

Semi-Annual
Report

July 2019

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

Henganofi-Nupuru Road Sub-Project (January to June 2019)

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 3533
Subproject	Henganofi – Nupuru Road Subproject
Executive 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"> ▪ Submit and endorse environmental assessments required for regulatory approval of the CEPA and requires the contractor to obtain approval, e.g., environmental clearance, environmental permit or permits from other statutory authorities as required by the Government. ▪ Ensure that all regulatory clearances for the subproject are obtained from the relevant government authorities and are submitted promptly to ADB. ▪ Ensure that the EMP is updated based on detailed design and included in the bidding documents of the subproject and that all bidding contractors have access to the environmental assessments and EMP. ▪ 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

	<p>requirements to update the EMP in response to any unexpected impacts and</p> <ul style="list-style-type: none"> ▪ That all selected contractors have agreed to implement in full the requirements of environmental mitigation measures prescribed in the EMP ▪ Provide training as required to HRMG in Mt Hagen and contractor; ▪ Receive environmental safeguard clearance on subproject(s). ▪ Provide training to contractor prior to preparation of CEMP, safeguards requirements of ADB and regulatory requirements of CEPA. ▪ Approve CEMP for the subproject, after being cleared by PSC. <p>During the implementation of civil works:</p> <ul style="list-style-type: none"> ▪ Ensure that the CEMP including all proposed mitigation measures and monitoring and relevant provisions of the environmental assessments is updated as required, ▪ Conduct environmental management and compliance monitoring on a monthly basis in cooperation with the PSC. ▪ Review and assess the contractor's monthly environmental monitoring report and compliances as contained in the CEMP. ▪ Assist the Engineer in the compliance of the submitted CEMP. ▪ Prepare the quarterly and semi-annual reports in cooperation with the PSC for submission to DOW and ADB.
Coverage of the Environmental Monitoring Report	January to June 2019

1.0 EXECUTIVE SUMMARY

1. This Semi-annual environmental monitoring report (SEMR) for 2019 covers the period of activities implemented by China Wu Yi Ltd from January to June 2019 for Henganofi-Nupuru Road Subproject CSTB# 3533. This project monitoring was carried out by Highlands Road Management Group (HRMG) of Department of Works (DoW) and the monitoring results is prepared and will be communicated to Asian Development Bank (ADB) through this report.
2. Henganofi-Nupuru sub-project road is one of the 4 sub-projects of Tranche 3 of HRRIP, an ADB assisted road program. The sub-project is covered by CSTB contract # 3533 entered into by the Independent State of Papua New Guinea (PNG) represented by the DoW and China Wu Yi LTD.
3. The purpose of this SEMR is to present the updated status of the environment including compliance with the approved CEMP in respect of the Henganofi – Nupuru road section covering January to June 2019. SEMR is a requirement under the ADB Safeguards Policy Statement 2009 (SPS 2009). In addition, the report provides a clear picture with regard to the future implementation of CEMP activities as well as the environmental outcome.
4. The project is now in the second year since its commencement in October 2017. All earth works are done as of March to April 2019. The contractor is now concentrating on the road base and sealing plus road installations which are done by sub-contractor enterprise.
5. The main aggregate extraction site is the Upegu Riverine quarry in Bena District. Other minor capping material extraction sites include Mehenave and Hapanofi which are closed as of April 2019.
6. Environmental related grievances are minimum to none for the concerned period. Issues with locals stopping work progress are all related to environmental damage payments within the road construction limits. All vegetation, trees and garden that are within the construction limit and have been damaged or removed by machines during earth works are recorded by CROs and social safeguard officer to be presented at the Grievance Redress Committee (GRC) meeting.
7. Provision of Personal Protective Equipment (PPEs) have significantly improved in the month of June. Hence, there are still more improvements that need to be done such as issuance of safety boots, safety glasses, nose/face masks and raincoats.
8. HIV/AIDS service providers Fore Health Health Services who are contracted to carry out HIV/AIDS awareness have signed a partnership agreement with Eastern Highlands Family Voice to (EHFV) to carry out awareness on the project on the 6th June 2019. From this date on the two service providers will work together to carry out the awareness program.
9. Water and air quality testing plus noise level tests are conducted by contractor's environmental officer for the month of April and May (2019), results are tabulated and present in the report.

2.0 INTRODUCTION

2.1 Background

10. 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.

11. Project 1 has included the improvement to two road sections and Project 2 is recently been completed with upgrading three road sections while Project 3 is in progress to rehabilitate four road sections comprising 113.3 km of the HCRN.

12. 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). Tranche 3 (ADB 3043/3408 and EU Grant 0485) include the upgrading, rehabilitation and maintenance of four road sections one of which is Henganofi-Nupuru Road in the Eastern Highlands Province.

13. The rehabilitation of the Henganofi to Nupuru road in the Eastern Highlands province has a length of 33.96 km. The works proposed for the upgrading and rehabilitation of the Henganofi to Nupuru 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 may require an EP depending on the duration and scale of those activities.

14. The contract was awarded in March 4, 2017 to China Wu Yi LTD (CWYC China) and civil works started in October 2017 following the contractor's mobilization. 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.

15. The Henganofi-Nupuru Road Section is covered by CSTB contract # 3533 entered into by the Independent State of Papua New Guinea represented by the Department of Works and China Wu Yi LTD (CWYC China).

2.2 Sub-Project Description

16. The road from Henganofi to Nupuru, passing through Fayantina, is approximately 34 km in length. The road commences at the junction with the Highlands Highway, approximately one kilometre from Henganofi Station and ends at the junction with the Lufa road in Nupuru. The road serves the Henganofi and Lufa Districts of Eastern Highlands Province which together have an average population of 40,000. The road is the only link from the two districts to Goroka and Kainaintu townships and hence improvement is vital to the economic development of the area and the delivery of fundamental services to the population.

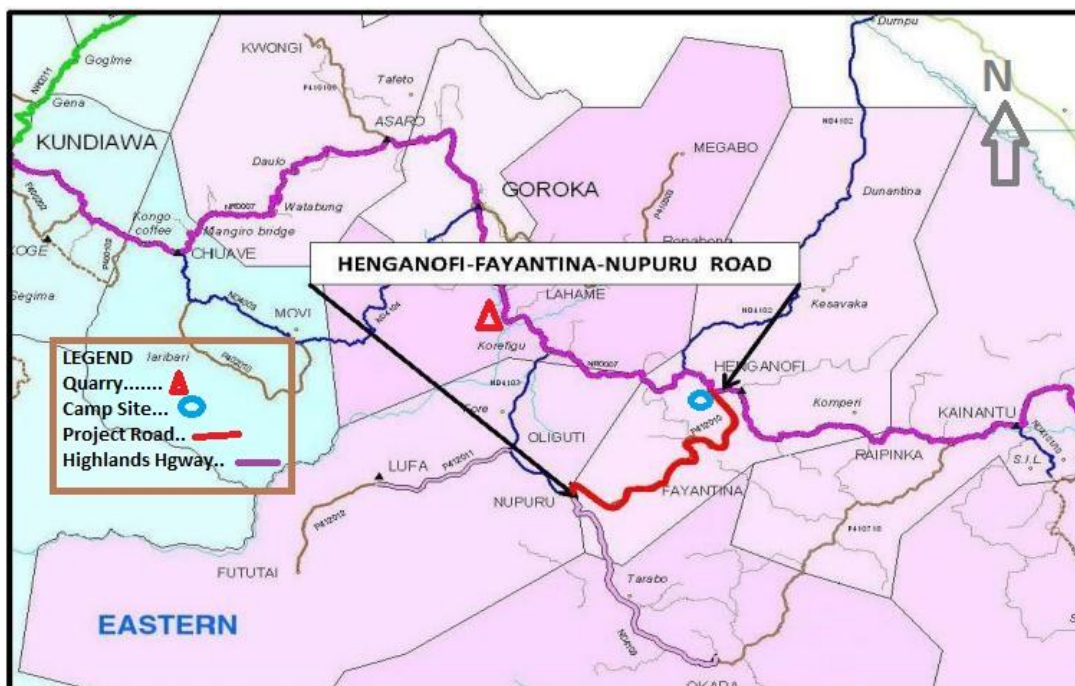


Figure 1 Location of Henganofi Nupuru Road

17. The Henganofi – Nupuru road was initially a walking trail which since the late 1960s or early 1970s has gradually been opened to provide the current road. The route traverses mountainous terrain and extensive sections of the alignment follow ridges. Elsewhere, the route is benched into sidelong ground and comprises a twisting alignment with steep gradients at the approaches to river and creek crossings. Improvement of either the horizontal or vertical alignment would not be economically justified at the present time.

18. The route crosses a total of 4 rivers and 3 major creeks on existing bridges. Two of these bridges are of comparatively recent construction and will require only minor maintenance whereas the remaining structures will require rehabilitation of the superstructure, the provision of steel decking to replace the existing timber and the provision of pedestrian facilities across the bridges. One new bridge is required.

19. The route passes through 11 villages/tribal settlements, the largest of which is Pore that acts as a local centre for the population living within the middle third of the road length and the immediate surrounding area. There are also numerous junctions along the road with local roads connecting to the interior.

20. The first 20 kilometres of the road primarily follows a ridge top alignment and the landscape is dominated by swathes of grassland with occasional secondary growth of trees, generally around settlement areas and individual homes. In the section of the road from km 20 to the end at Nupuru, the local tribes have made extensive plantings of pine trees.

21. The entire length of the road corridor has been extensively disturbed by human habitation and the activities of clearance for cultivation, the gathering of wood for fuel and hunting for food, hides and feathers for ceremonial purposes. As a consequence, there are no natural habitats of significance immediately adjacent to the road corridor and within the areas which will be affected by the proposed improvement works.

22. The Eastern Highlands province plays host to the Crater Mountain WMA and is located southwest of the Henganofi Nupuru road.

23. 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 web site. The IEE confirmed that environmental impacts of the rehabilitation of the Henganofi-Nupuru 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.

24. Based on the EMP presented in the IEE, a construction environment management plan (CEMP) was prepared by the contractor and was issued a no objection letter by the Construction Supervision Consultant in January 23, 2018.

25. 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. A reference compact disc (CD) was 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. Based on the experiences with Tranche 1 and Tranche 2, environmental laws including 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, was also provided in the CD. Further, also provided were sample forms and requirements on sample monthly monitoring report, Notice of Violation Form, and Logbook Sample Content.

26. Internal monitoring is conducted by the environmental specialist of the Project Supervision Consultant (PSC) whereas independent monitoring is conducted by the Environmental Officer (EO) of HRMG.

2.3 Proposed Scope of Works

27. The project intends to improve the existing Henganofi – Nupuru road through the provision of a 5.5-meter wide pavement, sealed with DBST and 0.25-meter-wide shoulders. Earthworks will be required to provide an adequate bench for construction of the pavement.

Associated drainage will also be required where improvements are necessary in the vertical alignment to ensure adequate stopping sight distance. An average additional width of 1.0 m on each side of the existing cleared width will be required to accommodate the improvement works. The estimated volume of excavation is 95,000 cu.m. of which 60,000 cu.m. will be reused for embankments and the remainder is expected to be unsuitable and therefore to be disposed of. Approximately 40,000 cu.m. of borrow area will be required for the balance of embankment construction.

28. The proposed drainage system for the road will entail the installation of 80 new culverts, primarily to provide relief to roadside drains, the removal and replacement of 50 existing culverts which are either badly damaged or undersized and the maintenance of 9 large diameter existing culverts i.e. dia >1,200 mm. Most of the culverts to be maintained will require extensions on each side to accommodate the carriageway above. Approximately 21,000 linear meters of lined roadside drains will be constructed to cater for run-off from the carriageway and the adjacent slopes.

29. There are 7 existing bridges within the road length, the details of which are presented in the following Figure 1 Location of the Henganofi - Nupuru Road. Five of the bridges require major rehabilitation and the provision of steel decks. The Pore bridge is relatively new and require only minor maintenance while the bridge at the Imayata River has been washed out

and requires replacement. This will necessitate the construction of bank seat abutments with gabion protection to prevent scour of the foundations and the installation of Bailey bridge superstructure.

Table 1 Bridges along the Henganofi - Nupuru Road

NAME	CHAINAGE	TYPE	PROPOSED WORKS
Konamebi River	00 + 365	Steel Girder	Rehabilitation of Girders and provision of Steel Deck.
Menipi Creek	00 + 925	Steel Truss	Rehabilitation of Truss and Provision of Steel Deck
Pore River	20 + 520	9 Bay Bailey	Good Condition – No Works Required
Okoteri Creek 1	23 + 815	10 Bay Bailey	Minor Rehabilitation and Provision of Steel Deck
Okoteri Creek2	24 + 240	4 Bay Bailey	Rehabilitation and Provision of Steel Deck
Imayata River	28 + 030	6 Bay Bailey	Construction of a new Bailey bridge includes provision of Steel Deck
Iyapa Creek	29 + 722	2 Bay Bailey	Rehabilitation and Provision of Steel Deck

30. The rehabilitation and upgrading would approximately take 36 months and would involve the following:

- 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.

31. The upgrading and rehabilitation works for the Henganofi to Nupuru Road would require approximately 231 people of which 120 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. The human-power complement, machinery and equipment required for the works rehabilitation and upgrading would approximately take 24 months and would involve the following:

32. The works require materials including fuel, lubricants, paint, bitumen, cement, aggregates, sand, timber, geotextile, drainage pipes and culverts. All materials will be sourced from

approved suppliers. Workers, including local women, will make gabion baskets for embankment and bridge pier protection.

2.4 Purpose

33. This SEMR is written to present the status of the environment including compliance with the approved CEMP in respect of the Henganofi – Nupuru road section covering January to June 2019. It is a requirement under the ADB SPS 2009 and project and loan agreements. In addition, the report provides a clear picture with regard to the future implementation of CEMP activities as well as the environmental outcome.

34. 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

35. This SEMR is written using data gathered from several sources. These include (i) Contractor's interviews and monthly reports; PSC monthly reports and; (iii) HRMG-PIU verification of site and field observations.

36. The report is 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.

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

2.6 Institutional Arrangements

38. 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.

39. 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.

40. 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 Reporting Outline

41. 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

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

43. The basis for monitoring are the parameters that would be considered in the CEMP of which there are 19 as follows: Contractor's camp and yard, Earth Works, 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), Health and safety issues, Employment Opportunities (Locals), Traffic management, Prevention of HIV/AIDS and STDs, Existing Infrastructure Issues, Environment Related Grievances and Training and Mentoring

44. The summary of non-compliance from the monthly reports prepared jointly by HRMG and PSC is provided in Table 2. 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 2 Summary of Non-Compliance Notices for January to June 2019

NON-COMPLIANCE						
	J	F	M	A	M	J
Hazardous material management	X		✓	✓	X	X
No PPEs issued, local workers always complaining about PPEs.	X	X	X	X	X	✓
Monitoring was done with in-situ	X	X	X	✓	✓	X
Prevention of HIV/AIDS & STI	✓	✓	✓	✓	✓	✓
Campsite monitoring not done thoroughly due to security dogs posing threat.	X	X	X			X
No water in local workers toilet on campsite	✓	✓	X			X

3.1 Contractor's camp and yard

45. Issues continuously identified at the camp site are; no water provided for Local workers toilet and poor control of security dogs which poses a threat to monitoring teams to do thorough inspection.

46. The major concern for monitoring team is the presences of security dogs around and near the kitchen, sleeping quarters, and shower blocks, thus as a result thorough monitoring is not made for these facilities.

47. Drainage system in the camp yard is kept clean around some areas while others especially on the side of the fences are covered by weed and grass. The drainage near the garage areas is sometimes or most of the times covered with or have spills of used oil in it. Thus, the drainage system in the camp yard all lead to one big drain which leads right into the Konemempi River.



Figure 2 Drain not cleaned causing stagnant water can lead to breeding of mosquitoes. This drainage is near the office spaces.

3.2 Earth Work

48. All earth work for Henganofi-Nurpuru Road Project is completed as of March 2019. The contractor is now focused on Capping and road base works as well as sealing on front sections of the 34km Road.



Figure 3 End of Henganofi - Nurpuru Road CH 34+ 000

3.3 Erosion and sedimentation control

49. The contractor has shown responsible soil erosion control through the hauling of soil spoils to approved dumpsites. Working when there is no rain is also practiced.

50. All culvert construction are done at along natural water ways to minimise flooding, erosion and damages to surround gardens and vegetation.

51. There were several landslips during the month of January and February along CH 6+ 000 and CH 7+ 000 due to too much water contain in the soil during the rainy period. These landslips caused a lot of damages to the road that where already sealed, line drain and retaining walls. Theses damages are yet to be reconstructed.



Figure 4 Eroded soil covering sections of the road also causing damages to line drain and retaining wall at CH 7+ 400 (left side)

3.4 Water quality

52. Baselines have been gathered for water quality and should be used as comparison in the monitoring of sediments in water bodies during earthworks activities and bridges construction or repair.

53. For the said period there were two water qualities testing done for the month April and May 2019 by the CWYC environmental officer. The results are provided in the table, below.

54. These testing sites are selected from the baseline data so as to compare the changes before and during the project. There were seven (7) stations to be sampled. Four (4) of them are perennial rivers and three (3) are intermittent creek. Since the commencement of this project these are the first two tests done so far.

Table 3 Water Quality test Results for April 2019

Chainage	Temperature (°C)	Total dissolved solid (ppm)	pH Value
0+ 355	25.6	036	7.6
0+ 925	27.1	045	8

20+ 520 (Fore)	25.6	034	7.4
23+ 812	23.5	046	7.7
24+ 240	26.2	140	7.9
28+ 030	23.2	036	8.2
29+ 772	23.1	038	7.45

Table 4 Water Quality Test Results for the Month of May

Chainage	Temperature (°C)	Total dissolved solid (ppm)	pH Value
0+ 355	28.1	032	7.8
0+ 925	26.2	042	7.7
20+ 520 (Fore)	26.6	031	7.6
23+ 812	27.1	042	7.1
24+ 240	28.2	035	7.5
28+ 030	25.8	045	7.9
29+ 772	26.4	039	7.3

3.5 Air Quality

55. Dust alongside road corridor increases as vehicles move to and from, especially on unsealed areas.

56. Workers taking part in priming and sealing are issued PPE's (Nose Mask) for protection According to the baseline survey; there are nine (9) Air Quality Testing Stations. Air Quality testing for this period is only done for the months of April and May.

57. Testing was done on site, in the given chainages by the CWYC Environmental Officer. The results were gathered and tabulated below.

Table 5 Air Quality Test Results for April 2019

Chainage	PM 2.5	PM 10	COMMENTS
0+ 355	41ug/m ³	206ug/m ³	Populated (Konamempi Market)
0+ 925	24	93	
10+ 000	32	83	
20+ 520	40	233	Populated (Fore Market)
23+ 812	24	47	
24+ 240	17	34	
28+ 030	36	89	Imaka Primary School
29+ 772	14	26	
34+ 000	32	56	Nupuru Junction

Table 6 Air Quality Test Results for May 2019

Chainage	Pm 2.5	Pm 10	Road Status Comments
0 + 355	44ug/m ³	220ug/m ³	Unseal section populated (Konamempi)
0+ 925	35	123	Sealed section; only few people

10+ 000	28	73	Sealed section only few people
20+ 520	43	238	Unsealed section Populated Fore Market
23+ 812	24	47	Unsealed section; Churches and a mini market
24+ 240	17	34	Unsealed section; only few people
28+ 030	39	110	Unsealed Section Populated
29+ 772			Unsealed section; test not done
34+ 000			Unsealed section; test not done

3.6 Noise and Vibration

58. The ambient noise level safe for human is between 45-60 dB. Sounds which are unpleasant to human ears can be classified as noise. A person must not be exposed to noise level of 60 - 85 dB for over 30 minutes as it can cause injuries to the ear drum.

59. The main source of noise generation for this project come from heavy machineries, heavy and light vehicles, generators, etc. Contractor working hours is between 7:00am to 5:00pm.

60. Noise/sound level meter has been used April and May only for the period to measure the noise levels along the road corridor. Testing stations are same as the baseline data. This can also be used for comparisons.

Table 7 Noise Level Test Results for April 2019

Chainage	Without car/machine	With car/machine
0+ 355	61.1 dBA	74.2 dBA
0+ 925	48.9 dBA	86.4 dBA
10+ 000	60.3 dBA	73.6 dBA
20+ 520	50.3 dBA	69.6 dBA
23+ 812	60.1 dBA	72.3 dBA
24+ 240	45.2 dBA	53.0 dBA
28+ 030	57.9 dBA	60.8 dBA

Table 8 Noise Level Test Results for May 2019

Chainage	Without Car/Machine	With Car/ Car
0+ 355	61.1	74.2
0+ 925	48.9	86.4
10+ 000	60.3	73.6
20+ 520	50.3	69.6
23+ 812	60.1	72.3
24+ 240	45.2	53.0
28+ 030	57.9	60.8
29+ 772	45.7	53.9
34+ 000	56.5	60.1

61. The results show sound levels without car re in the safe zone where a sound level with car/machines are a concern however since the vehicles are moving the sound is also passing whereas stationaries machines must be monitored, and workers are issued with earmuffs.

3.7 Waste management

62. The contractor disposes its unsegregated solid wastes into open dump areas which could be breeding grounds for diseases. There is also the possibility of the wastes or leachate seeping into the groundwater. It is recommended that the contractor segregate its waste and follow best practices for solid waste management including composting and the principles of reduce, reuse and recycle.

63. Contractor's kitchen wastes management at the camp site has improved and the contractor has maintained the good practice throughout the concerned period.

64. A new solid waste dump site was dug at CH 1+930 (left side) about 12m out from the edge of the new sealed road. The previous dumpsite is about 1.3km up at CH 2+ 300 which was full and is now covered up with soil.

65. Other materials like empty drums and old tyres are re-used as storage vessel for bitumen and used oil at the campsite and tyre are re-used as barrier for chips stockpile inside the camp yard.



3.8 Hazardous material management

67. The hazardous wastes from the camp consist mostly of leaking lubricant drums which has seeped into the soil and nearby drainages. The hazardous waste management strategy is to ensure that the soil is not contaminated by cementing the storage area and providing bunds to prevent leakage into other parts of the workshop area.

68. The management of hazardous wastes include their storage and ultimately disposal including fluorescent bulbs, computers and peripherals, printers and other equipment. This will also include used batteries, battery fluids, oils, lubricants, and asphalt products. There is a need to regularly monitor the implementation of the Hazardous Waste Management Plan.



Figure 7 Storage drums leaking with used lubricants



Figure 8 Oil spilling into drainage near garage area

3.9 Aggregates extraction

69. The Upegu Quarry needs to be carefully monitored for erosion and sediment impacts to ensure that mitigation measures are in place to reduce its impact to the communities who use it for domestic purposes.

70. Royalty payments are paid to landowners for the activities covering the months of January – June 2019. For the period extractions where made only from the Upegu Quarry. The estimated amount for Upegu Quarry is based on the signed contract of K3.15/m³.

71. The Total volume of aggregates and material extracted by CWYC for concerned period is 34,325.06m³; hence an estimated value of K105, 058.50 was paid to the landowners.

Table 9- Quarry Extraction and Estimated Value for January to June (2019) for CWYC.

Month	Hapanofi	Mehenave	Upegu	Total (m3)	Estimated Value (Kina)
January		1,577.60	4,564.1	6,141.7	16,280.92
February			4,628.4	4,628.4	14,579.46
March					
April	closed	closed	6,391.6	6, 391.6	20,133.54
May			9, 785.76	9, 785.76	30, 825.14
June 1 st – 26 th			7, 377.6	7, 377.6	23, 239.44
Total		1, 577.60	32, 747.46	34, 325.06	105, 058.50

3.10 Socio-economic issues (community)

72. Most issues relating to socio-economic benefit of the community are regarding payment of environmental damages along the road corridor. The frequently asked questions are about when and how payments of damages will be made.

73. Issues rose for the period where addressed through public consultation through explanations and reasoning with locals to allow work to continue. These consultations are tabulated below

Table 10 Public Consultation held where locals demand payments.

Date	Location	Agenda	Resolution/Response	Attendance	Organisation
10 th June 19	23+700 Hogoteru	Regarding construction of the new bridge. Agenda: 1. The local community claims the Henganofi-Nupuru Road Project was the initiative of the Late Former MP for Henganofi District Viviso Serawo; therefore, the community wants all workers working on the construction of the bridge to be from the area (ward 5) only. 2. According to Melanesian culture or belief; the community demands compensation in	The compensation was made on the 17 th June 2019. CWYC and Henganofi district jointly gave: - 1 pig - 2 lamb flaps - cartoon - K500 (refer to pictures in appendix 3)	19 – female 32 – male 15 – children During feedback: 100 – male 80 – female 15 - children	CWYC community relation officer – Terrix DOW & district representative – Jones HRMG CRO – John Upave

		cash and kind to thank and remove Late MP's spirit before construction begins.			
17 th June 19	32+ 700 Hoguporo Border of Lufa and Henganofi	1. Community from the lufa district side of the road wants improvement payment from Henganofi district before road base work.	Tranche 3 Team Leader Alberto Fieramosca visited the site on the 21 st June 2019 and instructed that if the locals still delay work then the contractor should work backwards and leave the Nupuru section out.	Not recorded	HRMG EO & CRO, CWYC, Renardet S A Team Leader, ADB representative From Port Moresby
19 th June 19	16+ 860	1. Landowner stops sealing work along 300m of the road and demands environmental payments before work will continue.	The contractor was instructed to skip the section of the road and continue sealing, after much anticipation by CROs to reason with the landowner was unsuccessful.	18 – Male 7 – female	Renardet S A CWYC HRMG

3.11 Health and safety issues

74. Workers health and safety is an ongoing issues with the Henganofi-Nupuru project, this parameter has been given less effort of improvement since the beginning of the project. For the concerned period PPEs has not improved until mid-May to June only when there were some improvements observed. However, there is still much improvement needed in the provisions of Personal Protective Equipment. The following images shows improvements on certain PPEs.

Figure 9 In January when no PPE was issued



Figure 10 In June when appropriate PPEs was provided

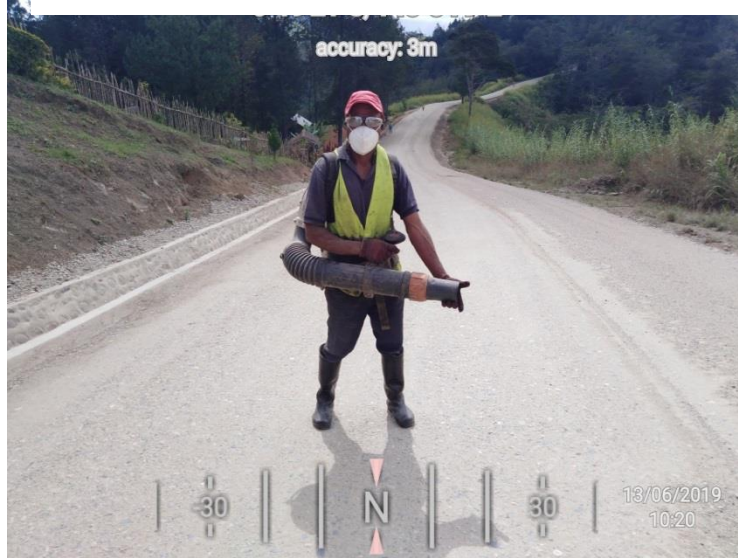


Figure 12 Worker with no safety boot, hand gloves and nose masks (February)

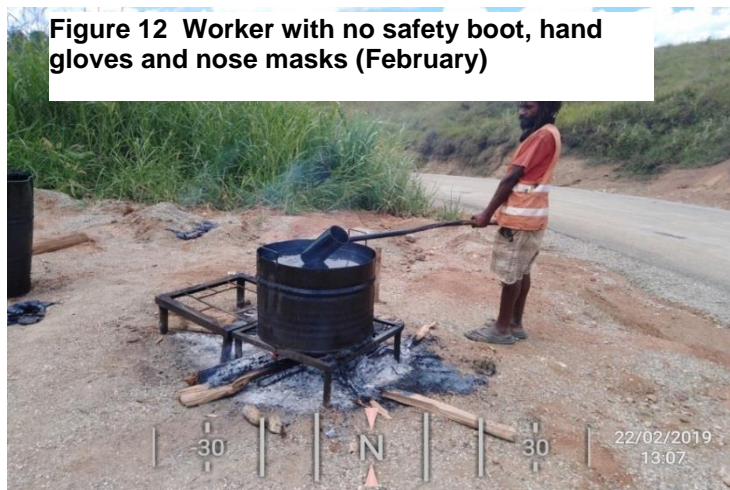


Figure 11 Rubber boots and gloves provided in June, still needs mask and stronger boots.



75. The contractor must regularly conduct a toolbox meetings with their workers. Thus, most of the local workers are unaware of safety procedure they should take or abide by during working hours. As a result, an incident occurred early this year (2019) in January; where a local employee got stuck between the wheel of a grader machine.

3.12 Employment Opportunities (Locals)

76. The contractor has increased the engagement of female along road construction activities such a culvert and line drain construction. However, they have yet to meet ADB expected ratio of 30% of female employment.

Table 11- Monthly employment by gender from January to June.

Month	Male	Female	total	DPs Employed	Estimated female Wages	Estimated Total wages
January	291	13	304		14,600	

February	284	14	298		13 800	
March	273	30	303	207	797.59	
April	247	28	275	209	23, 959	
May	253	27	280	210	24,793	
June	264	26	290	219	24. 512	

77. Local employment opportunities include non-payroll activities that involve women; these are presented in table 11 below.

Table 12- Women's Participation in non-payroll activities

Month	Spotters	Gabions	Line Drains	Head walls	Pick stones at Upegu	Total	Estimated Wages
January	24	2	3			29	8,200.00
February	13	0	4			17	8,300.00
March	13	2	4			19	8,000.00
April	8	3	2		5	18	8,090.00
May	5	4	3	1	10	23	9,130.00
June	8	2	4	2		16	9,072.00
Total	63	11	16	3		122	50, 792.00

3.13 Traffic management

78. The contractor maintains good traffic management practices. Small communicator radios are provided for spotters to use.

79. The flow of traffic has increased gradually but too busy, only constructions vehicles and few PMV pass the area on a daily basis hence traffic is manageable.



Figure 13 Female spotter posing with the new issued radio to communicator with spotter on the other hand.

3.14 Prevention of HIV/AIDS and STDs

80. The Fore Health Service provider who are contracted to carry out HIV/AIDS awareness have signed a partnership agreement with Eastern Highlands Family Voice to (EHFV) to carry out awareness on the project on the 6th June 2019. From this date on the two service providers will work together to carry out the awareness program.

81. The following data represented below was acquired by the contractor's environmental officer from Provincial hospital in Goroka town in March 2019.

Table 13 Statistics of persons affected with STIs , HIV/AIDS and VCT attendance in 2017 till 2019 in Fayantina and Nupuru

Facility CODE# Year	Health Facility	STIs		HIV		VCT Attendance	
Fayantina Health Centre							
2017		Males Females	104 89	Males Females	8 4	Males Female s	34 49
2018		Males Females	96 110	Males Females	7 9	Males Female s	0 0
2019		Males Females	5 7	Males Females	4 8	Males Female	0 0
Nupuru Health Centre							
2017		Males Female	82 115	Male Female	12 15	Males Female s	127 76
2018		Males Females	119 121	Male Females	8 11	Male Female	88 72
2019		Male Females	4 7	Males Females	3 5	Male Female	0 0
Total Cases			859		94		446

STIs TREATMENT

Total Treated

Males = 410

Females = 449

HIV TREATMENT

Total Treated

Males on ARTs =16 Nupuru Only

Females on ARTs = 18 Nupuru Only

OTHERS ON SEPTRIN PROPHYLAXIS

Total Prophylaxis

Males Septrin = 26 Nupuru/Fayantina

Females Septrin=34 Nupuru/Fayantina

VOLUNTARY COUNSELLING AND TESTING

Males tested Positive = 4

Males tested Negative = 245

Females tested Positive = 2

Females tested Negative = 195

3.15 Environment Related Grievances

Table 14 List of environmental related grievance from January - June 2019

Month	Environmental Grievances	Person/ Organisation	Resolution
January	No Grievances; despite rainy period		
February	No Grievances; despite rainy period		
March	Despite the raining periods there were no major damages to the environment as well as there were no complaints from the local communities.		
April			
May			
June	<p>1. CH 20+890 concerns raised about coffee garden at the top of the slope where cut was made to build stone baskets (right side)</p> <p>2. CH 20+890 on the left site of the same area the owner of the coffee garden complained that the trees and shrubs removed from the other side are thrown onto his coffee garden</p>	HRMG/CWYC	<p>1. Environmental Officers for CWYC and HRMG explained to the landowner that the stone baskets were necessary in order to support and hold the soil on top in place because either way landslip is still likely to occur because the area is unstable. So, the cut is necessary in order to build the stone basket for support.</p> <p>2. the contractor was told to clear the spoils felt on the other side of the road to an agreed upon dump site.</p>
Total	2		
Monthly Average	1		
Percentage			

82. **Note:** there are not many issues regarding damages to the environment. Social safeguards team have been recording vegetation, properties, and gardens and trees that were removed during the clearing and grabbing phase to be address in the GRC meeting. Therefore, the frequently asked questions are all relating to how and when the compensation payments for vegetation removal and environmental damages within the road corridor will be made.

4.0 CONCLUSION AND RECOMMENDATION

4.1 Conclusion

83. This first semi-annual report for 2019 indicates that the CEMP is being implemented substantially and the contractor provides remedies and mitigation for environmental notices of violation.

84. Solid wastes management practises has improved and the contractor commended and should always maintain the good practices.

85. The work progress for this project CSTB#3533 is on schedule with road sealing already reaching CH 17+ 000. Sections where locals have stopped work where skipped as advised from tranche 3 team leader.

86. The provision of PPEs has improved for the period the contractor is commended for complying.

87. The contractor has to conduct monthly monitoring of environmental parameters identified in the CEMP and IEE.

88. The contractor purchased new in-situ which are yet to be calibrated prior to use.

4.2 Recommendation

89. There is a need for workshops and training for environmental and safety officers for both Contractor, HRMG and PSC to pertain knowledge and skills with the used of in-situ equipment, traffic management and safety issues etc...

90. The contractor must assist monitoring team with information and data needed for report writings thus do not manufacture data.

91. The contractor should also notify Monitoring teams to be present for a joint monitoring and testing of water quality, air quality and noise level tests in order to avoid denunciation of data manufacturing.

92. Recommended actions provided by HRMG and PSC in the monthly reports are very vital for the contractor to review and improve on concerned areas. This will avoid issues and further corrective actions by HRMG and PSC.

5.0 APPENDICES

Appendix 1: List of References

1. Initial Environmental Examination for Henganofi – Nupuru Road section (2016).
2. Contractor's Environment Management Plan for Henganofi – Nupuru (January 2018)
3. Back to Office Report of HRMG Environmental Officer and Quarterly Report.
4. Environmental Monthly Reports for HRMG and CWYC Environmental Officers
5. Henganofi – Nupuru Baseline Report.
6. Social Safeguards Monthly monitoring reports

Appendix 2: List of People Interviewed

1. Mr. Alberto Fieramosca – Resident Engineer PSC.
2. Mr. Johnny Buduhan – Resident Engineer PSC
3. Junior Dick Karre– CWYC Environmental Officer
4. Nazmie Ruape, Social Safeguards Officer, HRMG
5. Anita Uvovo, Environmental Officer, HRMG
6. John Upave, Community Relations Officer, HRMG
7. Rebecca Ken, Community Relations Officer, HRMG
8. Terrix Lanefae, Public Relations Officer, China Wu Yi Co., Ltd
9. Sophie CWYC Administration Officer.

Appendix 3 – Public Consultation Photographs.



Figure 14 Loading of pig and flaps cartoons onto vehicle to give as compensation to community at Hogotere CH 13+ 700



Figure 15 Public consultation with Hogoteru community concerning the new bridge construction prior to compensation payments.



Figure 16 Public consultation at CH 16+ 860



Figure 17 Community at Hoguporo border of Henganofi and Nupuru gather for public consultation. CH 32+ 700