

### Environmental and Social Monitoring Form for Construction Stage

Item	Location	Parameter/ Means of Monitoring	Result (Average / Max / Total, etc.)	Standard (Legal / International Standard)	Frequency	Remarks	
Air quality	Construction site	Visual inspection of mechanical condition and exhaust gas	Equipment in good mechanical condition.	X	Every day before working	Everyday all equipment are inspected before any activity.	
	Construction site	Visual observation of dust	Dust emission are minimized by regular and controled watering, especially on dry and Windy days.		Every day	Watering is being performed regularly through out construction site in the following areas: Villages, Work Fronts, Main - Camp, Quarry, Sub - Camp, critical areas in detours; villages and work fronts being at top priority. Visual assessment is conducted every day and every month we are monitoring the dust wih equipment (ongoing)	
		No. of complaint	There is no complaint.		Any time	No report of complaint during this period.	
	Boundary of ROW nearest to construction site	SPM10		From 9 <sup>th</sup> to 25 <sup>th</sup> of July 2019 Average: 9.2 µg/m <sup>3</sup> , Max: 24 µg/m <sup>3</sup> at Main Camp; Average: 13.1 µg/m <sup>3</sup> , Max: 63 µg/m <sup>3</sup> , at Quarry; Average: 8.3 µg/m <sup>3</sup> , Max: 15 µg/m <sup>3</sup> , at Lilumile; Average: 20.2 µg/m <sup>3</sup> , Max: 29 µg/m <sup>3</sup> , at Sub Camp; Average: 40 µg/m <sup>3</sup> , Max: 152 µg/m <sup>3</sup> , at Madgiga Village; Average: 45.3 µg/m <sup>3</sup> , Max: 224 µg/m <sup>3</sup> , at Luagala Village.	0.02 mg/m <sup>3</sup> (Japan, average 24h)	2 times in dry season and 2 times in rainy season	Two values with more than 150 µg/m <sup>3</sup> , were registered. It was immediately instructed for the contractor to watering along the working areas to avoid dust.
				From 30 <sup>th</sup> to 31 <sup>st</sup> of Aug 2019 Average: 88.7 µg/m <sup>3</sup> , Max: 106 µg/m <sup>3</sup> at Main Camp; Average: 166.1 µg/m <sup>3</sup> , Max: 504 µg/m <sup>3</sup> , at Quarry; Average: 76µg/m <sup>3</sup> , Max: 86µg/m <sup>3</sup> , at Lilumile; Average: 187.8 µg/m <sup>3</sup> , Max: 389 µg/m <sup>3</sup> , at Madgiga Village; Average: 129.4 µg/m <sup>3</sup> , Max: 282 µg/m <sup>3</sup> , at Luagala Village.			Average: 166.1 µg/m <sup>3</sup> , Max: 504 µg/m <sup>3</sup> , at Quarry (The high value was due to start crushing without opening the water system to avoid the dust. And it was immediately instructed for the contractor to open the water system). Average: 187.8 µg/m <sup>3</sup> , Max: 389 µg/m <sup>3</sup> , at Magiga Village (The high value was due to burning of grass by the local population around the monitoring site.)
				From 16 <sup>th</sup> to 28 <sup>th</sup> of Sep 2019 Average: 45.8 µg/m <sup>3</sup> , Max: 53 µg/m <sup>3</sup> at Main Camp; Average: 20.2 µg/m <sup>3</sup> , Max: 31 µg/m <sup>3</sup> at Sub Camp Average: 124.7 µg/m <sup>3</sup> , Max: 142 µg/m <sup>3</sup> , at Quarry; Average: 20.1 µg/m <sup>3</sup> , Max: 42 µg/m <sup>3</sup> , at Lilumile; Average: 30.6 µg/m <sup>3</sup> , Max: 64 µg/m <sup>3</sup> , at Massangulo Village; Average: 43.2 µg/m <sup>3</sup> , Max: 252 µg/m <sup>3</sup> , at BIG CUT at km 81+340.			Watering is being performed regularly through out the construction sites in the following areas: Villages, Work Fronts, Main Camp, Quarry, Sub-Camp, critical areas in detours; villages and work fronts being at top priority. Small particles are expected to be consisting of soil dust quarry in Lulumile at km 146+500.
		SO <sub>2</sub>	0 ppm	0.04 mg/m <sup>3</sup> (Japan, average 24h)			During the monitoring, the equipment registered oxygen deficiency in a workshop and the CO value was 1 ppm. (This happened due to the welder. It was welding during the monitoring time in the workshop)
		NO <sub>2</sub>	0 ppm	0.10 mg/m <sup>3</sup> (Japan, average 24h)			
Water Pollution	River, stream, reservoir and other public water body where construction works are executed.	Visual observation	There is no record of activities with high potential for water pollution. Note that now we are in dry season.	X	Every Month	All construction activities over the river and stream have already been finalized. In this dry season the waters are clean. There are no other polutants obsrved in the waters.	

Noise	Along N-13	No. of complaint	There is no complaint.		Any time	No report of complaint during this period.	
	Boundary of land plot nearest to the construction site	Noise Level	<p>Lione Campsite Leq(5min)                      Leq(15min) Min Ave Max      Min Ave Max 37.2 59.8 82.5      48.2 70.25 92.0</p> <p>Km 81+340 Big Cut (Caracol section) Leq(5min)                      Leq(15min) Min Ave Max      Min Ave Max 68.8 83.15 97.7      72.4 93.9 115.4</p> <p>Quarry (nearest Jaw Crasher) Leq(5min)                      Leq(15min) Min Ave Max      Min Ave Max 63.4 74.6 85.8      73.6 86.05 98.5</p> <p>Massangulo village km 60+200 Leq(5min)                      Leq(15min) Min Ave Max      Min Ave Max 64.5 79.25 94.0      49.7 57.3 94.9</p>		70dB (06:00-21:00) 60dB (21:00-06:00) (Japan, Trunk Roads)	Every Month	At all the front working where the value is above 70dB, the contractor was instructed provide the adequate earplugs for each work place. Special treatment has been given to the quarry due to excessive noise such as the rotation of workers.
	Sensitive Area (School, Hospital)		<p>Lilumile – nearest school and health centre Leq(5min)                      Leq(15min) Min Ave Max      Min Ave Max 50.08 57.5 65.0      49 56 63</p>	55dB (Japan, Sensitive Area)		The max value was reported due to passing of a public truck when the monitoring were take in place. Immediately the driver was warned to slow down the speed and acceleration of the truck.	
General waste	Waste storage at construction site, Waste Disposal Site	Waste Oil and other construction waste	Store Condition	X	Every day	Tires, filters and used oils have been stored in drums containers in the storage area of the workshop. They are reusing the remnants of metals to produce stove, roasting pans, signal board and funnel. (ongoing)	
			Recycling Status				Recycling of metals drums
		Way of recycle	Produce stove, roasting pans, signal board and funnel.				
		General Waste	Recycling Status				Recycling of plastic bottles
			Way of recycle				For domestic use as containers for water/juice and cooking oil. They may also be used as plant pots although in small quantity.
Way of treatment	Re-use (used by internal personal); Re-use in construction activities; Dumpsite.						
Location of final disposal site	Within the Main-Camp, Sub-Camp or Quarry.						
Ecosystem	Along N-13	Visual observation of animals (mammals, birds, reptiles, amphibians)	The presence of some tortoise, snakes, foxes and cheetah is observed. (See attachment : photo Evidence of Ecosystem)		Every half year (1 time in dry season and 1 time in rainy season)	Snakes, Tortoise are observed during day hours and Foxes are being observed during night hours.	

Accident	Along N-13	Checking Traffic Accident Report	The target for the accident and incidents is zero, however 3 accident involving the civilian and one of which recorded in fatality, 11 resulted in damage to the project vehicles. Fourteen accidents occurred from July to September.	X	Every Month	<p><b>Description</b></p> <p>The target for the incidents/accident is zero, however 14 were reported during review period. Involving 3 civilians and 11 contractor trucks. Those 3 involving civilians, one was fatal and the other two were only vehicle accident that caused a proper damage. Local police confirmed that the case of the fatal accident was not related to the construction works. On the 11 Contactor trucks it was reported that no Contractor staff suffered any injuries only proper damages on the trucks.</p> <p><b>Root cause</b></p> <p>The major cause at all the accident was fatigue, driving in high speed and negligence not follow the road traffic signs.</p> <p><b>Countermeasures Taken</b></p> <p><b>For fatal accident</b> Road Safety Awareness Campaign was taken involving Lichinga Traffic Police officers and Community leaders.</p> <p><b>For rest of accidents</b> Train / Retraining the Involved Workers about the importance of defensive driving and issued a warning about driving in high speed was taken.</p> <p>The traffic accommodation was improved and increased the speed limits on the road;</p> <p>Continuously providing awareness involving Lichinga Traffic Police, local leaders, project drivers, public drivers and the villages regarding safety measures.</p> <p>Road safety campaign was conducted in partnership with the local traffic police as well as disseminate safe road driving measures and procedures.</p> <p>Motorcyclists, cyclists on road safety were sensitized and how they should behave on the roads.</p> <p>Communicate the occurrence and report internal, sharing by emails, in toolbox talks and to relevant local authorities.</p>
		Visual observation of accident with animals	No record of accident with animals			Nothing was observation during review period.

Land Acquisition	Along N-13	A: No. of land acquired/ B: to be acquired	A: 26 and B: 2	Progress Ratio: $A/(A+B) = 26/(26+2) = 0.98$	Every Month	28 parcels of land were acquired to date, for use as borrow pits. During the reporting period, 2 new borrow pits were opened at km 62+100 and km 63+000. 4 are partially under use for the section from Km 74+400 to km 60+000. 24 borrow pits in the section 76+000 to 147+000 are designated for rehabilitation.
		A: No. of HHs received compensation/ B: HHs to be compensated	A: 216 and B: 9	Progress Ratio: $A/(A+B) = 216/(216+9) = 0.96$		Sub Instruction number 43 (SI.43) on 5th of September 2019, 9 properties were paid at km 89+360 and km 60+200. We expect to receive the final designs that may affect more properties in km 132+500. The process now is with ANE to make evaluation and give the final quotation for each property.  There were some additional cases of RAP resulting from realignment at km 79+000. This realignment was done due to encroachment of the designed alignment into a space designated for cemetery. The other reason for consideration of another RAP matter is the existence of properties in Massangulo that are either abutting at the 12 m (off centerline) road reserve boundary or are within the road reserve. Implementation of RAP had been finalized as of 1 <sup>st</sup> March 2019. The total number of RAP implementation done at completion of this activity is 216 cases. This is an increase of 14 cases consisting of 8 cases from km 79+080 to km 79+340, 2 cases at km 77+200 and 4 cases in Massangulo from km 60+000 to km 60+200.
		Complaint received	Complaints only occur during explanations and signatures of compensation agreements. The construction began after the implementation of the RAP. We have no record of complaints after commencement of construction.	In general, all affected people		All affected people have received their compensation. First group completed on 15/09/2018 and second group resulting from realignment work on 1 <sup>st</sup> March 2019.