Semi-annual Report

September 2016

PNG: Highlands Region Road Improvement Investment Program (Project 2)

Mendi to Tambul Road Sub-project

Prepared by Department of Works for the Asian Development Bank.

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HIGHLAND REGION ROAD IMPROVEMENT INVESTMENT PROGRAM – TRANCHE 2

Mendi to Tambul Road Sub-project

ENVIRONMENTAL SAFEGUARDS MONITORING REPORT No.1

(January to June, 2016)

Project Implementation Unit

Department of Works

National Capital District

Papua New Guinea

September 2016

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Abbreviations

ADB	-	Asian Development Bank
AIDS	-	Acquired Immune Deficiency Syndrome
AP	-	Affected People
CEMP	-	Construction Environment Management Plan
CRO	-	Community Relations Officer
CSC	-	Construction Supervision Consultant
DBST	-	Double Bitumen-layer Surface Treatment
DC	-	Design Consultant
DOW	-	Department of Work
EA	-	Executive Agency
EMP	-	Environmental Management Plan
EO	-	Environmental Officer
ESSU	-	Environment and Social Safeguards Unit
GoPNG	-	Government of Papua New Guinea
GRC	-	Grievance Redress Committee
HCRN	-	Highland Region Core Road Network
HIV	-	Human Immunodeficiency Virus
HRMG	-	Highland Road Maintenance Group
HRRIIP	-	Highland Region Road Improvement Investment Program
IA	-	Implementation Agency
IEE	-	Initial Environment Examination
ISS	-	International Safeguards Specialist
LLG	-	Local Level Government
MFF	-	Multi-tranche Financial Facility
MOA	-	Memorandum of Agreement
NRA	-	National Road Authority
PNG	-	Papua New Guinea
PRO	-	Public Relations Officer
PWM	-	Provincial Works Manager
ROW	-	Right of Way
RP	-	Resettlement Plan
SHP	-	Southern Highland Province
SIS	-	Socio-economic Impact Study
SPS	-	Safeguard Policy Statement
STDs	-	Sexual Transmitted Diseases
TOR	-	Terms of Reference

1.0 Introduction

1.1 Background

1. The Highlands Region of Papua New Guinea (PNG), comprises of the Provinces of Western Highlands, Jiwaka, Southern Highlands, Hela, Eastern Highlands, Enga and Simbu. These provinces are major contributor to the PNG economy through their agricultural production and mineral resources. A well maintained road network is essential to facilitate the movement of goods and people. The Government of PNG (GoPNG) has made significant investment in improving the road network but a lack of maintenance has resulted in deterioration of the roads such an extent that the Highlands Core Road Network (HCRN) is now in poor condition.

2. In order to address the deterioration of the HCRN there is a clear need to: (i) implement a program of regular maintenance on all HCRN roads that are in good condition; and (ii) improve those roads that are in poor condition and ensure that maintenance begins on those roads as soon the improvement works are completed.

3. The GoPNG has negotiated a Multi-tranche Financing Facility (MFF) loan with the Asian Development Bank (ADB) to implement the Highlands Region Road Improvement Investment Program (HRRIIP). The HRRIIP includes projects to improve the HCRN, the preparation of long-term maintenance contracts for the HCRN, and the capacity development of road agencies. In total, 13 road sections are expected to be funded under the program. The Execution Agency (EA) for the program is Department of Works and Implementation (DOW) whilst the Highland Road Maintenance Group (HRMG) is the Implementation Agency (IA) for road improvement works. The National Road Authority (NRA) is the IA for road maintenance works.

4. The Project 2 (or Tranche 2) included improvement to three road sections namely, Mendi-Tambul (55.53km), Kotna-Lampramp (31.65km) and Ialibu-Kagua (32km) in the Southern Highlands/Western Highlands, Western Highlands and Southern Highlands provinces, respectively.

5. The rehabilitation of the Mendi - Tambul road is one of the 13 projects supported through the above loan. The civil works commenced in January 2016 with the mobilization of the contractor. The contract for construction has been awarded to COVEC (China) Limited. The construction period of the project is 30 months. The defects liability period of one year begins after the road is rehabilitated. The completion of this road will be an effective link between Mendi – Munuhu district in Southern Highlands and Tambul - Nebilyer district in the Western Highlands province.

6. After the end of defects liability period, a program of maintenance of ten years will commence. The resettlement work has nearly completed as per the resettlement completion report of December 2015. The assessment of grievances is being addressed inclusive of verification of missed out affected people (AP) during the reporting period. Few APs missed out on structures, trees and grave sites due to dispute during the last payment and will be sorted out in August 2016.

1.2 Project Description

7. Mendi – Tambul road section is 55.53 km long that connects Upper Mendi LLG and Lower Mendi LLG in Southern Highlands Province with the Mt Giluwe LLG and Nebilyer LLG in the Western Highlands province. The construction work of this road section included up-grading of the road that has been built in 1960s. The improvement works commenced in January 2016 and all works will be completed by 24th July 2018. This includes an additional two (2) months to complete all road works before being handed over to the national Road Authority (NRA) for maintenance.

8. The road consists of a 5.5 meter sealed carriageway with 0.25 meter gravel shoulders on either side together with all road furniture as per the design. The subproject work has taken place within the existing road corridor and direct impacts are confined to the edge of the existing road and the construction limits. The entire stretch of the existing road is situated on customary land the use of which has been agreed via memoranda of agreement (MOA) signed between the clan leaders and the DOW permitting the use of customary land for public infrastructure.

9. The environmental impacts assessed at the time of preliminary design categorised the subproject as Category B for environment. The same category was confirmed by the in-depth environmental analysis conducted at the time of project preparation. The Initial Environment Examination (IEE) dated July 2013 has already been disclosed in the web site. The IEE confirmed that environmental impacts of the rehabilitation of the Mendi – Tambul subproject road are limited to the road corridor, are of minor scale and can be mitigated through the thorough implementation of the measures contained in the environment management plan. The impacts such as dust, noise, materials sourcing, storage, haulage, soil erosion, sedimentation and run-off are likely to occur mainly during the construction phase.

10. Based on the EMP presented in the IEE, a construction environment management plan (CEMP) was prepared by the contractor. The plan was reviewed by the Construction Supervision Consultant (CSS) team and approval provided by the Environment and Social Safeguards Unit (ESSU) of DOW in March 2016. Prior to preparation of CEMP, three trainings were conducted by the safeguards specialist of PIU for the contractor staff. The workshop in February 2016 was on CEMP preparation whilst the subsequent training focused on its monitoring. The workshops were attended by the contractor staff, HRMG and CSC. According to pre and post evaluations conducted, few participants have had basic knowledge on CEMP and its monitoring where several monitoring tools were discussed.

11. The IEE consisted of the establishment of institutional arrangements for implementation of CEMP, grievance redress mechanism and consultations with the communities during the program of construction and maintenance.

12. Internal monitoring is being conducted by the environmental specialist of the Construction Supervision Consultant (CSC) whereas independent monitoring is conducted by the Environmental Officer (EO) of HRMG. Monitoring reports are prepared on a monthly basis. ESSU/PIU have reviewed monitoring reports to provide feedback. Presented in this document is the first semi-annual monitoring report for disclosure to ADB.

1.3 Purpose

13. This report is written to present the status of environment including the compliance with approved CEMP in respect of the Mendi - Tambul road section covering January to June 2016. Semi-annual environment safeguards monitoring reports is a requirement under the SPS. In addition, the report provides a clear picture with regard to the implementation of CEMP activities as well as the environmental outcome.

14. Furthermore, the report serves the client, ADB and other organisations to understand the environmental management process, its outcome, the corrective actions that are required and the impact of such actions on the environment.

1.4 Methodology

15. The six-monthly report is written using data gathered from several sources. The primary data has been gathered from discussions with project staff including contractor staff and officials and meetings with the community. Other methods of gathering primary information are the site inspections and observations. The secondary data sources utilized include review of monitoring reports produced by CSC, extraction of data from contractor's reports and camp log-book.

16. The list of reports reviewed is in Appendix 1 whilst names of people interviewed are in Appendix 2.

1.5 Report Organisation

17. The report consists of the foregoing introduction and 2 other sections as follows:

i) Section 1 – Introduction,
ii) Section 2 – Monitoring results and findings, and
iii) Section 3 – Conclusions and recommendations and appendices

2.0 Monitoring results and findings

18. The main findings of monitoring including the assessment of environmental impacts during the review period are presented in this section.

19. The construction works being undertaken includes;

i. clearing and grubbing,
ii. cut and fills to provide the designed road formation,
iii. cutting slopes,
iv. filling and embankments,
v. works on culverts and drainage, and
vi. laying of base coarse materials and its compaction

A new camp has been built in Tambul whilst the existing camp built during Mendi-Kandep road construction is being utilized at the Mendi end of the road. The camps are being used for staff housing, offices, storage of equipment, fuel and other materials.

20. The basis for monitoring is the parameters listed in the CEMP of which there are 15 as follows:

- Contractor's camp and yard
- Erosion and sedimentation
- Water quality
- Air quality
- Noise
- Waste management
- Hazardous material management
- Aggregates extraction
- Tree removal and vegetation management
- Socio-economic issues (workers)
- Socio-economic issues (community)
- Public safety
- Health and safety issues
- Traffic management
- Prevention of HIV/AIDS and STDs

21. In addition to the above activities, the contactor conducted public consultations and managed grievances related to environment.

22. Discussed below is the status of performance of each of the 15 parameters as well as community consultations and environmental grievances during the reporting period.

2.1 Contractor's camp and yard

23. As mentioned earlier, the contractor built a new camp at Ande (chainage 13+00) on the Tambul side while the existing camp built for the rehabilitation of the Mendi-Kandep road at Mopa has been refurbished. The contractor divided its employees into two teams. Team one based in Mendi is currently working from Ch. 00 + 000 to Ch. 27+000. The second new camp at Ande (chainage 13+100) contains Team two working on the Tambul side.

24. The camp is on an old cattle farm which was abandoned and later used for planting potato and broccoli, but left vacant for 15 to 20 years. As such, there was no disturbance to the environment such as removal of trees and shrubs but grasses were cleared for the establishment of Ande camp.

25. However, people from the surrounding villages complain regarding the improper disposal of septic waste from the camp into the stream used by people living downstream. The contractor has been instructed to fix this issue as a matter of high priority where the work is in-progress during the reporting period.

26. The land for each camp site is under customary ownership where the contractor had already entered into written agreements for the use of land based on a monthly payment to the landowners. Both camps are fully equipped with workers' accommodation, workshop, and office complex and store rooms. These camps also stores and stockpiles construction equipment.

27. Both camps were fully fenced where the contractor employs two security guards on day and night roosters and CCTV cameras for the protection of machinery and equipment and for the control of visitors. Each camp provides staff accommodation, kitchen facilities, toilets and office space. Issues such as poor camp hygiene and run-down facilities for the local workers have been pointed out by HRMG and PIU, which are being fixed by the contractor.

Photo 1 Toilet used by local Employees at Mopa Camp

28. It has been highlighted by CSC, HRMG and PIU that proper accommodation for the national workers should be built with safe drinking water, kitchen facilities with septic toilets. The toilets at Mopa camp do not meet with the requirements as seen in Photo 1.

2.2 Erosion and sedimentation control

29. The erosion of soil erosion and its sedimentation has been reported from clearing and grubbing as well as cut and filled areas. The project located on a rolling to hilly landscape, inevitably generates soil erosion from cut surfaces, filled areas and other open grounds. In some areas, the soil erosion rate had been high where the contractor implemented corrective measures such as drains, gabion baskets, cutting benches and the establishment of line drains. In areas with moderate slopes, the control measures were adequate to minimise soil erosion. On the other hand, soil erosion was high from higher gradients where the adoption of control measures has not been effective.

30. There are reports raising sedimentation concerns occurring in streams, agricultural lands and on other pathways. In some sites such as in Ande River (Ch 43) where a new quarry is in operation, stream sedimentation has been significant. The contractor utilized a number of measures to reduce sedimentation.

31. One of such measures is to prevent discharge of sediment laden construction water directly into the rivers and surface water. Construction water is being discharged into settling ponds with sufficient capacity to provide holding times that will allow sediment settlement prior to final discharge into natural waterways.

32. Consultations have been made with land owners and village chiefs to identify suitable land-based areas for settling ponds or discharges areas. Sediment controls such as silt fences or other sediment reducing devices will be built to prevent both siltation and silt migration during construction in the vicinity of streams and rivers.

2.3 Water quality

33. The baseline data on stream and river water quality along Mendi – Tambul road was not measured before the construction works began. The IEE stated that there are large numbers of streams and a few rivers that cross the road alignment where water is clear all year round. The water turned turbid during the rainy months that became normal in the dry season. The contractor has been instructed to conduct such measurements prior to work commencing in the section where civil work has not begun as yet.

34. In the absence of actual measurements, water quality was assessed through visual observations. The construction works have changed the colour of water in streams (due to high-level of suspended silt load) and two rivers adjacent to the road alignment. Near the Ande Camp where materials are stored, there had been reports of low water quality due to the leakage of oil and lubricants into the Ande River. The water from the sewage in the camp had been allowed to escape into the nearby stream untreated that may also have impacted water quality.

35. As the quality was not monitored based on chemical analysis, it is not possible to conclude on impacts on water quality. The impacts were temporary as water quality improved after the completion of works. However, there were no complaints from the people living near the main river and other streams regarding the deterioration of water quality.

36. The natural stream and river courses have not changed their directions as a result of construction activities.

2.4 Air quality

37. In general, air quality had been satisfactory as construction works did not have any long-term impacts on air in the construction zone. There had been occasions where air quality had been poor due to dust particles produced by movement of vehicles and road waste dumping activities during the dry season. The air quality in and around quarry areas were reported to be low, mainly due to dust particles and soot generated from heavy machinery. As the quarry is located away from the community, there were no adverse impacts on people. The impact on air quality was confined only to the construction months as it remained good (visually) after works completion.

2.5 Noise

38. There were reports from the community on the high noise levels. The contractor managed this impact effectively through the adoption of measures such as frequently checking all machinery and vehicles for noise generation and the fixing of mufflers, etc. In a few instances, at the request of the community, construction works was re-scheduled during the day. The baseline data on noise levels was not collected. The equipment for noise level monitoring has been ordered. The contractor has been instructed to collect baseline noise data prior to works commencing in the remaining road section.

2.6 Wastes management

39. The wastes generated from construction works was of three main types namely, overburden from construction site and quarry sites, camp wastes and hazardous material. The over burden generated from road sides was dumped in designated areas after reaching agreements with relevant land owners. There were several requests from land owners to

dump road wastes into their land and level the grounds. In such cases, the contractor supplied waste material to land owners at free of charge. There have been a few cases where spoil rolled down the slope of the road onto gardens and streams (Photo 2). Also a few reports on waste dumping damaging gardens of land owners have surfaced. The contractor has been instructed to resolve such disputes.

Photo 2 Dumping of Road Spoil at Ande River in Tambul

40. On reporting of such impacts, the contractor changed its behaviour and dumped wastes in designated areas where there would not be any harm to the local population and their assets. The dump sites were levelled off and adequate drainage provided upon pointing to the contractor by HRMG staff and the community. The timber off cuts, iron cuts and other material were collected and disposed by the contractor in designated sites.

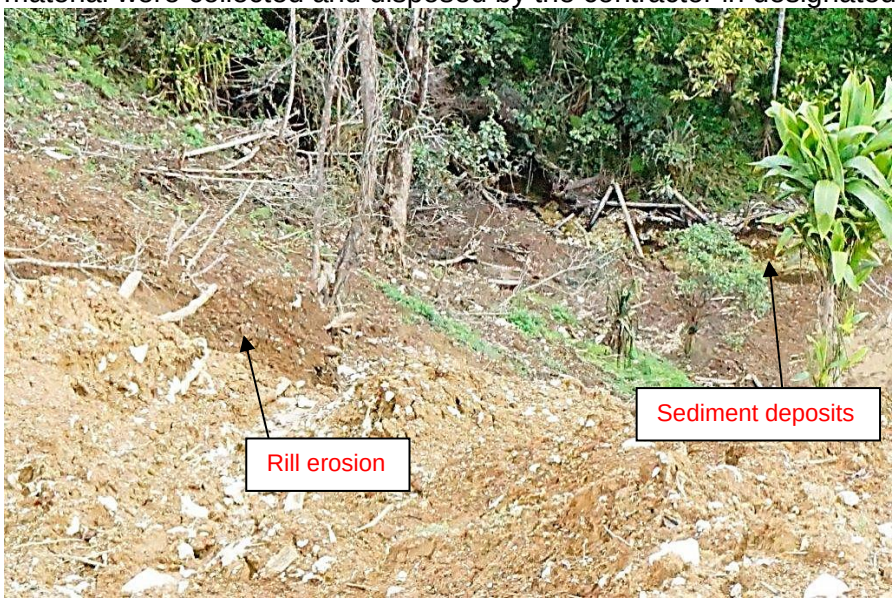

Photo 3 Dumping Quarry Spoil in Streams near Alu Quarry, Komeal

41. The wastes generated from quarry sites were used to fill depressions at the request of relevant land owners. All material disposed did not have any impacts on the community and no reports from the community were received regarding this. There was an observation where Alu quarry spoil washed down into streams (Photo 3) although there was no complaint from the community.

2.7 Hazardous materials management

42. The hazardous wastes generated from construction works were the bitumen, paints and lubricants. All such materials were contained in contractor's yard with controlled entry to people. There was no report of any injury or life impairment to community members from hazardous wastes disposal. There was an incidence where bitumen leaked from the bitumen burning plant. The contractor on reporting impacts quickly cleared the area and made it safe for the people. Minor leakage of fuel and lubricants from the camp were removed by the contractor without creating adverse impacts on the environment (Photo 4).

Photo 4 Lubricant and Oil Leakage at Ande Camp

2.8 Aggregate extraction

43. Three quarries located at chainage 55+53, 13+000 (both new) and the existing quarry at Mopa operated for this subproject. All material required for construction works was extracted from the 3 quarries. The contractor also extracted materials from Ande River (Ch 43). The material extracted was crushed at the quarry and transferred to batching and stockpile areas as required.

44. None of the quarries had a management plan approved and the baseline status has not been documented. As a result, the monitoring of quarry management had been a problem throughout the extraction period. The HRMG and CSC are conducting frequent site

visits to ensure that quarry operations are properly monitored in order to minimize impacts on the environment.

45. The environment damage from the 2 quarries at Ekari (Ch. 55+530) and Kagul (Ch. 13+000) respectively were evident where spoil material cascaded down the slope. It was not possible to minimize this damage as the quarries are on hilly landscape. The damage was to the adjacent land where forest stood including edible pandanus and *Ficus damaropsis*. The quarry operation at Ande River caused temporary discolouration in water quality (Photo 5). However, the river water was clear after the completion of material extraction.

Photo 5 Materials Extraction at Ande River

46. People or their properties were impacted from the activities of this quarry. To alleviate for that, people living near Kagul quarry site were relocated about 50 metres away as their presence near the site was deemed to be unsafe. The families were paid compensation by the contractor.

47. All three quarries will close after the end of the construction works, subject to request from quarry owners. Some owners want the quarry to remain open so that they can continue to sell materials to other interested parties to generate income.

2.9 Trees removal and vegetation management

48. A number of trees were removed from the Right-of-Way to pave the way for road construction. In addition, several trees have also been removed from the Alu Quarry which is a new site. Many trees were removed in accordance with the resettlement plan where APs received compensation.

49. In the meantime, there were other trees removed in order to pave the way for construction works. The actual number removed is unknown as there had not been records kept by the contractor. However, the table below shows the number of plants and trees listed

in the resettlement plan which were recorded during the DMS. The majority of trees and plants listed in the RP have been removed (Table 1).

Table 1: Trees Earmarked for Removal

Tree / Plants Category	Unit
Tree Crops	1,295
Single Plants and Trees	16,374
Clump Plants and Trees	51,123
Single Plants	4,276
Vines or Clump Plants	986
Mound Plants	943
Forest Trees	19,197

Source: Resettlement Plan (2013)

50. The contractor is currently preparing a re-vegetation plan for implementation after the completion of road works. This plan will be reviewed by ESSU before rolled over to implementation.

2.10 Socio-economic issues (workers)

51. The CEMP contained socio-economic issues of three types. They are health and safety issues of workers, establishment of the Public Relations Department and HIV/ADS and STDs control program. The compliance of above three aspects with the CEMP is discussed below.

2.10.1 Workers health and safety

52. All construction workers are required to be present on their respective stations until 6.00 pm. The employees are advised not to engage with affairs of the community. The employees were advised on camp rules including the prohibition of removal of fauna, flora and fuel wood from the local forest areas where there had not been any breaches.

53. There had not been any adverse reports against the employees during the reporting period. The entry to camp and yards are controlled by a private security company where entry of any unauthorised person into these entities is not permitted. Each employee was issued with personal protective equipment as appropriate. The contractor confirmed the issuance of such PPE. However, during the camp inspection, it was obvious that the employees were not issued with PPE. Photos 6 & 7 taken at the Mopa base camp for the Mendi – Tambul subproject road illustrate this.

Photo 6 Employee at Mopa Camp filling battery water without PPE

Photo 7 Welder without Safety Boot and Hand Gloves

54. Most of the employees do not wear such equipment during working hours. The contractor has been instructed to make it compulsory for its employees to wear PPE whilst at work.

2.10.2 Public Relations Department

55. The contractor established the Public Relations Department where 3 PROs (all men) were on duty. At the request of ESSU, the contractor is in the process of recruiting a woman PRO. The PROs worked closely with the community to provide them with the information as appropriate and to work between community and the contractor. The PROs conducted community meetings to explain about construction progress as well as to keep the

community informed about construction activities that may have an impact on the community. The PROs were also deployed to inform community about the grievance redress mechanism as well as to collect such information for reporting. The data on meetings conducted and participants have not been kept by PROs.

2.10.3 HIV/AIDS and STDs

56. The contractor prepared a HIV/AIDs and STDs control plan. This was submitted and cleared by the CSC and finally approved by ESSU. The Plan is being executed by a private service provider. All workers were provided with basic HIV/AIDS training and also issued with condoms. In addition, two sign posts were erected to convey vital information to the public about HIV/AIDS.

2.11 Socio-economic issues of community

57. Several members of the community in general received income from employment in construction work. Ten out of 85 workers are women.

58. The contractor purchased various items such as garden produce, fruits, handicrafts, animals and construction items (poles, sand, etc.) from the APs and other community members. Records on community benefits including amount in Kina spent to purchase from the community reveal that 30 % of the requirement of food are purchased from the community.

2.12 Traffic management

59. The contractor had prepared and implemented a traffic management plan. The local community members were employed (see photo 8) to hold “GO” and “STOP” signs throughout construction period. The traffic management was in order where there were no major issues or accidents reported during the review period. Moreover, sign posts to the approach of the camp, quarry sites other risk sites were established by the contractor.

Photo 8 Mrs Sony Kil employed as a Traffic Warden at Malke, Tambul

2.13 Consultations

60. Several community meetings and public consultations were planned and conducted by PROs. The purpose of these events was to inform public on construction plans, receive their feedback and to seek their assistance to resolve environmental impacts created by the project. However, the data on such events are not available for reporting.

2.14 Environment-related grievances

61. Only a few grievances were received from people along the road regarding spoil damages to their property and assets. These have been assessed by GRC. The contractor has already undertaken to correct damages caused by its negligence as demanded by HRMG.

62. The Grievance Redress Committee (GRC) inclusive of 6 members has been established on 28th April 2015. The GRC conducted several meetings to resolve various environmental issues that emerged during the construction works. All outstanding environmental issues (except for problems caused by natural landslides) have been resolved.

63. As part of grievance redress process, awareness rising among APs has been undertaken during the review period. One CRO was working on both awareness creation and to provide initial response to APs with regard to their grievances. This activity focussed on those who have not yet submitted their grievances, the majority of whom were found to be vulnerable. The APs were also explained about the process of handling environment-related grievances including the timeline to provide resolution to their grievances.

3.0 Conclusions and Recommendations

3.1 Conclusions

64. The main conclusions arising from environmental monitoring activities during the review period are:

- The construction works commenced after the approval of the CEMP where it is monitored by CSC, HRMG and ESSU staff. Except for non-compliance in few areas, the construction activities follow the standards established in the CEMP;

- All relevant staff has received training on the preparation and monitoring of CEMP conducted by the safeguards specialist. This has been very useful for all concerned;

- Several areas of non-compliance have been observed where the contractor has been instructed to correct them. Some non-compliance activities have been corrected whilst the contactor is in-progress with regard to others;

- The contractor has placed orders for the purchase of equipment to conduct baseline environmental data. Accordingly, the database will be established after the measurement of environmental parameters;

- The quarry operations have not followed the approval of the quarry management plan. This has made it hard to conduct proper monitoring of quarry operations;

- The short-term environmental impacts such as high river turbidity, noise and dust created at the time of construction are now stabilised. There are no permanent issues on air quality, noise and water quality resulting from construction works. Sections where excessive soil erosion has taken place are being naturally stabilised. There were no soil erosion hot-spots identified;

- The environmental-related grievances have been resolved by the GRC. All valid grievances have been acted upon by the contractor;

65. Based on the above conclusions of internal monitoring, it is recommended that further actions are pursued as outlined in the next section.

3.2 Recommended actions

66. The proposed actions to address issues and other relevant information are provided in Table 2.

Table 2: Corrective Action Plan

Serial No.	Item and Corrective Action	Responsibility	Completion Date (Planned)
1	Continue with environmental monitoring until the project is complete on 24th July 2018	Contractor/CSC/ /HRMG/ESSU	July 2018 Final safeguards monitoring report is due after this date
2	Preparation of Plans as follows: • solid wastes management • quarry management for 3 quarries • contingency and emergency response plan • re-vegetation	Contractor to prepare CSC to review HRMG/CSC to monitor ESSU to approve	September 2018
3	Corrective actions as per approved CEMP on the following issues: Issue of PPE to workers and training conducted Streamline waste disposal Count of trees removed Baseline environmental data on water quality, noise level and air quality in 2 sites Data on public consultations		 September 2018 August 2016 September 2016 September 2016 September 2016
4	Semi-annual environmental safeguards monitoring report (July-Dec 2016)	ESSU/HRMG	10th January 2017

Appendices

Appendix 1: List of References

1. Initial Environmental Examination for Mendi - Tambul Road section (2013).
2. Construction Environment Management Plan for Mendi - Tambul (March 2016)
3. Monthly Environmental Monitoring Reports (January to May 2016)
5. Contractor Induction Workshop Report (2016)

Appendix 2: List of People Interviewed

1. Ippio Acceri, Team leader, Construction Supervision Consultant
2. Alphonse Niggins, Senior Field Coordinator, HRMG
3. Joseph Maiya, Safeguards (environment) consultant, CSC
4. Paul Nombri, Manager, Technical Services, HRMG
5. Roselyn Isaak, Environmental Officer, HRMG
6. Newman Paraka, Environmental Officer, HRMG Mendi Office
7. Peterson Senoli Senior CRO, HRMG
8. Bob Jiang, Project Manager
9. Robin Wang, engineer
10. Water Leu, translator
11. Kaisan Mai, LO / ward councillor (A'rambo ward)
12. Mumi clan members
13. Buluwa Yambanda, Torowa village leader