

Semi-annual Report

January 2019

PNG: HIGHLANDS REGION ROAD IMPROVEMENT INVESTMENT PROGRAM (TRANCHE 3)

Pangia-Wiru Road Sub-Project

Prepared by Highlands Road Management Group (HRMG) of the Department of Works for the Asian Development Bank

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FACT SHEET:

Loan	ADB Loan: 3404/3408 and Grant 0485 PNG
Project Number	CSTB 3532
Subproject	Pangia-Wiru Road Subproject
Executing Agency	The Department of Works (DOW) is the executing agency for the Highlands Region Road Improvement Investment Program (HRRIP). It has overall responsibility to manage the planning, implementation and monitoring for all road improvement works including environmental management and environmental compliance monitoring.. It also includes the acquisition of use rights for additional land to implement HRRIP subprojects, as well as compensation for damages on project-affected land DOW is also responsible for reporting to ADB and the recruitment of the organization to conduct independent monitoring
Implementing Agency/Unit	<p>The DOW will also be the Implementing Agency for the road improvement works. The DOW has delegated to the Highlands Road Management Group (HRMG), the responsibility to carry out the planning, implementation and monitoring for environmental management and environmental compliance monitoring, land acquisition and/or resettlement activities, as required. The more relevant delegated responsibilities include the following;</p> <p>Prior to the commencement of civil works:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Submit and indorse environmental assessments required for regulatory approval of the CEPA and require the Contractor to obtain approval, e.g., environmental clearance, environmental permit or permits from other statutory authorities as required by the Government. <input type="checkbox"/> Ensure that all regulatory clearances for the subproject are obtained from the relevant government authorities and are submitted promptly to ADB. <input type="checkbox"/> Ensure that the EMP is updated based on detailed design and included in the bidding document of the subproject and that all bidding Contractors have access to the environmental assessments and EMP. <input type="checkbox"/> Ensure that the EMP and all required mitigation measures during construction, including conditions stipulated in the CEPA's clearance or environmental permit, are included in BCD with requirements to update the EMP in response to any unexpected impacts and <input type="checkbox"/> That all selected Contractors have agreed to implement in full the requirements of environmental mitigation measures prescribed in the EMP <input type="checkbox"/> Provide training as required to HRMG in Mt Hagen and Contractor; <input type="checkbox"/> Receive environmental safeguard clearance on subproject(s). <input type="checkbox"/> Provide training to Contractor prior to preparation of

	<p>CEMP, safeguards requirements of ADB and regulatory requirements of CEPA.</p> <p><input type="checkbox"/> Approve CEMP for the subproject, after being cleared by PSC.</p> <p>During the implementation of civil works:</p> <p><input type="checkbox"/> Ensure that the CEMP including all proposed mitigation measures and monitoring and relevant provisions of the environmental assessments is updated as required,</p> <p><input type="checkbox"/> Conduct environmental management and compliance monitoring on a monthly basis in cooperation with the PSC.</p> <p><input type="checkbox"/> Review and assess the Contractor's monthly environmental monitoring report and compliances as contained in the CEMP.</p> <p><input type="checkbox"/> Assist the Engineer in the compliance of the submitted CEMP.</p> <p><input type="checkbox"/> Prepare the Semi-Annual and quarterly reports in cooperation with the PSC for submission to DOW and ADB.</p>
Coverage of the Semi-Annual Environmental Monitoring Report # 2	July to December 2018

1.0 EXECUTIVE SUMMARY

1. This second Semi-annual Environmental Monitoring Report covered the period from July to December 2018. This report was carried out by the DOW through the Highlands Road Management Group (HRMG) and the monitoring results will be communicated to ADB through this report.

2. The Pangia-Wiru Loop road sub-project road is one of the four (4) sub-projects of Tranche 3 of the Highlands Region Roads Improvement Investment Program, an ADB assisted road program. The sub-project is covered by CSTB contract # 3532 entered into by the Independent State of Papua New Guinea represented by the Department of Works and China Overseas Engineering Company LTD (COVEC China).

3. The project commencement date was in October 16, 2017 while the civil works construction commenced in February 26, 2018. The construction period of the project is 24 months.

4. There are still outstanding environmental plans that need submission, approval and implementation by the contractor including the Sewerage Waste Management, Solid Waste Management, Traffic Management Plans and Quarry Management Plans.

5. The contractor has failed to conduct monthly monitoring of the identified environmental parameters due to the absence of environmental in-situ equipment. The contractor should be firmly reminded of this contractual obligation.

6. The contractor has not implemented the various waste management plans and observations of this non-compliance remain outstanding. It was recommended that Notices of Violation should be issued for long standing concerns.

7. The implementation of best practices in soil erosion and sediment control are well known and aside from engineering solutions, the use of grasses, bamboo, hedges and trees could be done. A manual of these best practices which has been provided needs to be revisited.

8. The implementation of the CEMP and the associated plans should be done and a checklist of the monthly monitoring requirements need to be revised to accommodate the revisions made on these plans.

9. The review by DOW, PSC and HRMG of the Quarry Management Plans should be prioritized considering the environmental impact of these activities. The use of maps to ensure that environmental best practices in soil erosion and sedimentation management are recommended.

10. There is a need for the contractor to provide HRMG and PSC National Specialist with the monthly environment reports for monitoring and environmental site audits.

11. The contractor needs adhere to the requirements for a health facility to address emergency medical requirements. A first aid office is a minimum requirement.

12. Documentation of meetings, environment grievances, employment disaggregation, HIV-AIDS implementation, among others.

2.0 INTRODUCTION

2.1 Background

13. The Highlands Region of Papua New Guinea (PNG), comprising the Provinces of Western Highlands, Jiwaka, Southern Highlands, Hela, Eastern Highlands, Enga and Chimbu, is a major contributor to the PNG economy through its 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 investments in improving the road network but a lack of maintenance has resulted in the deterioration of the roads such that the Highlands Core Road Network (HCRN) is now in poor condition.

14. 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 (iii) ensure that maintenance begins on those roads as soon the improvement works are completed.

15. 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 (HRRIP) in tranches. The HRRIP 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.

16. Project 1 has included the improvement of two road sections and Project 2 is currently being implemented to upgrade three road sections while Project 3 proposes to rehabilitate four road sections comprising 113.3 km of the HCRN.

17. The Execution Agency (EA) for the program is the Department of Works (DOW) whilst the Highland Region Management Group (HRMG) is the Implementation Agency (IA).

18. Tranche 3 (ADB 3043/3408 and EU Grant 0485) include the upgrading, rehabilitation and maintenance of four road sections namely, Henganofi-Napuru, Gewa-Gembogl, Nipa-Munihi, and Pangia-Wiru in the Eastern Highlands Province (EHP), Chimbu Province and Southern Highlands Province (SHP).

19. The rehabilitation of the Pangia to Wiru road in the Southern Highlands province has a length of 31.40 km. The works proposed for the upgrading and rehabilitation of the Pangia to Wiru Road such as earthworks, establishment and operation of quarry sites and extraction of materials, minor civil works and discharge of wastewater are Level 2 activities under the EPAR and requires an EP depending on the duration and scale of those activities.

20. . The civil works is expected to commence in July 2017 with the mobilization of the Contractor. Actual commencement of operations began in October 16, 2017. The construction period of the project is 24 months. The Long Term Performance Based Maintenance Services is 60 months from the issuance of the Performance Certificate for the Improvement Work.

21. The Pangia-Wiru Road Section is covered by CSTB contract # 3532 entered into by the Independent State of Papua New Guinea represented by the Department of Works and China Overseas Engineering Group Co. Ltd (COVEC LTD).

2.2 Sub-Project Description

22. The Pangia to Wiru Road commences in the township of Pangia and extends to the Williame village, a distance of 31.40 Km. shows the location of the Pangia to Wiru Loop Road (Figure 1).

23. The route traverses rolling to occasionally mountainous terrain characterized by numerous incised gullies and outcropping spurs. As a result, sections of the horizontal alignment wind with numerous tight radii curves and the road benched into the existing sidelong ground. Elsewhere, the route follows a ridge top alignment. The vertical alignment is reasonable with only isolated short sections having gradients in excess of 10%. The existing road surface is a gravel layer consisting of fair to good graded limestone material with a width of 7 to 12 meter wide up to Km 24 but thereafter the road narrows to little more than a walking track with clay type of road surface. There are occurrences of soil erosion observed in the proposed project intermittent along Km 11+000 to Km 23+700.

24. The route passes through eight villages of which Maupini (km18) and Williame (km 31) are the largest. There are also several smaller settlements that typically consist of clusters of up to six or so houses.

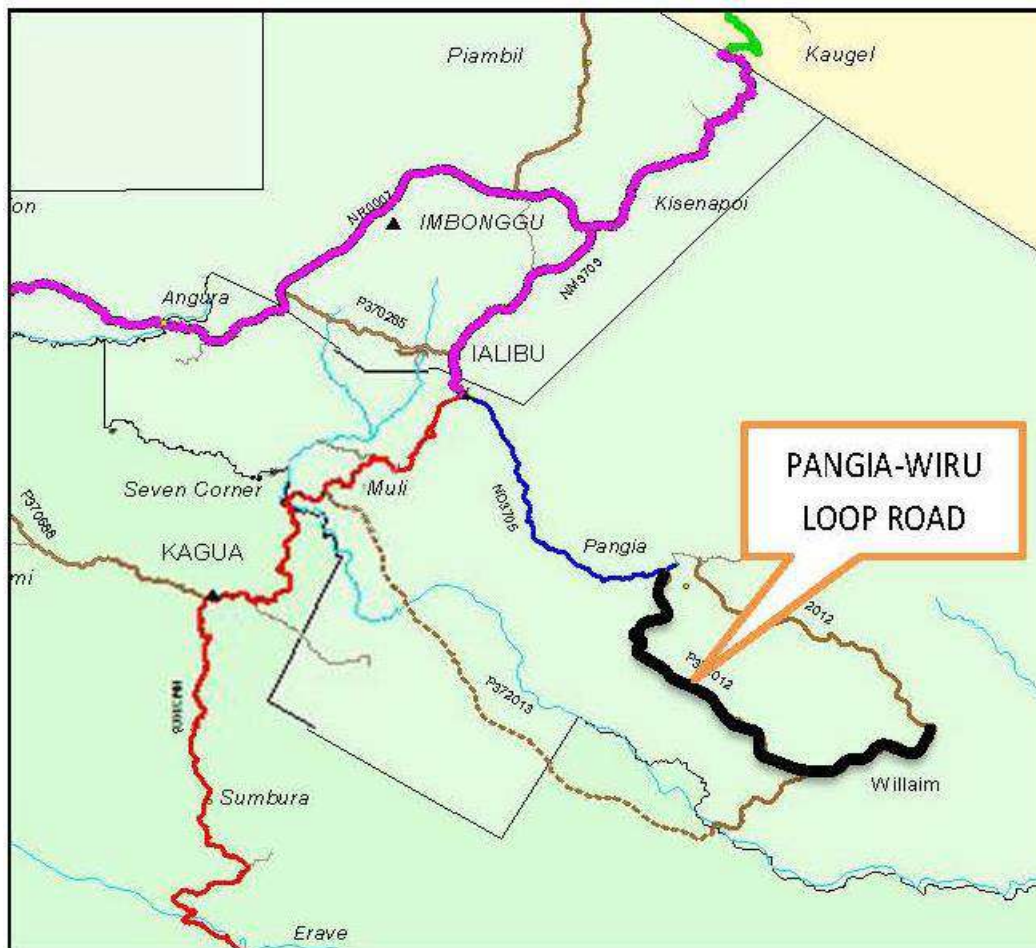


Figure 1: Location Map of Pangia Wiru Road

25. The existing road drainage is generally in very poor condition or completely lacking. The route crosses three major creeks on log bridges, all of which will need to be replaced with Bailey bridges. There are two minor creek crossings and several localized watercourses where natural gullies provide channels for the discharge of surface water run-off from the adjacent slopes or from spring/underground sources.

26. 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 April 2016 has already been disclosed in the ADB web site. The IEE confirmed that environmental impacts of the rehabilitation of the Pangia-Wiru 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.

27. Based on the EMP presented in the IEE, a construction environment management plan (CEMP) was submitted and approved last April 4, 2018 by the DOW-ESSU.

28. An Induction Meeting was conducted for all the Contractors in July 12, 2017 by the Engineer and HRMG with the PSC to provide a background of the environmental management plans and compliance monitoring requirements.

29. Electronic references were also provided to the Contractors during this meeting containing best practices for environmental management and mitigation, including sewage treatment, solid and hazardous waste management; and soil erosion control and management. Other information including environmental laws, a summary presentation on the legal framework of PNG, CEPA Act, Environment Act of 2000, list of suggested environmental monitoring equipment, and PNG Water Quality Standards. Also provided were sample forms and requirements on sample monthly monitoring report, Notice of Violation Form, and Logbook Sample Content.

30. Internal monitoring will be conducted by the environmental specialist of the Project Supervision Consultant (PSC) whereas independent monitoring will be conducted by the Environmental Officer (EO) of HRMG. However, the monthly environment reports submitted to DOW are joint PSC and HRMG reports.

2.3 Proposed Scope of Works

31. The proposed project is to upgrade the existing road to a 8.0 meter wide carriageway width sealed with DBST and 0.25 m wide gravel shoulders. Earthworks will be required to widen with an average of 2m on each side of the existing road bench from Km 24+000 until end of the project to accommodate the final formation width and roadside drains. The total volume of excavation is estimated at 121,000 cu.m. of which 50,000 cu.m. will be reused in embankments with the remainder being surplus material and can be provided to interested local people for levelling their land. The raw materials will come from local quarries to be identified by the contractor and approved by the Project supervision consultant (PSC). No material will be extracted from rivers. The improvements will likewise include the provision of road safety features comprising road signs, pavement markings and guardrails

32. A total of 92 additional culverts to discharge roadside drains are proposed in addition to the replacement of 29 existing culverts which are of inadequate capacity (typically 450mm

diameter) while seven existing culverts are to be retained and rehabilitated with the capacity of 750 to 900 mm diameter to cope with the flows from roadside drains. Approximately 28,000 meters of lined roadside drain will be provided to cater for surface works run off from the road and adjacent slopes.

33. There are three existing log bridges within the road section, (Ippei Creek with chainage 27+880, Polea Creek with chainage 29+430 and Wanduve Creek with Chainage 30+085). all of which will require replacement with Bailey Bridges. Two of the bridges have spans of approximately 9m while the third bridge has a span of 6 metres. All of these bridges will be constructed using bank seat abutments constructed on concrete pads at the top of bank level. The bailey decks will be assembled in the roadway and then launched across the channels. Some protection work in the form of gabions will be required to protect the abutments from possible scour.

34. The rehabilitation and upgrading would involve the following activities:

- (i) Transport, handling and storage of construction materials, fuel and lubricants and, machinery to site;
- (ii) Preparation of Contractor's camp and work sites;
- (iii) Establishment of ancillary facilities, i.e. identification and establishment of suitable material sources/quarries, batching, crushing and asphalt plants;
- (iv) Clearing and grubbing (shoulders and drainage);
- (v) Excavate defective sections and improve side drains as required;
- (vi) Excavation and/or filling to widen the existing road bench;
- (vii) Culvert removal, installation, extension and/ or replacement;
- (viii) Construct masonry retaining walls;
- (ix) Construction of gabion protection works;
- (x) Rehabilitate bridges which may include installation of new steel decks if necessary, removing rust and repainting and, construct a new bridge;
- (xi) Backfill and compact as required;
- (xii) Layout sub-base and base materials and compaction;
- (xiii) Install road furniture required (guardrails, pavement markings, etc.); and
- (xiv) Pave roadway with DBST.

35. The upgrading and rehabilitation works for the Pangia - Wiru Road would require a workforce of 216 people of which 105 unskilled workers will be sourced from the local communities in the area. Various machinery and heavy equipment will be required in the rehabilitation and upgrading works. This would range from 4WD vehicles to bulldozers. and presents the manpower complement and machinery and equipment required for the works.

36. The works require materials including fuel, lubricants, paint, bitumen, cement, aggregates, cement, sand, timber, geotextile, drainage pipes and culverts. All materials will be sourced from approved suppliers. Workers, including local women, will make gabion baskets using local materials for embankment and bridge pier protection

2.4 Purpose

37. This report is written to present the status of the environment including compliance with the CEMP in respect of the Pangia - Wiru road section covering July to June 2018. Semi-Annual environment safeguards monitoring reports is a requirement under the SPS. In addition, the report provides a clear picture with regard to the future implementation of CEMP activities as well as the environmental outcome.

38. Considering that the project has only commenced late last year, the compliance monitoring requirements enumerated in the monitoring findings are just initial and will be compared with the CEMP.

39. 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.

2.5 Methodology

40. This six-month consolidated report is written using data gathered from several sources. These include (i) Contractor's interviews and Environment Officer monthly report; (ii) Monthly report of the PSC, and; (iii). HRMG-PIU verification of site and BTOR.

41. This report is also reviewed by the Supervision Consultant and HRMG-PIU prior to its submission to ADB. It also follows the format prescribed by ADB and a checklist for monitoring environmental compliance.

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

2.6 Institutional Arrangements

43. The Department of Works, as the executing agency, has the overall responsibility to manage the planning, implementation and monitoring related to acquiring use rights for additional land to implement HRRIP subprojects, as well as compensation for damages on project-affected land.

44. DOW established a Project Management Office (PMO) headed by a Project Director which manages the day to day activities of the program. Within the PMO, there are two units, the Project Management Unit (PMU) which is based in Port Moresby. The other is the Highlands Road Management Group (HRMG), the DOW's Project Implementation Unit (PIU) for HRRIP subprojects to carry out the planning, implementation and monitoring for land activities, as required and is based in Mt. Hagen City.

45. In the revitalized organizational chart (as of February 2017), the HRMG is headed by the Field Project Manager (FPM). Under the FPM are two sub-units, the construction unit headed by the "Engineer" and the social and environmental safeguards unit headed by the Senior Field Project Coordinator (SFPC).

2.7 Report Organisation

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

- i) Section 1 – Executive Summary
- ii) Section 2 - Introduction,
- iii) Section 3 – Monitoring results and finding
- iv) Section 4 – Conclusions and recommendations and appendices

3.0 MONITORING RESULTS AND FINDINGS

47. The main findings of monitoring shall include the assessment of environmental impacts during the review period and prescriptive requirements are presented in this section.

48. The basis for monitoring are the parameters that would be considered in the CEMP of which there are 18 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
- Existing Infrastructure Issues
- Environment Related Grievances
- Training and Mentoring

49. The summary of non-compliance from the monthly reports prepared jointly by HRMG and PSC is provided in Table 1. Environment Officers from HRMG with PSC should prepare the Notices of Violation if warranted based on the standards set during a meeting for this purpose.

Table 1. Summary of Non-Compliance for July to December 2018 for Pangia - Wiru.

NON-COMPLIANCE	MONTHS					
	J	A	S	O	N	D
Conduct monthly environmental monitoring and compare it with previously conducted environmental baselines.	X	X	X	X	X	X
Leaking sewage treatment facility in the camp.	X	X	X	✓	✓	✓
Burning of camp workshop hazardous wastes.	X	X	X	X	X	X
Disposal of wastes in the side of the road.	✓	✓	X	X	✓	✓
Failure to provide soil and sediment best practices to include the planting of trees, bamboo and grasses.	X	X	X	X	X	X
Absence of environmental in-situ equipment to conduct field measurements.	X	X	X	X	X	X
Absence of camp clinic with nurse or appropriate health personnel to provide first aid assistance.	X	X	X	X	X	X
Submit or revise the Sewerage Waste Management, Solid Waste Management, Traffic Management Plans and Quarry Management Plans.	X	X	X	X	X	X

3.1 Contractor's Camp and Yard

50. The Contractor has completed construction for all of its camp facilities. (Photograph 1). The environmental non compliance observed during the period is the leaking sewage facility (Photograph 1). The contractor needs to immediately mitigate this problem.

51. The improper disposal of used oil should be remediated to prevent groundwater contamination (Photograph 2).



Photograph 1. Leaking sewage from the contractor's camp.



Photograph 2. Improper waste disposal of used oil.

3.2 Erosion and Sedimentation Control

52. The contractor has carried out several erosion control engineering structures such as culvert headwalls and terraced gabions (Photograph 3). It was observed that the contractor has deposited its wastes in the designated sites.

53. As previously suggested, a helpful manual which was previously provided could be used, the “Erosion and Sediment Control Best Management Practices Manual”. Erosion control using trees, bamboos and other grasses was also recommended.



Photograph 3. Terraced gabion to hold off erosion from steep slope.

3.3 Water Quality

54. The contractor has failed to conduct its monthly water quality monitoring due to the absence of in-situ equipment. This is unfortunate considering that baseline monitoring has been conducted in July of 2018.

55. The PNG Environmental Water Quality Regulations of 2002 will be used as basis for the monthly compliance monitoring.

3.4 Air Quality

56. The contractor has also failed to conduct its monthly monitoring activities due to the absence of in-situ monitoring equipment. To mitigate dusts generation, the contractor has provided water trucks.

3.5 Noise

57. The noise level monitoring was not done for the monitoring period. It is recommended that the contractor conduct monthly monitoring of noise levels specially in its quarry and crushing site since these could reach noise levels that could impair hearing. It is recommended that the use of PPEs for ear protection needs to be provided.

3.6 Wastes Management

58. The proper disposal of construction wastes needs to be followed. The dumping of wastes along slopes has occurred (Photograph 4).



Photograph 4. Dumping of soil overburden along the road side.

59. A previous recommendation is for the Contractor with the cooperation of the PSC and HRMG review the various plans associated with wastes to ensure its compliance.

3.7 Hazardous Materials Management

60. Hazardous wastes include fluorescent bulbs, computers and peripherals which need proper disposal. The other wastes that should be monitored include used batteries, battery fluids, used oils, lubricants, fuel filters and asphalt products. The approved best practices in the Hazardous Waste Management Plan (HWMP) need to be followed.

61. In a previous report, there has been evidence of burning plastics. Burning plastics release heavy metals and toxic chemicals such as dioxin. This practice should be disallowed by the contractor.

62. Discarding or burning fuel drums, filters and used oil waste fuel can pollute groundwater and pose air pollution hazards if improperly managed. Spent fuel filters should not be burned (Photograph 5) and needs to be disposed following its submitted HWMP.

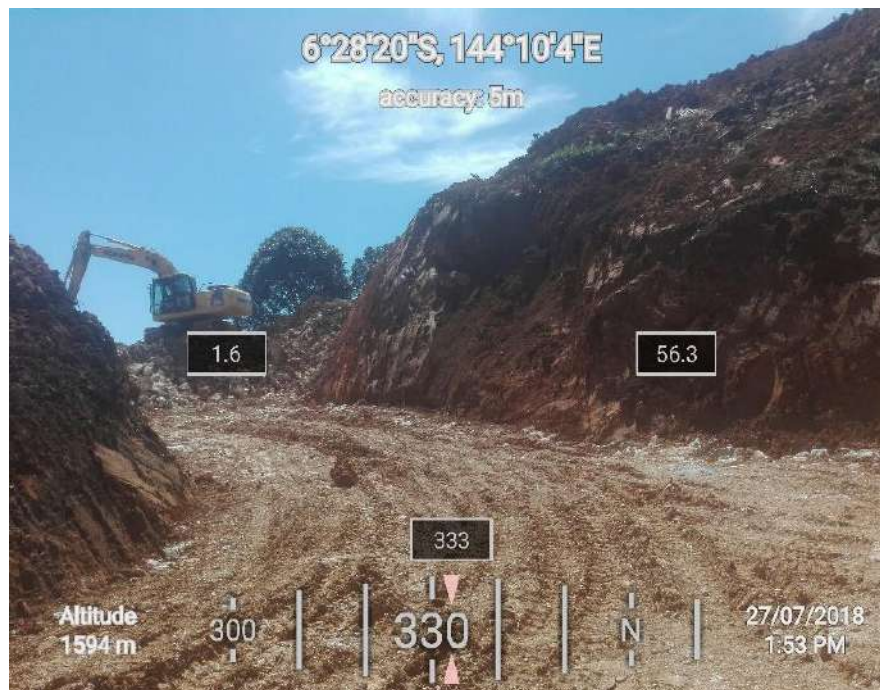


Photograph 5. Burnt fuel filters are considered hazardous

3.8 Aggregates Extraction

63. The quarry at Chainage 22 at Tomiare Village needs to submit its QMP due to its utilization following the clearing of access road (Photograph 6).

64. All the quarry sites need to have an approved Quarry Management Plan. In the case of the abovementioned quarry, spoils have been dumped along the slopes (Photograph 7).



Photograph 6. Clearing at Tomiare Quarry Ch 22+200



Photograph 7. Erosion and sedimentation at the back of Tomiare Quarry.

3.9 Trees Removal and Vegetation Management

65. The previous report has shown that all the affected trees were identified and marked for removal by the Environmental Officer of HRMG and PSC.

66. A negative consequence of the road would be easier access to markets for logging to produce timber and possible expansion of deforestation (Photograph 8). The implementation of the tree planting activities need to be implemented with stakeholder's participation.



Photograph 8. Lumber store along the road project.

3.10 Socio-economic Issues of Workers

67. The socio-economic issues of workers need to be assessed based on compliance with the labor laws of PNG. The provision of the contract recommending 30% women workers also needs to be addressed. The gender requirements in the contract recommend that employees should at least comprise of 30% women.

68. A summary of the disaggregated workers employed for the months of July to December 2018 are contained in Table 2. A total of 1,739 workers were employed wherein 1,466 and 273 were women or 84% and 16% respectively. Of these, 1,221 were displaced persons or 70%.

69. Although women are clearly involved, no information was provided on women involvement in non-payroll activities (Photograph 9).

Table 2. Summary of monthly employment by Gender for July – December 2018.

Months	Male	Female	Total	DPs Employed
July	196	35	231	162
Aug	210	40	250	175
Sept	285	45	330	226
Oct	289	47	336	240
Nov	286	46	332	238
Dec	200	60	260	180
Total	1, 466	273	1, 739	1, 221
Average	244.30	45.5	289.80	203.5
Percentage	84.30%	15.70%	100%	70.21%



Photograph 9. Young women involved in rock wall construction.

3.11 Socio-Economic Issues of Community

70. There is a lack of documentation on the socio economic issues being raised by the community. However, these are being conducted in response to issues that have been raised by the community and the need for resolution (Photograph 10).

71. Information on the socio-economic benefits of the community from the project's operation include the contractor's monthly expenditures for purchases of food, construction materials, and other expenses presented in Table 3.



Photograph 10. Public consultation at Tunda community.

Table 3. Expenditures or Community Payments from July to December 2018

Month	Local Food Purchases	Construction Materials	Other Items	Total (PNG KINA)
July	450.00	200.00	100.00	750.00
August	450.00	200.00	100.00	750.00
Sept	450.00	200.00	100.00	750.00
Oct	450.00	200.00	100.00	750.00
Nov	450.00	200.00	100.00	750.00
Dec	450.00	200.00	100.00	750.00
Total	2,700.00	1,200.00	600.00	4,500.00
Average	450.00	200.00	100.00	750.00

72. Information on the quarry activities including the volume of quarry extraction and the royalties paid to each person, clan or family. These are summarized in Table 4 which show a total of PGK 174,135. Payments for land rental of Langane camp is PGK 2,500 per month or a total of PGK 15,000 for the six-month period. Payment for disposal sites were not available.

73. The possibilities for market access could have spurred the revitalization of backyard coffee production (Photograph 11).

Table 4. Quarry extraction volume and estimated royalties from July to December 2018

Month	Elu Quarry (m ³)	Kabulbul Quarry (m ³)	Tomiares Quarry (m ³)	Total (M ³)	Total (Kina)
July	2, 650	11, 930	0	14, 580	K18, 954.00
Aug	14, 000	26, 000	0	40, 000	K52, 000.00
Sept	6, 620	7, 970	3, 510	18, 100	K23, 530.00
Oct	6, 590	4, 950	3, 500	15, 040	K19, 552.00
Nov	9, 890	5, 780	7, 770	23, 440	K30, 472.00
Dec	11, 220	5, 000	6, 570	22, 790	K29, 627.00
Total	50, 970	61, 630	21, 350	133, 950	K174, 135.00

* Based on Kina 2.50 per bucket or Kina 25 per cubic meters. 1 ton = 1.6 cubic meters.



Photograph 11. Pruned coffee plants.

3.12 Public Safety

74. There were no public safety issues reported for the monitoring period. However, it is suggested that continuous information and education campaigns not only in communities but also in schools should be done.

75. Construction activities near school sites or community areas need more visible precautionary signs or traffic safety including traffic aides and humps. The risks to public safety in terms of erosion and sedimentation of water bodies and home gardens need to be assessed for future road work activities. The use of Drone Mapping with Geographic Information Systems could serve as a tool for this activity.

3.13 Workers Health and Safety

76. The Contractor has not fully implemented the Health and Safety Plan (HSP). Provision of first aid, medical supplies. To substitute for a trained medical professional, the personnel who has attended the First Aid training could be utilized temporarily.

77. The Contractor has provided protective clothing and safety equipment to some of its staff (Photograph 12). However, the contractor has not complied with this requirement for its non-payroll workers who are mostly women.



Photograph 12. Workshop personnel with PPE.

3.14 Traffic Management

78. The Contractor has to follow its own Traffic Management Plan which has not yet been approved. The monitoring activities show that the contractor has provided traffic signs and traffic aides (Photograph 13). It is recommended that women traffic aides should be employed.



Photograph 13. Traffic aide worker with reflective vest.

3.15 Prevention of HIV/AIDS and STDs

79. The HIV-AIDS provider, the Department of Health, Pangia Health Centre has provided counselling to its clients (Photograph 14).



Photograph 14. Health worker providing information on HIV-AIDS.

80. The HIV-AIDS provider has not provided a monthly activity report. The contractor needs to require the provider to submit such reports.

3.16 Existing Infrastructure Issues

81. There were no existing infrastructure issues. Monitoring shall be done to ensure that no public or private services, utilities or similar facilities are damaged or interrupted by the Works.

3.17 Environment Related Grievances

82. The only environment related grievance for the period was a verbal complaint on the the spoils that were deposited on private landowners area. The landowners were encourage to bring their complaints to the attention of the contractor.

83. The Contractor has yet to form its Environmental Grievance and Redress Committee and need to be monitored by HRMG and PSC.

3.18 Training and Mentoring

84. A seminar workshop Technical Report Writing was conducted last November 31 at Kuri Lodge and was participated in by all contractor's social and environmental safeguards officers, HRMG personnel and PSC (Photograph 15).



Photograph 15. HRMG officer providing pointers on technical writing.

85. A training on First Aid was also conducted by St. John's Ambulance at Port Moresby for contractor's and HRMG personnel from July 18-20, 2018 (Photograph 16).



Photograph 16. Contractor's participant performing first aid activity.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

86. The contractor has failed to provide monthly monitoring of the identified environmental parameters using in-situ equipments. This has to be rectified immediately and a Notice of Violation will be issued.

87. The PSC and HRMG have provided close monitoring and non-compliance advice on unwarranted disposition of spoils and leaking sewages. These issues were raised with the contractor.

88. The difficulty of providing monthly internal audits on a sustained basis will require more logistical resources from DOW and the project.

89. The submission, approval and implementation of the CEMP and the associated plans needs to be reviewed by PSC and HRMG to ensure their implementation.

90. The application of Notices of Violation should be issued for long standing environmental issues. Verbal and written non-compliance letters shall be the basis for this sanction.

91. The contractor has to provide approved Quarry Management Plans following the prescribed outline issued during a previous seminar workshop. The use of maps to ensure that environmental best practices in soil erosion and sedimentation management are recommended.

92. There is a need for the contractor to provide HRMG and PSC National Specialist with the monthly environment reports for monitoring and environmental site audits through the Resident Engineer.

4.2 Recommended Actions

93. The experience from Tranche 1 and Tranche 2 indicate that the personnel recruited by the Contractor need capacity building. It is therefore important that these trainings, seminars and workshops need to be done as soon as possible to ensure that the Contractor's staff with the assistance of DOW-HRMG together with the PSC would benefit from these capacity and capability building activities (Table 5).

94. The importance of identifying environmental harm and mitigating or remediating these activities need corrective action. The activities that cause harm are pollution of water bodies from unwarranted spoils disposal, burning and dumping of solid, liquid and hazardous wastes.

95. The PSC and HRMG need to identify the most pressing environmental concerns and issue appropriate Notices of Violation for long standing issues and concerns. These NOVs could then be the basis for client sanctions. becomes the basis for the preparation by the contractor of a Corrective Action Plan to address the violations.

96. A summary of the recommendations for implementation and corrective action are presented in Table 6.

Table 5. Recommended Seminars and Trainings for Capacity Building

Activity Number	Item and Recommended Action	Responsibility	Completion Date
1	Training on the use of environmental In-situ equipment for monitoring.	HRMG-PSC-CONTRACTOR	February 2019
2	Echo Seminar-Workshop on Traffic Safety.	DOW-HRMG-PSC-CONTRACTOR	February 2019
3	Echo Seminar-Workshop on First Aid Procedures	HRMG-PSC-CONTRACTOR	March 2019
4	Echo Seminar-Workshop on Environment Health and Safety Best Practices.	HRMG-PSC-CONTRACTOR	March 2019
5	Seminar Workshop on Status, Issues and Concerns in the Implementation of the CEMP and other plans.	HRMG-PSC-CONTRACTOR	March 2019
6	Training on Mapping Using Geotagging and Google Maps for Monitoring and Quarry Management.	HRMG-PSC-CONTRACTOR	March 2019

Table 6. Recommendations for Implementation and Corrective Action

Non Compliance	Recommendations for Implementation	Corrective Actions Plan	In-Charge	Date of Implementation
Absence of monthly monitoring and in-situ equipment for identified environmental parameters.	Provide a notice of violation for the repeated non-compliance.	Formally inform the contractor of his obligation following the CEMP and related plans.	PSC HRMG	January 2019
Non-implementation of solid and hazardous waste management including waste segregation, open dumps and smoke belching. .	Provide a notice of violation for the repeated non-compliance.	Formally inform the contractor of his obligation following the CEMP and related plans.	Contractor PSC	January 2019
Lack of soil erosion management and sediment traps to contain spoils being transported to water bodies.	Assist the Contractor in identifying soil erosion management activities such as sediment traps and tree and grass seeding or planting.	Contractor to provide action plan with detailed activities.	Contractor PSC	January – February 2019
Absence of camp clinic with appropriate health personnel to provide first aid assistance.	Advise the contractor to temporarily designate the First Aid trainee for this job.	Review with the contractor the submitted Health and Safety Plan	Contractor	January 2019
Provide the revised Sewerage Waste Management, Solid Waste Management and Traffic Management Plans.	Provide a notice of violation for the repeated non-compliance.	Formally inform the contractor of his obligation following the CEMP and related plans.	Contractor	January 2019

Appendices

Appendix 1: List of References

1. Initial Environmental Examination for Pangia - Wiru Road section (2016).
2. Department of Works Specification for Road and Bridge Works 1995
3. Department of Works Specification for Road and Bridge Works 2015 Edition
4. Back to Office Report of HRMG Environmental Officer
5. Conformed Documents for the Improvement Works and Long Term Performance Based Maintenance Service (LTPBM) for Pangia - Wiru Road. Contract Number CSTB 3533.
6. Scherer, Thomas F. 2016. North Dakota State University Extension Service. Reviewed and Reprinted October 2016.
7. DOWL. 2015. Erosion and Sediment Control Best Management Practices Manual. Montana Department of Transportation. HIV Semi Annual Report
8. General Construction Waste Management and Hazardous Materials Handling and Waste Disposal DEC 1997.
9. Sample Environmental Baseline Procedure for Tranche 3 Projects. The Case of Pangia Wiri Loop Road.

Appendix 2: List of People Interviewed

1. Alonto Mangandog - Resident Engineer PSC
2. Alphonse Niggins, Senior Field Project Coordinator and Acting FPM, HRMG-DOW.
3. Steven Sukot – National Environment Specialist PSC
4. Paul Nombri, Manager, Technical Services, HRMG
5. Paraka Newman, Environmental Officer, HRMG
6. Garry Dum – Environmental Officer, HRMG
7. Rodney Karu – Environmental Officer COVEC