north to south on western side of the district, with an altitude up to 2,200. Land in Kilosa can basically be divided into five: agricultural (37.5 per cent), natural pasture (33.5 per cent), Mikumi National Park (22.5 per cent), forest reserves (5.5 per cent) and urban areas, water and swamps (1 per cent). Both agriculture and livestock grazing are practised on general, village and private lands, while Mikumi National Park and forest reserves are controlled areas and state owned.

Mpwapwa District is one of the six districts in Dodoma Region. It is located 120 kms from Dodoma municipality. It lies between Latitudes 6°00” and 7°30” South of the Equator and between Longitude 35°45” and 37°00” East of Greenwich. Mpwapwa is characterised by short rain season which starts in December and ends in April. The rainfall ranges between

600 – 700mm per annum. The average minimum temperature is 15.5°C, the coolest month being August (13.8°C). The average maximum temperature is 27.5°C, the warmest month being November (30.2°C).

The project area from Kilosa to Ihumwe where railway line passes has two sections of distinct landscape: Kilosa to Gulwe and Gulwe to Ihumwe. *Kilosa to Gulwe*: Railway line from Kilosa to Gulwe passes along the valley defined by the ranges of hills; on the left (Rubeho mountains) and on the right (Ukaguru mountains) of the railway line towards North West. The hills are composed of exposed rock and some areas of shallow depth of soil cover, the effect being observed also on the vegetation cover. *Gulwe to Ihumwe*: The section is not confined between ranges of hills but characterised by the gentle slopes towards East and South East. The gentle slopes are made up/ comprised of deep deposit of alluvial SAND from North and North West.

The geology of the project area is characterised by Usagaran and Bendian of Mafic Gneiss and Garnet Gneiss rocks with some occasions of crystalline limestone. *Kilosa to Gulwe*: There are two types of soil pads within the project section – (i) Along the hills and ridges slopes, there are residual soils of medium to stiff gravelly SAND pads, shallow depths of one to two horizons, namely, the O-horizon of up to 10cm depth which overlays a bedrock in most places and along the foot of the hills/ridges and the A- horizon up to about 30cm which overlays the bedrock. (ii) Along the Valleys/Folds, swamps, Flood plains: there is loose to moderately firm deposit of alluvial SAND soils of undifferentiated horizons due to deposition made every rain season. *Gulwe to Ihumwe*: There exist loose to moderate stiff Reddish Brown Alluvial SAND soils of shallow to deep layers of horizons.

Hydrologically, the project area is located within Wami/Ruvu water basin on the eastern side of Tanzania. Wami basin extends between 5° and 7° Latitudes, South and between 36° and 39° Longitudes, East. The surface water resource in this area therefore is dominated by natural rivers. Other surface water features are man-made ponds and dams most of which having a connection with existing natural rivers. Kinyasungwe River in Dodoma region marks the major surface water feature in the upstream of the project area. It is a seasonal river originating from the arid areas of Dodoma region flowing south-east and discharge its water into Mkondoa River. Other rivers in this zone are Mzase, Sikoko, Kidibo, Maswara and Mangweta. Previous hydrological studies carried out in the project area have reported on sediment transport as water moves from upstream to downstream. Reported causes include deforestation and unsustainable agricultural practices and livestock keeping in the upstream tributaries and along some sections of the rivers. The quality of water is generally within TBS Standards. Previous hydrological studies carried out in the project area have reported on sediment transport as water moves from upstream to downstream. Reported causes include deforestation and unsustainable agricultural practices and livestock keeping in the upstream tributaries and along some sections of the rivers. Other uses includes swimming, transportation of logs during rainy season, construction activities especially blocks and bricks making, and aquatic life. Groundwater resources in the project area are evidenced by the presence of shallow wells and boreholes. Boreholes are dominant and during the study more of these were observed in the Mkondoa hydrological zone (in Kilosa) than the Kinyasungwe zone (in Dodoma).

The fish found consist mainly of small barbs (*Barbus paludinosus*), some African sharptooth catfish (*Clarias gariepinus*), tilapias (*Oreochromis niloticus*), freshwater eels and some upside catfish (*Chiloglanis* sp). Of these, only three are migratory fish species i.e. *Labeo* sp., *Barbus paludinosus* and, *Anguilla* sp, was recorded in the area during the study. Large

specimens of these fishes were found mainly in large pool areas especially at the Gulwe swamp, while the rest of the river stretch had very small sized fishes. Other aquatic animals reported include Crocodiles (*Crocodylus niloticus*) mainly in Lumuma River and monitor lizards (*Varanus niloticus*). These reptiles were however, not encountered during the survey period. During rainy season Kinyansungwe and Mkondoa Rivers receive a lot of silt through surface runoff due to severe erosion that take place in the catchment. This has always rendered the water very turbid or muddy thus threatening the aquatic life especially fish. That is why this river system is inhabited mostly by the hard fish species i.e. the catfish, tilapia and barbs that can tolerate very difficult conditions including reduced water levels, oxygen and water clarity.

Floristically, the vegetation of the proposed project site falls under two main Phytocorions which are Zambezi regional centre of endemism characterized by drier miombo woodland, patches of flood plain grassland and riparian woodland. Other phytocorion is Somali-Masai regional centre of endemism characterized by *Acacia-Commiphora* deciduous bushland, and patches of Halophytic vegetation dominated with *Tamarix nilotica* stands. Based on physiognomic characterisation within the proposed project area, seven main vegetation categories have been classified from the project area includes: *Acacia – Commiphora* deciduous bushland, Drier miombo woodland, Settlements with alien species, Cultivations, Marshland with sands, Riparian, and *Tamarix nilotica* stands. In the project area, one tree species has been identified growing in *Acacia – Commiphora* deciduous bushland at Kitete and Gulwe which is considered vulnerable under IUCN list. In the project area, one plant species has been identified growing in *Acacia – commiphora* deciduous bushland vegetation type which is considered endemic. Several medicinal plants were identified.

A total of eleven species of amphibians were recorded between Kilosa and Gulwe. . None of the amphibian species observed is threatened with extinction according to International Union for Conservation of Nature (IUCN). Twenty three species of reptiles were observed at the proposed rerouting survey sections and access road between Kilosa and Gulwe. Most of the reptiles observed belong to the Family Scincidae. Most of the species detected, except Rainbow Skink *Trachylepis margaritifer* and Blue-headed Tree Agama *Acanthocercus atricollis*, do not appear in IUCN Red List of Threatened species. 126 species of birds were recorded. All species are in Least Concern (LC) category of threat status according to IUCN except Fisher's Lovebird *Agapornis fischeri* and Tanzania Red-billed Hornbill *Tockus ruahae*. The Fishers Lovebird is Near Threatened (NT) according to IUCN while Red-billed Hornbill is not in the list. 26 species of mammals were recorded in the study area. Of these, only five species, the vervet monkey *Cercopithecus pygerythrus*, Yellow Baboon *Papio cynocephalus*, Slender Mongoose *Herpestes sanguinea*, Four-toed Elephant Shrew *Petrodromus tetradactylus* and Mutabe Sun Squirrel *Heliosciurus mutabilis* were observed during the survey. However, most of the area that was surveyed has been disturbed in one way or another bearing in mind that rerouting and access roads will be located in the vicinity of the existing railway.

Generally speaking, the archaeology and cultural heritage of Morogoro and Dodoma regions particularly Kilosa and Mpwapa District remains relatively unknown. The surveys conducted at these sites during the 1980s and 1990s revealed cultural material remains including Later Stone Age (LSA) artefacts, potteries of Early Iron Age (EIA) and indicators of ancient iron smelting activities that include slag, tuyeres and furnaces. These cultural heritage properties recorded from these sites date between the 6th and 15th centuries AD. Also some of the artefacts especially potteries of TIW/Tana variants recovered from the site of

Dakawa indicate an interaction between the coast and hinterland. At Mkadage for instance, one major archaeological site of early iron working was recorded. Scatters of ancient settlements were observed at Munisagara village. While few potsherds of between the 17th and 19th centuries were recorded within the relocation points, a huge scatter of the ceramic materials was recorded at point 0268109/9253800. Like Mkadage and Munisagara, Kikundi seemed to be rich in terms of archaeology. Ceramics of different age period ranging from the 8th to the 18th century were recorded at the vicinity within which the rail will be relocated. Like Mkadage and Munisagara, Kikundi seemed to be rich in terms of archaeology. Ceramics of different age period ranging from the 8th to the 18th century were recorded at the vicinity within which the rail will be relocated.

Major environmental threats that were observed include: Soil erosion - The section between Kilosa and Gulwe has been much affected with the soil erosion along the river bank attributed by the River flow patten (River meandering), the volume, speed and the constituent of the river water that strike the river banks and therefore enhance erosion.; **Siltation** - The siltation was also observed to be a major problem along the project area. The siltation affects the river dimensions, and blocks the drainage structures along the railway line. **Land/ground instability areas (landslides, creep, etc.)** - most of the cut areas for railway passage have the landslides attributed by the nature of the rock (fragmented bedded rock) and the high angle of cut (most of the area is 90° vertically).

The ethnic makeup of the study area can be roughly divided into two, i.e. between those in Kilosa and Dodoma. In Kilosa there is a mix of ethnic groups. This fact is in line with history of this district that it was one of the areas with sisal plantations since the colonial period. As such, it attracted migrant labourers from various parts of Tanzania. For this reason, there is a multiplicity of ethnic groups in this area, namely: the Hehe, the Ha, the Sagara, the Kaguru, the Gogo, the Sukuma/Nyamwezi and the pastoralist Maasai and Mang'ati, etc. Unlike Kilosa, (where there is a multiplicity of ethnic groups) the study area in Dodoma is dominated by the one ethnic group: the Gogo. There is however other ethnic groups such as the Hehe, the Nyamwezi

Farming is the main economic activity in the study area followed by livestock keeping. Both permanent and seasonal crops are grown in Kilosa. Such crops include bananas, maize, soya beans, sunflower, simsim, onions, mangoes, sugarcane etc. in Mpwapwa on the other hand, rainfalls are uni-annual. As such farming is mainly seasonal rowing seasonal crops mainly maize, groundnuts; sunflower etc. in both Kilosa and Mpwapwa farming technology is still low. Livestock keeping is the second economic activity in the study area next to farming. It is more common in Dodoma than Kilosa because of the dry climate of Dodoma which makes farming for them only seasonal.

In the entire study area, incidences of food insecurity were reported. In the Kilosa food insecurity was attributed to the flooding of Mkondoa River which implied washing away of the crops grown in the river valley. Moreover, the declining of Mkondoa River depth due to siltation has negated the possibility of fishing activities in this river further contributing to both food and income insecurity. In Dodoma on the other hand, and especially in Godegode, Gulwe and Kisisi, food insecurity was attributed to frequent droughts which burn off the crops before maturation.

Project stakeholders and their involvement in the EIA process;

This ESIA statement involved consultation with various stakeholders at different levels including national and District authorities, and local communities. Participatory methods including stakeholders' consultative meetings, observations, and semi - structured interviews were applied. Other relevant information was obtained through discussions with relevant informants and by reviewing available literature, documentation and studies.

Positive Expectations

- Employment opportunities to locals
- Ease transportation of people and goods
- Increase in per capita income of individuals

All issues raised by the stakeholders, regardless of their significance have been addressed.

List of developer, consultant, local planning authorities and other people and organisations consulted

The project consulted the following people and groups:

National Level

- Works, Transport and Communication
- Lands, Housing and Human Settlements
- Natural Resources and Tourism
- SUMATRA

Regional Level

- Morogoro Regional Commissioner
- Morogoro Regional Administrative Secretary
- Dodoma Regional Commissioner
- Dodoma Regional Administrative Secretary

District Level

- **Kilosa District Executive Director**
- Mpwapwa District Executive Director
- Kilosa District Officers responsible for Lands, Community Development, Natural Resources
- Mpwapwa District Officers responsible for Lands, Community Development, Natural Resources

Ward Level

- **Ward executive Officers for** Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe wards
- Ward Development Committees for Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe wards

Village Level

- Village Executive Officers for Munisagara Village, Mzaganza Village, Kikundi Village, Godegode Village and Gulwe Village.
- Village Environmental Committees for the Magomeni, Masanze, Kidete, Godegode, Kimagai, Gulwe wards

Individuals

Traditional healers

Results of public consultation

From the consultations the following environmental and social management issues as well as project were raised:

- Losses of natural vegetation cover and contained valuable wildlife due site clearance during flood protection measures / construction works
- Air pollution due railway line development activities
- Loss of agricultural and residential land
- Interfering with the village settlement patterns and the landscape in general
- Increase in accident events
- Increase in HIV transmission from / to new comers and local community and consequent increase in AIDS sufferers in project area
- Disturbance from construction equipment

Description of the major significant impacts

Design / Mobilisation

- ✓ Land disturbances / soil erosion at onsite and offsite location – this is considered significant considering that the area is prone to soil erosion, landslides and vegetation has been cleared in some areas
- ✓ Loss / damage / disturbance of indigenous vegetation and contained biodiversity species – There are some species within the project corridor which are listed in IUCN and CITES
- ✓ Release of oils and fuels in the aquatic environment – Release of oils and fuels into water bodies will have significant impact on the aquatic ecology
- ✓ Contamination of surface and ground water with demolition debris and other wastes – release of demolition waste into water bodies will impact the aquatic life

Construction phase

- ✓ Impaired air quality & contribution to climate change due to release of dust (including fugitive (unavoidable, residual), greenhouse gases and other noxious air pollutants – there will many equipment using fossil fuels and travelling on un-surfaced road hence release of dust and noxious gases some which have significant adverse health impacts.

Social Impacts

Site selection and Mobilisation phases

- ✓ Change or modification of population and its quality of life due to land take – some villagers at Maguru subvillage will be relocated. Other people will lose their property, land and livelihoods as a result of the project
- ✓ Construction health and safety hazards – Workers and no worker will be exposed to construction hazards such noise, vibration, accidents etc.

Construction Phase /operation

- ✓ Public HSS risks: traffic accidents, Risks of human-human transmission of diseases (STD, HIV etc.) – there will be an influx of workers from different parts of Tanzania. They will be based on site without their families. This may act as catalysis for intimate relationships with locals

- ✓ Potential loss of lives and property as a result of falling off from moving train, collision with train at road crossing as a result of increased train frequencies – this may happen if proper control of engine movements, and people movements, particularly considering that the project will result into increased train frequencies.
- ✓ Additional pressure and demands on local social services and resources (increase water users, toilet users) – increased number of people means increased demand for social services.
- ✓ Vandalism of structures / equipment, theft of materials and portable items – this is reported to be a serious problem as people vandalise the railway infrastructure in the name of scrap metals. As the scrap metal business increase so will be vulnerability to the railway infrastructure.

Positive impacts

The study identified several positive impacts that will result from the project

- ✓ Increased train frequencies and therefore smoothening passenger and cargo movement
- ✓ Protection of roads from heavy cargo as is the current practice
- ✓ Increased income to local suppliers
- ✓ Employment opportunities
- ✓ Increased income and improved or livelihoods as result of increased agricultural production, trading activities, and movement of people within the region and bordering countries
- ✓ Improved comfort of passengers as a result of increased train frequencies
- ✓ Improved quality of the landscape features and appearance of the river embankments

Alternative considered

A number of alternatives have been considered for realizing the project objectives. As a standard practice, the “No project alternative” was also considered. However, this was not considered to be preferred alternative as it will mean to continue with current inefficient railway system and continue using road to transport cargo which is a major cost on our roads. Selection of rerouting was subject to a number of factors such as severity of the erosion problem of the area, the number of people affected by the project, the cost of realising such alternative rerouting. The least cost alternative rerouting was selected. Different types of river embankment were considered these include using gabions mattress bank protect, concrete block, **Branch Block Bank Protection**. The choice of the type of river protection will depend on the type of erosion on a particular section.

Recommendations and plan for mitigation of the impacts/ Environmental and social management

Project Aspect / Potential Direct Impacts	Mitigation Measures/ Management Programme
DESIGN AND MOBILISATION PHASE	

<p>Impact # 1: Land disturbances / soil erosion at onsite and offsite location</p>	<p>The following measures will be implemented:</p> <ul style="list-style-type: none"> ▪ Implement soil erosion control and land rehabilitation measures at all project sites and offsite locations ▪ Ensure strict control of trucks, vehicles as well as equipment to operate only within the project area ▪ Limit excavations area needed for construction works, construct temporary drainage grooves and sedimentation ponds for surface runoff collection and compact the disturbed areas soon after construction. ▪ Compact the disturbed areas soon after construction. ▪ Whenever possible development activities shall be implemented when the agents of erosion (i.e. rain and wind) are not active. ▪ RAHCO will monitor areas of exposed soil during periods of heavy rainfall throughout the project development phase.
<p>Impact # 2: Loss / damage / disturbance of indigenous vegetation and contained biodiversity species</p>	<p>The following measures will be implemented:</p> <p>Vegetation</p> <ul style="list-style-type: none"> ▪ Develop and Implement a Flora and Vegetation Conservation and Soil Restoration Plan ▪ Train the workers and construction site managers in avoiding cutting of trees and bushes along the RoW and destruction of soils on large areas <p>Fauna</p> <p>Examine at each section:</p> <ul style="list-style-type: none"> ▪ breeding areas of special wildlife and invertebrates in water objects ▪ presence of small mammals; ▪ presence of the nests of protected birds; and ▪ whether the individual section of a big mammal falls within the construction zone. <p>Mitigation of noise</p> <p>The Contractor shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Maintaining machinery and equipment in good running conditions and avoiding sudden loud noise ▪ Use quiet equipment (i.e. equipment designed with noise control elements) and the proponent will ensure all vehicles have properly functioning mufflers ▪ Establish and enforce good site management ▪ Develop and observe best practice - methods of working ▪ Restrict hours of working – construction to be done during day light within the settlements ▪ Exercise efficient material handling – to minimise truck movement ▪ Define access routes to the site with the smallest number of properties in proximity ▪ Keep trucks and vehicle movements to a minimum possible
<p>Impact # 3: Depletion at point source</p>	<p>RAHCO shall</p> <ul style="list-style-type: none"> ▪ Ensure that the construction materials such as sand, gravel, natural stones, and ballast are procured from registered quarry and sand mining firms. ▪ impress the Contractor to avoid over procurement of construction materials ▪ impress the Contractor to avoid wastage, damage or loss (through run-off, wind, etc.) of materials at the construction site
<p>Impact # 4: Impaired air quality & contribution to climate change due to release of dust, greenhouse gases and other noxious air pollutants</p>	<p>The following measures will be implemented:</p> <ul style="list-style-type: none"> ▪ Use of best practice management techniques during extraction, loading and transporting raw materials. ▪ Use efficient trucks and vehicles ▪ Train driver training to minimize emissions (e.g. prevention of over revving, shut off engines when vehicles not in use). ▪ Regular (monthly) servicing of engines ▪ Avoiding idling of engines ▪ Ensure efficient equipment operations and maintenance measures to minimize emissions. ▪ Institute proper planning of transportation of materials to ensure that vehicle fills are increased in order to reduce the number of trips done or the number of vehicles on the road.

<p>Impact # 5: Release of oils and fuels in the aquatic environment</p>	<p>The following measure:</p> <ul style="list-style-type: none"> ▪ Fuels and lubricants shall be stored only at designated areas. ▪ Storage of fuel and lubricants shall be kept at least 30m from the edge of the surface waters e.g. rivers ▪ Refuelling and lubrication of equipment shall be restricted to areas at least 30m away from the edge of the surface waters ▪ All routine equipment maintenance shall be done at least 30 meter away from the edge of the rivers and recover and dispose of wastes in an appropriate manner ▪ Fixed fuel dispensing locations will be provided with secondary containment to capture fuel from leaks, drips, and overfills ▪ A supply of sorbent and barrier materials sufficient to allow the rapid containment and recovery of spills shall be maintained at construction site ▪ All equipment shall be free of leaks prior to use on the Project and prior to entering or working in or near the water bodies ▪ Conduct regular maintenance and inspections of the equipment to reduce the potential for spills or leaks ▪ Rubber-tired vehicles (trucks) shall refuel at commercial fuel stations. Tracked machinery (e.g. backhoes, bulldozers) shall be refuelled and lubricated on the construction site
<p>Impact # 6: Contamination of surface waters with demolition debris and soils</p>	<p>The following mitigation measures shall be implemented:</p> <ul style="list-style-type: none"> ▪ Prevent the generation of hazardous waste; ▪ Where elimination is not possible apply means and techniques to reduce the quantity of hazardous waste generated; ▪ Minimize amount of waste for disposal by recycling, reuse and/or recovery. This includes the recovery of energy which may be available from the waste. ▪ Treat waste to stabilize, immobilize, contain or destroy hazardous properties. ▪ Dispose of residues with minimum environmental impact. ▪ Appropriately contain, isolate and store hazardous waste for which no acceptable treatment or disposal option is currently available. <p>Other specific measures that will be implemented are: <i>Inert Construction Materials:</i> These materials shall be used for construction of embankments, acoustic barriers or as filling materials on rural roads</p> <p>Non-hazardous Waste:</p> <ul style="list-style-type: none"> ▪ Concrete waste will be disposed in similar manner as inert wastes ▪ Metal waste shall be disposed separately for reuse and recycling <p><i>Hazardous Waste:</i></p> <ul style="list-style-type: none"> ▪ Hazardous wastes will be collected and transported to Dar es Salaam for their final disposal in approved disposal sites ▪ Uncontrolled incineration will not be allowed ▪ Before removal of wastes from the site, the quantity (volume) and size of wastes; the name of waste collector/disposal agent and the name of the place of their final disposal/measure shall be specified. This issue shall be controlled by site manager ▪ The technical personnel shall be trained and informed about the appropriate regulations for handling hazardous waste i.e. Environment Management (Hazardous Waste Control and Management) Regulations, 2008 ▪ After demolition the place shall be restored to the pre-construction state
<p>CONSTRUCTION PHASE</p>	

<p>Impact # 7: Land disturbances / soil erosion</p>	<p>In addition to mitigation measures listed under impact # 1 following measures will also be implemented:</p> <ul style="list-style-type: none"> ▪ RAHCO shall make land management and soil erosion control a requirement in the bidding document ▪ RAHCO shall develop management plans for its existing quarry sites, and new sources of construction materials ▪ Contractors will be required to control soil erosion and rehabilitate disturbed land ▪ RAHCO shall provide oversight supervision and monitoring during and after project implementation ▪ Contractor shall identify erosion prone areas, identify permanent erosion control measures (applicable for a particular site) and plan construction works and sites to limit quantity of material likely to be eroded and transported into the nearby rivers. ▪ Deliberately, the Contractor will cover exposed soils with grass and other appropriate species as soon as possible and temporarily will bind exposed soil and redirect flows from heavy runoff areas that threaten to erode or result in substantial surface runoff to adjacent water courses. <p><i>Topsoil removal, disposal and piling</i></p> <ul style="list-style-type: none"> ▪ First of all the topsoil and then subsoil shall be cut and piled (stocked) separately on specially selected area for their purposeful use ▪ The stocked topsoil shall not be mixed up with unfertile soils, stones, etc. It should be prevented from washing to preserve the structure, fertility and seeds base of the topsoil. ▪ Topsoil will be stored in the form of stockpiles having the height up to 2 m and slope inclination up to 30-35° ▪ Erosion of stockpile surface shall be provided through compacting surfaces to the level having no threat of development of anaerobic processes ▪ The Contractor shall stop topsoil removal and stocking operations if topsoil is saturated with water ▪ Stocked soil shall be protected from washing, therefore, it is necessary to arrange drainage [system] in the bottom of the storage. ▪ Stocking of removed topsoil outside the RoW, shall be avoided as far as possible. If this is not possible appropriate sites shall be identified and used in accordance with the current Tanzania Laws (e.g. Village Land Act, 1999)
---	---

<p>Impact # 7: Continue</p>	<p><i>Erosion control</i> Following erosion control measures shall be implemented:</p> <ul style="list-style-type: none"> ▪ Arrangement of berms, stone mounds and gabions will be required at the cut slopes and in the bottom of the slopes. ▪ Cut topsoil shall not be used for construction of berms within the RoW. ▪ At the location of cult slopes and ravine crossings where the excavation works are to be carried out, water collecting and conveyance canals shall be built to regulate the flows of surface waters. ▪ At the ends of water conveyance canals the settlers shall be arranged (pits, sand sacks) to prevent damage of areas adjacent to RoW with water. ▪ Phyto-amelioration measures shall be implemented to stabilize the edges of slopes and cut slopes if required. ▪ It is particularly important to protect the removed and stocked topsoil from erosion processes – as follow. <ul style="list-style-type: none"> ✓ Stocked topsoil shall be drained. ✓ To control erosion processes at the edge of the cut slope, phyto-amelioration measures shall be implemented on the slope. ✓ For regulation of surface waters, berms and water canals shall be arranged at the edge of the slope that will be connected to natural water courses to avoid development of lateral erosion. <p><i>Soil reinstatement measures</i></p> <ul style="list-style-type: none"> ▪ After completion of excavation works and laying the rails the soil reinstatement activities shall be implemented in the areas adjacent to the embankment. ▪ The reinstatement works shall be carried out in favourable meteorological (dry) conditions and in the shortest possible time. ▪ During implementation of soil reinstatement works mechanical and physical-chemical characteristics of soils shall be taken into account. ▪ Soils shall be reinstated at least to its initial state for the purpose of observation of the principles of environmental safety and preservation of the recreational value of landscapes.
<p>Impact # 7: Continue</p>	<ul style="list-style-type: none"> ▪ Reinstatement works to be carried out within the framework soil quality management; therefore the following will be required: <ul style="list-style-type: none"> ✓ preservation of landscapes and their recreational value; ✓ reinstatement-conservation of the areas modified as a result of construction activities to their initial visual-aesthetic state as much as possible; ✓ the construction shall not cause negative impact on the environment of the railway route and the RoW; ✓ implementation of slope stabilization and designing activities at the crossings of the railway with ravines; ✓ reinstatement of the private land parcels located in the vicinity of the railway bypass to their initial state, conservation of their fertility and natural characteristics; ✓ implementation of erosion control measures along and in the vicinity of the railway. <p>Other mitigation measure include:</p> <ul style="list-style-type: none"> ▪ <i>Training of workers and construction site managers</i> to avoid, along other impacts, destruction-trampling and mechanical damage of soils by construction machinery in the areas adjacent to the construction sites.

<p>Impact # 8: Impaired air quality & contribution to climate change due to release of dust (including fugitive (unavoidable, residual), greenhouse gases and other noxious air pollutants</p>	<p>Mitigation measures listed under Impact # 4 apply.</p>
<p>Impact # 9: Impaired land and water qualities and contained resources from discharge of pollutants (wastes, oily substances etc.)</p>	<p>In addition to mitigation listed under Impact # 5 and Impact # 6 , the Contractor and RAHCO shall implement following additional measures:</p> <ul style="list-style-type: none"> ▪ Develop and implement project – specific Waste Management Procedure / Plan (i) identify what type of solid or liquid wastes and categories of wastes the project will generate or handle (biodegradable / organic wastes; packaging materials; non-biodegradable (metallic, plastic), and hazardous wastes i.e. fuels, oils, lubricants, vehicle / machinery fluids etc.);(ii) identify ways to reduce the volume of waste by reusing or recycling initiatives (iii) establish technological interventions to capture and removal unwanted materials and sand before entering the water ways i.e. bar screens, sand traps and grit chambers. <p>The following are specific waste management procedures to be implemented:</p> <ul style="list-style-type: none"> ▪ During earthworks, i.e. excavation, digging pits, quarrying, etc. Contractor shall ensure the top soil is piled aside at one place, then after finishing the earthwork the top soil shall be used to fill any bare land surfaces around the site. ▪ Plastic and glass bottles (about 9kg per day) shall be collected into litter bins, and transported to plastic recyclers. ▪ At completion of each day, site shall be left clean and tidy; debris, scrap and spill materials removed. ▪ Biodegradable waste of about 900kg per day consisting of mainly paper, etc. from offices and open workshop will be disposed by burying ▪ Batteries will be sent to YUASA in Dar es Salaam for recycling ▪ No waste oil will be disposed at the site during construction. Fuel, oils and lubricants (300kg per day) on average from construction machinery and equipment from maintenance workshops, fuelling points etc. will be collected for use in furnaces ▪ Demolition debris will be used during construction as construction aids or distributed to community project and filling of rural roads. <p>Following specific measures shall be implemented where applicable: <i>Inert Construction Materials:</i> measures listed under impact # 6 apply</p>

<p>Impact # 9: continue</p>	<p>The Contractor and RAHCO shall implement following additional measures to mitigate water pollution from vehicle related activities:</p> <ul style="list-style-type: none"> ▪ vehicle fuelling stations (in case of their existence at the construction stage) shall be embanked to prevent spread of fuel and pollution of the surrounding area in case of accidental spills; ▪ vehicle wash areas within the garages shall be embanked. For wastewater treatment a primitive treatment facility in the form of concrete covered two-step ditches to prevent discharge of untreated waters in ravines and rivers; ▪ washing of vehicles in river and other surface water object shall not be allowed; ▪ layers of soil polluted by fuel and lubricants spilled from construction machinery shall be removed and transported to the place agreed with the Vice President’s Office (VPO), Division of Environment (DoE), Department Natural Resources in advance; ▪ when painting metal constructions, especially metal bridges, tin or other covers shall be placed under the sections to be painted to avoid spill of paints into the surface water objects; ▪ Crossing of the planned railway with water bodies shall be designed in a manner to avoid penetration of pollutants in water bodies. <p>Other wastes</p> <ul style="list-style-type: none"> ▪ places for toilets within the construction camps shall be selected with consideration of the groundwater levels. ▪ Cesspools shall be covered with cement solution to avoid pollution of groundwater with faeces. ▪ Cesspools shall be emptied on a regular basis in accordance with the number of workers living in the construction camp. ▪ construction waste shall be piled at a distance of at least 50 m from the riverbeds of rivers and ravines prior to disposal to the specially allocated dumpsites; ▪ temporary barriers shall be arranged at the small ravines and gullies to avoid movement of increased volumes of solid materials from the RoW to large ravines and rivers at the construction stage; ▪ the design of shall ensure protection of the groundwater and the river water from pollution
<p>Impact # 9: Continue</p>	<p>Non-hazardous Waste - mitigation measures listed under impact # 6 apply</p> <ul style="list-style-type: none"> ▪ Construction camps will be provided with toilet / shower facilities connected to a regularly emptying septic tank; ▪ Special waste bins and waste collection system will be introduced to ensure disposal of wastes at landfills; ▪ The concrete wastewater will be collected, processed through a sedimentation tank and neutralized, usually with gaseous CO₂, before their disposal; ▪ Vegetation wastes generated from site clearance during construction can be left on the site only in exceptional cases. They will be transported to the suitable waste management facility; <p>Hazardous Waste – mitigation measures listed under impact # 6 apply</p> <ul style="list-style-type: none"> ▪ Reserves of potential polluters will be stored on special insulating bedding and fenced by a berm made of the similar material to retain the polluter in an amount of 10% more than stored. ▪ During operation all stationary construction machinery operating on diesel and petrol will be equipped with a special container to collect leaking fuel for disposal. ▪ Main equipment and vehicles will be fuelled on special insulating bedding wherever possible. ▪ A special attention will be paid to prevention of fuel spills. Special collectors will be installed at the points of potential leakage. Absorbents will be used as well. Fuel will be transported by specially designed fuel trucks. ▪ Collection, treatment and transportation of waste wastes generate at the construction site will be implemented in accordance with the general plan of waste management. ▪ Wastes shall be collected on a daily basis. Waste bins labelled with special signs will be placed on specially allocated points for collection and further disposal of wastes.

<p>Impact # 10: Temporary disturbances / flight of aquatic fauna from noise emission</p>	<p>In addition to mitigation listed under Impact # 2, the Contractor and RAHCO shall implement following additional measures:</p> <ul style="list-style-type: none"> ▪ During the construction phase small supporting enterprises, construction camps, parking and maintenance areas shall be arranged at a considerable distance from the settlements. ▪ Where possible alternative methods of drilling and explosion; e.g. so-called “shields” to drill tunnels will be used, or at worst drilling-explosion shall be carried out using minimal explosive charge. ▪ If protected species are found, special measures to minimize their disturbance during reproduction and breeding periods will be develop and implemented; ▪ Arrange fences to prevent animals from falling into the trenches. Before filling the trenches make sure that there is no animal there. In general, it will be sufficient to place wooden boards in trenches that will be used by animals for escaping; ▪ Keep old trees near the RoW during the construction works; ▪ After completion of construction works the water courses and forest strips shall be recovered, topsoil shall be reinstated and re-cultivated, shrubbery shall be planted along the RoW. Pipes laid in gorges will play the role of so-called “Green Bridges” for animals.
SOCIAL IMPACTS	
SITE SELECTION AND MOBILISATION PHASES	
<p>Impact # 11 Destruction of archaeological and cultural heritage resources</p>	<ul style="list-style-type: none"> ▪ During implementation of earthworks at the project sites and adjacent areas permanent inspection/monitoring of the archaeologist shall be done ▪ The results of inspection will be reflected in the construction prpgress report ▪ If cultural / archeological heritage is discovered or the grounds for assuming its existence are revealed during construction works, RAHCO (or/and its Contractor) is legally bound to stop the activities that bear the risk of damaging cultural heritage and inform in writing the Director of Archeology and Cultural Resources in the Division fof Antiquities, Ministry of Natural Resources and Tourism . The Director has to verify the discovered cultural heritage or the grounds for supporing the discovery and inform RAHCO 9or /and its Contractor) about the verification results in writing no later than in 2 weeks offer receipt of the notification.
<p>Impact # 12: Change or modification of population and its quality of life due to land take</p>	<p>In order to mitigate impact associated with land take and land use change RAHCO shall implement the following measures, before project implementation begins;</p> <ul style="list-style-type: none"> ▪ The Project Affected People will be compensated as proposed in the Resettlement Action Plan (RAP) ▪ Ensure user participation at the planning, design, and implementation stages of the project. Consultations with. ▪ Ensure women and other vulnerable groups are not disadvantaged by the project. ▪ Encourage the PAPs to join Village Community Bank (VICOBA) as a way of protecting their money. <p><i>Loss of land and property</i></p> <ul style="list-style-type: none"> ▪ To minimize the negative effects of the relocation of affected communities RAHCO shall develop a Resettlement and Compensation Plan. RAHCO has developed a preliminary Project Resettlement Framework containing possible mitigation measures ▪ Consultations with the PAPs on the developed relocation program shall be continuously be made. Information on timeframe of the relocation program should be provides. In addition, railway staff should be trained on relocation program if appropriate. ▪ Consultations should be conducted not only with the people that are subject of displacement but also with the host community members. The affected community members should be involved in the decision-making process related to the resettlement process: compensation packages, resettlement assistance, suitability of proposed resettlement sites and the proposed timing. ▪ In terms of mitigation and reduction of negative impacts from disruption of social relationships and networks while considering resettlement opportunities priority should be given to those areas where the possible resettlement of the whole community / settlement exists. ▪ To address in a timely manner specific concerns that will be raised during the resettlement process Grievance Mechanism should be established at an early stage as possible.

CONSTRUCTION PHASE	
<p>Impact 13: Construction health and safety hazards</p>	<p>In order to mitigate these impacts RAHCO should oblige construction company through contractual terms to conduct the following activities:</p> <ul style="list-style-type: none"> ▪ To develop and implement <i>Public health and Safety and Construction Health and Safety Plans</i> - these should address the dust and noise issues. ▪ Where possible erect special fences; provide adequate sheeting of vehicle, ensure loads up until tipping point when moving around the site; use of dust filters on fixed plant and machinery. ▪ The workers they should provided with and require to wear protective special masks especially those workers who are involved in the implementation of dust generating works. ▪ Where possible noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers should be constructed. ▪ Where possible avoid conduction works during night-time ▪ Use special quiet equipment, such as silenced and enclosed air compressors and properly working mufflers on all engines. ▪ Develop and implement Grievance Mechanism through which local residents and workers could bring their concerns on the noise and dust caused to the construction. <p>Additional measures include:</p> <ul style="list-style-type: none"> ▪ Avoid and minimize the pollution and ensure environmental safety of workers and the population all construction equipment is maintained in good running conditions. ▪ Develop and implement Construction Site Management Plan: which will regular watering of relevant sites, especially in dry and windy weather, regular washing of construction machinery and their wheels and use of closed waste containers to ensure additional protection from unpleasant smell ▪ Use of diesel engines in closed spaces shall be restricted within depots and maintenance areas, exhaust mufflers shall be installed on internal boilers and proper ventilation of closed spaces shall be ensured.
<p>Impact # 14: Temporary disruption of socioeconomic activities</p>	<p>During construction the Contractor shall implement the following measures to mitigate disruption of other socioeconomic activities:</p> <ul style="list-style-type: none"> ▪ Establish and enforce good site management to limit the construction activities as close as possible to the construction site ▪ Develop and observe best practice - methods of working – e.g. avoid unnecessary noise ▪ Restrict hours of working during day light; ▪ Exercise efficient material handling to minimise vehicle movement ▪ Define access routes to the site, and try to avoid the large port area ▪ Keep trucks and vehicle movements to a minimum possible
<p>Impact # 15: Loss of aesthetics due to haphazard disposal of demolition waste</p>	<ul style="list-style-type: none"> ▪ Mitigation measures listed under Impacts # 6 & 9 apply
<p>Impact # 16: Nuisance and disturbances from noise / vibrations (exceeding allowable level for people comfort) due to construction activities</p>	<ul style="list-style-type: none"> ▪ Mitigation measures listed under Impact # 10 apply

<p>Impact # 17: Occupational Health and Security and Safety (HSS) risks</p>	<p>In order to mitigate Occupational and Health safety Hazards the Contractor and RAHCO shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Avoid use of faulty equipment, tools and risk practices: Standards and operations and equipment: lifting, electrical isolation / installation, working at heights, manual handling, fitness for work, hand tools, housekeeping, building and office, vehicle and driving, hazardous substances etc. ▪ Employ trained /qualified and competent Personnel. ▪ Provide appropriate equipment and working condition. ▪ Provide PPEs (to workers and visitors) and enforce their use. ▪ Put in place fall-prevention systems for people working at elevated sites. ▪ Install Signage: post warning signs with appropriate text (local language) and graphics. ▪ Observe standard working hours (8 hours per day) ▪ Secure equipment properly and demarcate any hazardous areas. ▪ Enforce best code of practices at the work place: Observe internationally acceptable Performance Standards on health/safety requirements. ▪ Institute procedures and guidelines, work procedures, inspections and maintenance system, ▪ Implement in-house health and safety manual /guidelines ▪ Avoid inadequacies in water and sanitation provisions ▪ The demolition and construction work shall be contracted to class one contractor to avoid unnecessary health risks. ▪ OSHA guidelines on workers safety shall be implemented ▪ Raise awareness on construction hazards to construction workers. ▪ Use water sprinklers to suppress dust during construction ▪ Post warning signs with appropriate text (local language) and graphics. ▪ Workers Code of Conduct with the Community Liaison Plan will be developed and implemented – this will provide rules of conduct while conflict situations; emphasizing cultural characteristics of the local communities if migrants from different cultures enter the area shall be developed. Moreover, workers should be trained in order to ensure that they behave according to the developed Workers Code of Conduct.
<p>Impact # 18: Public HSS risks: traffic accidents, Risks of human-human transmission of diseases (STD, HIV, etc.) Infections from putrescible wastes with disease pathogens</p>	<p>In order to mitigate public health and safety hazards, the Contractor and RAHCO shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Cooperate with local Civil Society Organizations (CSOs)/public health offices in programmes for reduction/eradication of the diseases and establish worker’s health protection procedures (e.g. make available free condoms to workers) ▪ Enforce surveillance measures e.g. yellow fever vaccination, potential Ebola infection etc. ▪ Enforce speed limit for vehicles ▪ The construction area shall be isolated with special fences from the settled areas; clear signs should be posted at the entrance to the construction area to ensure that community members will avoid entrance of this area and will be more cautious when passing the construction site <p>Other measures include:</p> <ul style="list-style-type: none"> ▪ <i>Public Health and Safety Plan</i> shall be developed and implemented to mitigate the impacts of the movement of heavy equipment on existing local roads. ▪ <i>Construction Traffic Management Plan</i> shall be developed which will allow re-routing of the truck traffic from residential streets or using local roads with fewest homes for transportation of construction materials. ▪ Develop and implement a Grievance Mechanism to facilitate early notifications of any concern from the public
<p>Impact # 19: Vandalism of structures / equipment, theft of materials and portable items</p>	<p>In order to mitigate vandalism tendencies, during construction phase, the Contractor shall</p> <ul style="list-style-type: none"> ▪ strengthen security system ▪ Strengthen patrol overall project sites and routes
RAILWAY OPERATION	

<p>Impact # 20: Release of oils and fuels in the aquatic environment</p>	<p>In order to protect the receiving environment against oils and fuels during operation TRL shall implement the following measure:</p> <ul style="list-style-type: none"> ▪ Fuels and lubricants shall be stored only at designated areas. ▪ Storage of fuel and lubricants shall be kept at least 30m from the edge of the surface waters e.g. rivers ▪ Refuelling and lubrication of equipment shall be restricted to areas at least 30m away from the edge of the surface waters ▪ Perform all routine equipment maintenance at least 30 meter away from the edge of the rivers and recover and dispose of wastes in an appropriate manner. ▪ Fixed fuel dispensing locations will be provided with secondary containment to capture fuel from leaks, drips, and overfills. ▪ A supply of sorbent and barrier materials sufficient to allow the rapid containment and recovery of spills shall be maintained at construction site ▪ Conduct regular maintenance and inspections of the locomotives to reduce the potential for spills or leaks.
<p>Impact # 21: Impairment of local air quality</p>	<p>Mitigation measures listed under Impact # 4 & 8 apply Other mitigation measures include:</p> <ul style="list-style-type: none"> ▪ Proper maintenance of trains, rails and wheels; ▪ Speed of trains may be restricted when passing the sensitive areas; ▪ Supporting structures may be constructed along the railway track which will play a role of acoustic screens.
<p>Impact # 22: Occupational and Public health and safety</p>	<p>In addition to mitigation measures under impact # 17, TRL shall implement the following measures to reduce risks of worker accidents during rail operations:</p> <ul style="list-style-type: none"> ▪ Develop and implement a <i>Safety Program</i> in accordance with the international norms. ▪ Ensure that every manager and worker receives training before they perform any work on the line, and are provided refresher training at least every year thereafter. This applies to temporary workers as well. ▪ Train workers in personal track safety procedures ▪ Block train traffic on lines where maintenance is occurring (green zone working) or if blocking the line is not possible use an automatic warning system ▪ Segregation of stabling, marshalling and maintenance areas from running lines. ▪ Railway workers should schedule rest periods at regular intervals and during the night to the extent feasible, to maximize the effectiveness of rest breaks and in accordance with international standards and good practices for work time in order to avoid fatigue of workers and accidents invoked by this.
<p>Impact # 23: Potential loss of lives and property as a result of falling off from moving train, collision with train at road crossing as a result of increased train frequencies</p>	<p>To avoid, minimize and control the risks associated with railway operation including railway crossings the RAHCO and TRL shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Use of bridges or tunnels is recommended. ▪ If level crossings are unavoidable, signals shall be installed and their regular inspection/maintenance provided. ▪ Increase the security at all railway stations ▪ Continuously provide awareness campaign to inform passengers on the dangers of boarding or disembarking train while the train is moving. ▪ TRL will develop and implement a <i>Safety Program</i> in accordance with the international norms. Underpasses or level crossings should be developed based on the consultations with the public and representatives of local government. ▪ Post visible warning signs at potential points of entry to track areas. ▪ Fencing or other barriers should be installed at station ends and other locations to prevent access to tracks by unauthorized persons. ▪ Stations should be designed in such a way to ensure that the authorized route is safe, clearly indicated and easy to use. ▪ In addition awareness raising campaign should be conducted in the area for the local public to provide them relevant information and increase their awareness on the risks of trespassing.

<p>Impact # 24: Additional pressure and demands on local social services and resources (increase water users, toilet users)</p>	<p>RAHCO shall implement the following measures</p> <ul style="list-style-type: none"> ▪ Ensure there enough toilets and washrooms at all stations ▪ Ensure availability of clean water at all stations ▪ Construct passenger waiting room ▪ Provide areas for canteen operation
<p>Impact # 25: Vandalism of structures / equipment, theft of materials and portable items</p>	<p>In order to mitigate vandalism tendencies RAHCO shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Strengthen patrol of the railway infrastructure ▪ Work with village leadership to get their cooperation to guard the infrastructure ▪ Strengthen community outreach and Corporate Socio Responsibility programmes
<p>NATURAL, ACCIDENTAL AND ANTHROPOGENIC EVENTS</p>	
<p>Impact # 26: Physical damage of project structures and disruption of railway operations and schedules due to natural causes</p>	<p>This project is aimed at mitigating recurrent flood risk as such efforts should be made to implement it</p> <p>In order to protect the environment from natural or accidental events RAHCO shall implement the following mitigation measures:</p> <ul style="list-style-type: none"> ▪ RAHCO should develop a disaster management program. The main tasks of this programme are: <ul style="list-style-type: none"> ✓ Introduction and systematic use of methods for analyzing, evaluating and predicting the risks of disasters in practice; ✓ Improve the management and coordination activities for the reduction of disaster risk and increase the resilience of sites of critical infrastructure; ✓ Establishment of an early warning system and notification of disasters; ✓ Improving the quality of management, organization and technical provision of the single rescue system; ✓ Development of systems for seismic surveys and monitoring of water basins and rivers; ✓ Improving the system for training of managerial staff for disaster response; ✓ Public education using modern technologies and media to form a culture of safe life activity.

<p>Impact # 27: Impairment of environmental quality due to accidental events</p>	<p>RAHCO in collaboration with TRL shall implement the following measures:</p> <ul style="list-style-type: none"> ▪ Carry out continuous research and monitoring to determine the reasons for and reduce the risk of freight train derailment – e.g. the probability that a train will be involved in a derailment is a function of the quality of track, the length of train, and exposure in terms of distance travelled etc. ▪ Implement rail operational safety procedures aimed at reducing the likelihood of train collisions, such as a positive train control (PTC) system. ▪ Conduct regular inspection and maintenance of rail lines and facilities to ensure track stability and integrity in accordance with national and international safety standards. ▪ Implement an overall safety management program that is equivalent to internationally recognized railway safety operations. E.g. the Safety Management System published by the Safety Management in Railways group of the International Union of Railways (IUR). <p>Accidents related to the transportation of dangerous goods</p> <ul style="list-style-type: none"> ▪ TRL should develop and implement a system for the proper screening, acceptance and transport of dangerous goods. ▪ RAHCO should develop spill prevention and control, and emergency preparedness and response plans and ensure its implementation. <p>Vegetation</p> <ul style="list-style-type: none"> ▪ TRL and RAHCO should develop and implement a system to rehabilitate areas of damaged vegetation as a result of railway accidents (oil spills, destruction of the soil horizon, etc.) along with implementation of the Emergency Response Plan. ▪ Conduct regular training of the relevant employees for preparedness and timely and effective response to emergency situations.
<p>Impact # 28: Impairment of railway operations as a result of flooding of Gombe Dam</p>	<p>RAHCO shall continuously liaise with operator of the Gombe Dam to ensure that the dam is effectively managed to ensure it does not flood beyond its boundaries</p>
<p>Social Impacts</p>	
<p>Impact # 29: Increased train frequencies and therefore smoothen passenger and cargo movement</p>	<p>In order to enhance the benefits that will result from the implementation of this project TRL and RAHCO shall</p> <ul style="list-style-type: none"> ▪ Invest in other infrastructure and operational requirements such as procuring more wagons and more engines, improving welfare of workers etc.
<p>Impact # 30: Protection of roads from heavy cargo as is the current practice</p>	<p>In order to improve the usage of railway system to transport cargo instead of roads the following mitigation measure should be considered:</p> <ul style="list-style-type: none"> ▪ Tanzania should make it mandatory to transport heavy cargo with railway system instead of using road
<p>Impact # 31: Increased income to local suppliers</p>	<p>In order to enhance the benefits that may result from procurement of construction materials and other services from local business people the following measures may be implemented:</p> <ul style="list-style-type: none"> ▪ RAHCO and TRL will develop a plan aiming at providing opportunities for procurement contracts with local companies in the context of all areas of service requirement during construction and operation
<p>Impact # 32: Employment opportunities</p>	<p>In order to enhance the employment benefits the following measures may be implemented:</p> <ul style="list-style-type: none"> ▪ RAHCO and TRL will develop and implement a Local Workforce Recruitment Plan aiming at providing opportunities for employment of local workforce. ▪ Information with regard to construction recruitment will be comprehensively and timely communicated to the local community members by contractors.

Impact # 33: Increased income and improved or livelihoods as result of increased agricultural production, trading activities, and movement of people within the region and bordering countries	Measures under Impact # 29 will apply
Impact # 34: Improved comfort of passengers as a result of increased train frequencies	Measures under Impact # 29 will apply
Impact # 35: Improved quality of the landscape features and appearance of the river embankments	<ul style="list-style-type: none"> ▪ River embankment protection will be implemented as planned
Impact # 36: Improved flood management emanating from proper operation of the Gombe Dam	<ul style="list-style-type: none"> ▪ Mitigation measures under Impacts # 28 apply
DECOMMISSIONING	
Impact # 37: Environmental degradation due to haphazard disposal of wastes	<ul style="list-style-type: none"> ▪ Mitigation measures under Impacts #6 and 9 apply
Impact # 38: Loss of employment	<p>In order to minimise the impacts that may result from un-employment the following measures shall be implemented:</p> <ul style="list-style-type: none"> ▪ RAHCO and TRL shall prepare their workers to be employed elsewhere through regular and periodic training ▪ Ensuring that all employees are members of the Social Security Fund. The employer shall ensure that the company contributions are paid to respective Social Security Fund.
Impact # 39: Loss of income to government	<p>In order to mitigate the impacts on loss of government revenue as a result of decommissioning the railway system (though very unlikely)</p> <ul style="list-style-type: none"> ▪ The government to develop other transport sectors to compensate for the loss

<p>Impact # 40: Destruction of road infrastructure as the cargo will revert back to current transport system</p>	<p>In order to mitigate the impacts on roads as a result of decommissioning the railway system (though very unlikely)</p> <ul style="list-style-type: none"> ▪ The government to strictly enforce maximum allowable axle load
--	--

Proposed monitoring and auditing

In order to ensure that the proposed mitigation measures are implemented and are effective a monitoring plan has been proposed. This shows the parameters to be monitored, areas for monitoring, frequency of monitoring, target level, responsibility and estimated costs for carrying out the monitoring. The estimated costs are about Tsh 21,000,000 (one off expenditure) and Tsh 134,400,000 per year. In order to ensure that the mitigation measures are implemented, and are working, RAHCO shall designate an Environmental Control Officer, his/her main task will be to monitor the implementation of the project. RAHCO shall conduct environmental audit of the project as provided in the EMA Act Cap 191.

Resource evaluation or cost benefit analysis

A cost and benefit analysis has been conducted. The project costs have been looked upon in terms of capital expenditures; operating and maintenance costs; staff costs; operations material costs; and Environment, health and other social costs. While the benefits have been assessed in terms of Better operations of the Central railway line; Better servicing and maintenance of the railway line facilities; Protection of road network by transporting the majority of cargo via railway line; Efficient and cheap cargo transportation costs to business people; Increased use of the Dar es Salaam Project by neighbouring land locked countries; Protection of environment and health; and Provision of other social benefits e.g. easy movement of agricultural goods and people. It is estimated that Tsh. 167,000,000 (one off) and Tsh 245,000,000 per year will be used to implement the mitigation measures. Based on the analysis it has been concluded that the expected benefits outweigh the costs of implementation of the project.

Decommissioning

The EIS has proposed a preliminary decommissioning plan of the scheme. The plan elaborates on different phases of decommissioning starting with pre-decommissioning inventory and identifying relevant institutions for permitting and handling of decommission wastes such as scrap metals and other waste. This preliminary plan will be subject for finalization and approval by designated authority one year before the project decommissioning.

Conclusion

The implementation of proposed flood protection measures for the Central Railway Line will result into both negative and positive impacts. There is no impact that has been considered to be irreversible. Most of the impacts can be mitigated. However, there will be a number of people that will be impacted by the project. RAHCO has developed a preliminary Compensation and Relocation Plan to gauge the extent of affected people and their property. A comprehensive Relocation and Compensation Action Plan shall be developed before the project starts.

LEAD CONSULTANTS

Expert	Responsibility	Signature
Prof. Jamidu Katima	Team Leader and Environmental Management Specialist	
Ms. Saada K. Juma	Environmental and Social Management Framework Specialist	
Eng. Gastory Leonard	Water Resources Management / Irrigation Specialist	
Ms. Mwajuma Nuru	Sociologist	