Environment Monitoring Report

Semi-annual Report No.1

July 2016

CIVIL AVIATION DEVELOPMENT INVESTMENT PROGRAM – TRANCHE 2

Period Covering

January to June 2015.

Prepared by National Airports Corporation for the Asian Development Bank.

Environmental Monitoring Report

Loan Number: 2588/2589/2590-PNG

Reporting Period: Jan 2015 – June 2015 (1st Semi-annual)

PNG: Civil Aviation Development Investment Program – Tranche 2

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1. INTRODUCTION

1.1 Background

1. The Government of the Independent State of Papua New Guinea (GoPNG) has requested the Asian Development Bank (ADB) to provide a Multi-Tranche Financing Facility (MFF) to facilitate investments to improve the current state of the country's domestic air transport system under the Civil Aviation Development Investment Program (CADIP).

2. The Program is a comprehensive plan to upgrade, rehabilitate and maintain 21 national domestic airports in Papua New Guinea (PNG). The executing agency (EA) for the Program is the National Airports Corporation (NAC).

3. Implementing safeguard policy is a fundamental component of ADB funded projects such as CADIP. The principle ADBs Policy on Safeguards is the Safeguard Policy Statement (SPS) 2009 which covered the Environment, Involuntary Resettlement and Indigenous People *Policies*. In 2012, an Environmental Safeguard Draft Policy Handbook was launched and this reiterated SPS 2009.

4. These safeguard policies seek to avoid, minimize or mitigate adverse environmental and social impacts, including protecting the rights of those likely to be affected by the development process. Implementing the provisions of the policies is the responsibility of the GoPNG through Project Implementation Unit (PIU) of CADIP in NAC.

5. This report covers the environmental safeguard policies, the SPS 2009, that provides policies and procedures for preparation, implementation and monitoring of environmental safeguards such as; (i) environmental scoping and Initial Environmental Examination (IEE), (ii) Environmental Management Plan (EMP), (iii) Contractor' EMP Monitoring & Auditing, (iv) environmental clearances , (v) Impacts on people and natural surroundings, and also (vi) in compliance to the loan covenant for Environmental safeguard.

6. This report incorporates EMP implementation remarks from on-site meetings, contractors' reports, environmental audits and general environmental issues observation.

7. An Environmental Assessment Resettlement Framework (EARF) documented for CADIP is part of the provisions of the environmental safeguard which incorporates the five major airports (Tranche 2) in the country that have been identified for upgrading and rehabilitation.

1.2 Project Brief

8. Projects identified and works carried out by the contractor under Tranche 2 is stated in Table 1.

Table 1 Component of Tranche 2 Projects

No.	PROJECTS	MAIN SCOPE OF STATUS	CONTRACTOR	STATUS
1	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Strengthening of the runway pavement to handle Q400 or similar aircraft type. Apron widening Apron widening will cater for 2 -3 Q400 parking space New terminal building to cater for increasing passenger and cargo movements	China Harbour Engineering Corporation (CHEC)	▪ 20% completed and in progress ▪ Detail design for terminal building in progress
2	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Strengthening of the runway pavement to handle F100 or similar aircraft type. Apron widening Apron widening will cater for one F100 and Q400 parking space New terminal building to cater for increasing passenger and cargo movements	Global Ltd	▪ Mobilize to site in May 2015 ▪ Detail design for terminal building in progress
3	Kundiawa Airport Pavement Upgrading & Associated Works	Strengthening of the runway pavement (including widening) to handle Dash 100 or similar aircraft type.	Shorncliffe Ltd	10% completed and in progress
4	Goroka Airport Aircraft Pavement Upgrade & Associated Works	Pavement strengthening and runway extension will allow for Fokker 100 or similar type aircrafts operations. Apron widening will cater for 2 -3 Fokker 100 parking space New terminal building to cater for increasing passenger and cargo movements	Yet to decide	Bidding In Progress Contractor to be decided by the end of 2015
5	Momote and Buka Airport Fencing Installation & Associated works	Supply and installation of palisade security fencing to protect the land side for safe aircraft operations	Yet to decide	Bidding In Progress

9. Momote and Buka Airport Security Fencing & Associated Works are in the bidding stage and yet to be awarded to a contractor. Civil works for the aircraft pavement construction for Girua and Kundiawa airport is currently in progress whilst contactor for Goroka Momote and Buka is yet to be determined. Contractor for Vanimo has mobilized to site and in May to June 2015 and will start work by the 4^{tth} quarter of 2015.

10. The three main components of the projects are:

(i) Improvement of a safe and secured airports and airways infrastructure
(ii) Program Management and Capacity Development
(iii) Project Environmental Management Plan/Program

11. Part of the contract is for the environmental management and monitoring to ensure that civil works done on construction site are environmentally friendly whilst at the same time manageable. The key environmental impacts on natural and human environments have been assessed on-site and mitigation measures will be presented in this report.

12. This report also incorporates Occupational Health Safety (OHS) measures of the construction site, workers and workplace.

1.3 Environmental Category

13. Tranche 2 projects under CADIP are categorized as Environmental Category "B" according to ADB's Safeguard Policy Statement (2009). Its potential environmental impacts are less adverse and site specific, few if any of them are irreversible, and can be managed. An Initial Environmental Examination (IEE) as required was carried out and documented.

14. PNG Environmental Act 2000 and guidelines governing environment and conservation in projects implementation classified Tranche 2 as; (i) Level 1 for all the fencing projects and
(ii) Level 2A for the airport pavement and terminal upgrading works.

15. Level 1 project activities have the lowest impact on the surrounding environment. The requirements for submitting an IEE was waived and acceptance was granted from Conservation & Environmental Protection Agency (CEPA) to proceed with the fencing activities without further environmental assessment.

16. Level 2A is anticipated to cause potential adverse environmental impacts which are site-specific, few are if any of them are irreversible, and mitigation measures can be designed readily. This level involves earthworks, water abstraction, quarrying and waste discharge while doing upgrading & construction.

1.4 Environmental Performance Indicators

17. For qualitative and quantitative measurement of air and noise quality, general observation was carried out to determine compliance with the EMPs.

1.5 Institutional Arrangement for Project Environmental Management

18. NAC is responsible for managing the construction contract including monitoring the implementation of the environmental management and monitoring plans (EMP) by the contractor.

19. An International Environmental Specialist (IES) shall be engaged intermittently as and when required to assist with:

- Strengthening the environmental management of the project during detailed design, bidding process, contract process, construction, and implementation,
- Supervision and guidance of the environmental assessment process for all subprojects under the MFF,
- Supervision of the EMP implementation of subprojects, and
- Undertaking the necessary institutional strengthening including on-the-job training for the PE of NAC by giving major tasks to the PE in all of these activities.

20. The PIU established within the NAC has a Project Environmentalist (PE) responsible for monitoring the contractors' implementation of the EMP and to coordinate EMP implementation of the project.

21. A contractor's representative to implement EMP on-site is stationed at the contactors site office. The contractor reports to the Engineers Representative (ER) and the PE of PIU.

2. MONITORING ACTIVITIES

2.1 Methodologies

22. Environmental monitoring is carried out by the Contractor, PIU Project Engineer; the Site Supervisor with the assistance from the PE. Environmental audits are carried out on a quarterly basis by the PE. A weekly monitoring is conducted by the Project Engineer and the Site Supervisor in coordination with a contractors' Environmental Representative (ER). Monitoring is performed continuously with reporting done every month by the contractor to The Engineer and/or the ER of the Contract.

23. A project specific environmental monitoring checklist has been prepared by the Contractor with inputs from the PE. The checklist is used for daily/monthly monitoring as well as the audits which is carried out on a quarterly basis. The monitoring checklist for this quarter for all Tranche 2 projects is summarized in Annex A.

24. It was emphasized during construction site meetings that monitoring is an integral part of the EMP implementation and must be reflected adequately in their monthly environmental monitoring report as well. EMP implementation monitoring for ongoing project in Tranche 2 is presented in Annex B, C and D.

25. Site inspection and monitoring was carried out at the following areas:

- Contractors' site establishment & lay down area
- Drainage works and Grave/water extraction area
- Pavement works and building areas
- Batching plant area
- Workers compound
- OHS for permanent workers
- Nearby communities/settlements consultation
- Local participation

26. The contractor has a representative engaged to implement and monitor the EMP for the contract. The Contractors representative ensures all mitigating measures contained herein and thereafter is adhered to including necessary instructions from the Engineer whenever environmental impacts are observed is corrected.

3. WORKS IN PROGRESS

27. Tranche 2 projects works progress within the 1st semi-annual of 2015 is summarized in Table 2.

Table 2 Summary of the Progress of on-going Tranche 2 projects

Girua Airport Pavement Upgrading, New Terminal Building & Associated Works
Pavement Works Contractor mobilizing to site and establishing itself. Stripping of the flight strip and topsoil stockpiling. External works to include drainage, sewerage, and storm water, domestic and fire water piping were also completed. Excavation and removal of top soil at the air side area was done, backfilling and complication is still in progress and be completed by the second semester of
Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works
Pavement works Mobilization of materials, equipments, machineries and personnel to site in May 2015. Confirming the location of river gravel extraction at Wewak, East Sepik Province. Allocation and initial clearing of site establishment area within state land.
Kundiawa Airport Pavement Upgrading & Associated Works
Pavement works Mobilization and site establishment Survey and setting out Mobilization of materials, equipments, machineries and personnel to site in May 2015. Confirming the location of river gravel extraction at Simbu River. Initial clearing and preparing location for the site establishment within aerodrome land
Goroka Airport Aircraft Pavement Upgrade & Associated Works
Mobilization and works are yet to commence.
Momote and Buka Airport Fencing Installation & Associated works
Works are yet to commence.

4. COMPLIANCE WITH ADBS AND NATIONAL ENVIRONMENTAL REQUIREMENTS

28. Compliance statutes with National / State / Local statutory environmental regulatory requirements are shown in the Table 3.0.

Table 3: Compliance Status for Tranche 2 Projects Contract Package

NO.	PROJECT	STATUTORY ENVIRONMENTAL REQUIREMENTS	STATUS OF COMPLIANCE	ACTION REQUIRED
1	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Environmental Clearance under the 'Notification of preparatory Works' Documentation and approval of contactors Site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting Consent for vegetation / food gardens / crops / assets clearance	Yes (granted by DEC as Level 2A activities) Yes (obtained and submitted by the contractor) Yes (done by contractor on monthly basis) Yes (done by PIU PE on quarterly basis) not required	No Further Action (NFA)
2	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Environmental Clearance under the 'Notification of preparatory Works' Documentation and approval of contactors Site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting Consent for vegetation / food gardens / crops / assets clearance	Yes (granted by DEC as Level 2A activities) Yes (obtained and submitted by the contractor) Yes (done by contractor on monthly basis) Yes (done by PIU EO on quarterly basis) not required	NFA
3	Kundiawa Airport Pavement Upgrading & Associated Works	Environmental Clearance under the 'Notification of preparatory Works' Documentation and approval of contactors Site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting Consent for vegetation / food gardens / crops / assets clearance	Yes (granted by DEC as Level 2A activities) Yes (obtained and submitted by the contractor) Yes (done by contractor on monthly basis) Yes (done by PIU EO on quarterly basis) Not required	NFA
4	Goroka Airport Aircraft Pavement Upgrade & Associated Works	Environmental Clearance under the 'Notification of preparatory Works' Documentation and approval of contactors Site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting Consent for vegetation / food gardens / crops / assets clearance	Yes (granted by DEC as Level 2A Activities) Not yet. Contract not award Not yet. Contract not award Not yet. Contract not award Not required	NFA
5	Momote and Buka Airport Fencing Installation & Associated works	Environmental Clearance under the 'Notification of preparatory Works' Documentation and approval of contactors Site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting Consent for vegetation / food gardens / crops / assets clearance	Yes (granted by DEC as Level 1 activities) Not yet. Contract not award Not yet. Contract not award Not yet. Contract not award In progress	Consent through an MOU or records of minute of meetings with food crop owners and locals

5. COMPLIANCE WITH COVENANTS IN THE LOAN AGREEMENT

29. The status of compliance with the loan covenants is presented in Table 4.

Table 4: Compliance Status with the Environmental Covenants

REFERENCE	COVENANTS	COMPLIANCE
Loan agreement (special Operations) – CADIP Article 1: Loan Regulations; Definitions Section 1.02.	Wherever used in this Loan Agreement, the several terms defined in the Loan Regulations have the respective meanings therein set forth unless modified herein or the context otherwise requires. Additional terms used in this Loan Agreement have the following meanings: (d) "Environmental Assessment and Review Framework" or "EARF" means the environmental assessment and review framework for the Investment Program, including any update thereto, agreed between the Borrower and ADB and incorporated by reference in the Framework Financing Agreement (FFA); (e) "Environmental Management Plan" or "EMP" means an environmental management plan for the Project, including any update thereto, incorporated in the IEE; (f) "Environmental Safeguards" means the principles and requirements set for in Chapter V, Appendix 1, and Appendix 4 (as applicable) of the SPS; (n) "Initial Environmental Examination" or "IEE"" means an initial environmental examination for the Project, including any update thereto, prepared and submitted by the Borrower pursuant to the requirements set forth in the EARF and cleared by ADB; (cc)"Safeguard Policy Statement" or "SPS" means ADB's Safeguard Policy Statement (2009); (dd) "Safeguards Monitoring Report" means each report prepared and submitted by the Borrower to ADB that describes progress with implementation of, and compliance with the EMP, the RP and the IPP (as applicable), including any corrective and preventative actions.	Complied with and understood the definition of these terms
Loan agreement (special Operations) – CADIP SCHEDULE 4 Procurement of Goods, Works and Consulting Services	<u>Conditions for Award of Contract</u> 7. The Borrower and NAC shall not award any Works contract which involves environmental impacts until NAC has: (a) Obtained the final approval of the IEE from the appropriate environmental authority of the Borrower; and (b) Incorporated the relevant provisions from the EMP into the Works contract.	Complied

Loan agreement (special Operations) – CADIP SCHEDULE 5 Execution of Project; Financial Matters	<u>Environment</u> 7. The Borrower shall ensure, or cause NAC to ensure, that the preparation, design, construction, implementation, operation and decommissioning of each Subproject and all Project facilities comply with: (a) all applicable laws and regulations of Borrower relating to environment, health and safety; (b) the Environmental Safeguards; (c) the EARF; and (d) all measures and requirements set forth in the IEEs, the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report. <u>Safeguards – Related Provisions in Bidding Documents and Works Contracts</u> 12. The Borrower shall ensure, or cause NAC to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the IEEs, the EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures; (c) provide the Borrower and NAC with a written notice of any unanticipated environmental impacts that arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMP; (d) adequately record the condition of roads, agricultural land and other airport infrastructure prior to starting to transport materials and construction; and (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction. <u>Safeguards Monitoring and Reporting</u> 13. The Borrower shall do the following or cause NAC to do the following: (a) submit quarterly Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission ; (b) if any unanticipated environmental risks and impacts arise during construction, implementation or operation of the Project that were not	Complied Complied with the EMP set out in the IEE for respective projects in Tranche 2. Complied and budget made available/allocated in the contract agreements Not applicable at this stage Existing road conditions range from fair to good. Most roads are usable / accessible. Conditions of agricultural land and infrastructures are recorded through photos and videos. Complied with in line with construction site restoration / revegetation plan to be executed by the contractor. Complied and needs improvement to submit subsequent reports on time. Not applicable at this stage. ADB will be informed of the risks and impacts with the proposed

	considered in the IEEs, the EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and (c) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP, or any RP promptly after becoming aware of the breach.	corrective action. Breach of compliance will be reported to ADB in timely manner.
	<u>Health</u> 17. The Borrower shall ensure, or cause NAC to ensure, that the Works contractors will disseminate information on the risk of transmission of sexually- transmitted diseases, including HIV/AIDS, in health and safety programs to all construction workers employed under the Project. Specific provisions to this effect shall be included in bidding documents and Works contracts, and compliance shall be monitored by NAC and reported to ADB.	Complied and forms part of the EMP in the contract

6. COMPLIANCE WITH EMMPS IN AGREED DOCUMENTS

30. The compliance with Environmental Management and Monitoring Plan is shown in Table 5.

Table 5 Compliance Status for Tranche 2 Projects EMPs

NO.	PROJECT	EMP PART OF CONTRACT DOCUMENT (Yes/No)	EMP BEING IMPLEMENTED (Yes/No)	STATUS OF EMP IMPLEMENTATION (Excellent/Satisfactory/Partially Satisfactory/Below Satisfaction)	MITIGATION MEASURE
1	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Yes	Yes	Partially satisfactory	Needs improvement on Occupation Health and Safety
2	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Yes	Yes	Satisfactory	Needs improvement on Occupation Health and Safety Stockpiling of earthworks should be away from drains
3	Kundiawa Airport Pavement Upgrading & Associated Works	Yes	Yes	Partially Satisfactory	Needs improvement on Occupation Health and Safety Sedimentation and surface runoffs control needs to be in place on the drains
4	Goroka Airport Aircraft Pavement Upgrade & Associated Works	Yes	Not yet. Contract not award	Not yet. Contract not award	
5	Momote and Buka Airport Fencing Installation & Associated works	Yes	Not yet. Contract not award	Not yet. Contract not award	

7. MONITORING RESULTS AND ACTIONS REQUIRED

31. EMP monitoring for Tranche 2 projects was based on the main areas of concern. For Buka and Momote Airport fencing projects areas of monitoring will start from site establishment (Table 6).

Table 6 Summary of the EMP monitoring undertaken for this second quarter reporting month of January – June 2015

	PROJECTS				
	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Kundiawa Airport Pavement Upgrading & Associated Works	Goroka Airport Aircraft Pavement Upgrade, New Terminal Building & Associated Works	Momote and Buka Airport Fencing Installation & Associated works
Batching Plant Area	NA (Terminal Building works that will require more concrete is yet to commence)	NA (Terminal Building works that will require more concrete is yet to commence)	NA	NA (Works yet to commence)	NA (Works yet to commence)
Crusher Plan Area	- Assembling of crusher plant - Back filling materials and aggregate production for the entire project will be done at crusher plant located inside the project area. - Aggregates wash-out shall be diverted into ponds or open area within the site to control sediments without being directly discharge into the river. - River Gravel and aggregates produced will be stockpiled inside the crusher compound vicinity. - All machines on site are inspected to ensure there is no excessive leakage into water bodies and exhaust emission to air. - Water supply for cleaning the gravels is sourced from the nearby river. - Regular maintenance & fine tuning of the plant is maintained	- Assembling of crusher plant. - Aggregates wash-out shall be diverted into ponds or open area within the site to control sediments without being directly discharge into the river. - Back filling materials and aggregate production for the entire project will be done at the contractors' crusher plant located at Wewak and barged to Vanimo. - Aggregates, coronus basecourse materials are stockpiled inside compound vicinity. - Provision of proper PPEs to all workers.	- Assembling of crusher plant - Gravels is extracted from Simbu River (*Wara Simbu*) and crushed 20m on the river side. Crushed gravels for aggregate production for the entire project are done at the Shorncliffe Crusher Plant located on-site area. - Crushed river gravel and aggregates produced are stockpiled properly at both crusher plant sites. - The river sides are kept stable to prevent further sedimentation. - All machines on site are inspected to ensure there is no leakage and exhaust emission conforms to EMP standards. - A pond has been dug next to the river for sourcing the water supply for cleaning the gravels. Regular maintenance & fine tuning of the plant is maintained on-site in case of machine malfunction or breakdown.	NA (Works yet to commence)	NA (Works yet to commence)

	on-site in case of machine malfunction or breakdown and nose nuisance control to nearby communities. - Most of the construction workers have proper PPEs.		- Most of the construction workers have proper PPEs.		
Camp Site Area	- Hygiene and cleanliness is maintained at a satisfactory level. Practice of maintaining a clean campsite is emphasized as part of the company's practice. - CHEC Environmental representative conducts routine campsite inspections to ensure proper health and hygiene habits are practiced at the living quarters and reports on any issues that need attention from management. - Workshops and work places are kept clean and tidy. All construction and salvage materials are properly stored in designated areas and removed to designated disposal areas. - Most of the construction workers have proper PPEs.	- Basic housekeeping is maintained to a much better standard to ensure that a clean and healthy environment is maintained in the site office complex, contractors' personnel shelters, toilet, shower and Kitchen areas. - Kitchen wastes are disposed in rubbish bins. - All construction and salvage materials are stored in designates areas. - Workshops and work places are kept clean and tidy. All wastes are properly stored in designated areas and removed to designated disposal areas. - Most of the construction workers have proper PPEs.	- Hygiene and cleanliness is maintained at a satisfactory level at the workers campsite. Practice of maintaining a clean campsite is emphasized as part of the company's policy. - Kitchen wastes are separated into biodegradable and non-biodegradable bins and disposed in the public rubbish dump. - All construction materials are stored away in designates areas but needed to be properly and orderly arranged and stored. - Workshops and work places are kept clean and tidy. Oil spillage and proper storage of petrochemical products is emphasized. Any minor spillage must be cleaned immediately. - Most of the construction workers have proper PPEs.	NA (Works yet to commence)	NA (Works yet to commence)

Construction Site	- The main construction area where the main runway pavement upgrading and associated works is where EMP is strictly enforced. - All construction activities on site are strictly monitored to ensure the objectives of EMP are achieved. - Apart from EMP monitoring, other company Rules and Regulations, Company Policy on Health and Safety at Workplace are also implemented to ensure that	- The main construction area where the main runway pavement upgrading and associated works is where EMP is strictly enforced. - All construction activities on site are strictly monitored to ensure the objectives of EMP are achieved. - Apart from EMP monitoring, Health and Safety of workers	- The main construction area where the main construction area where the main runway pavement upgrading and associated works is where EMP is strictly enforced. - All construction activities on site are strictly monitored to ensure the objectives of EMP are achieved. - Apart from EMP monitoring, other company Rules and Regulations, Company Policy on Health and Safety at Workplace are also implemented to ensure that		
	construction works and the environment are protected. - Rainfall runoff flows through new (Open Unlined Drain) and existing network of drainage lines discharging to the main existing discharge drains. - Stripping of grass and top soil on the flight strip with controlled mitigation measures on dust, sedimentation and stockpiling. - Stripping of topsoil and disposed in designated areas away from water course - 6m corridor stripping of grass and bushes along the perimeter fence line for the installation of new palisade fence. Spoils are stockpile and later used on the concrete embankment flanks for re-grassing. - Most of the construction workers have proper PPEs.	personnel require improvements. For example, provision of proper PPEs - Rainfall runoff flows through a series of new (Open Unlined Drain) and existing network of drainage lines discharging to the main existing discharge drains. - Stripping of grass and top soil on the flight strip with fence line 6m corridor with controlled mitigation measures on dust, sedimentation. - Stripping of topsoil and disposed in designated areas away from water course or used on the concrete embankment flanks for re-grassing.	construction works and the environment are protected. - Rainfall runoff flows through a series of new (Open Unlined Drain) and existing network of drainage lines discharging to the main existing discharge drains. - Stripping of grass and top soil on the flight strip with fence-line 6m corridor with controlled mitigation measures on dust, sedimentation. - Stripping of topsoil and disposed in designated areas away from water course or drains or used on the concrete embankment flanks for re-grassing. - Most of the construction workers have proper PPEs		

Weather Impact on Project Progress	- The overall weather pattern was rainy is the first quarter to considerably fine with frequent showers and cloud cover towards the mid of the year.	- It was generally rainy in the beginning of the year and sunny towards the mid of the year with frequent showers.	- Overall weather pattern for this quarter was fine and dry	NA (Works yet to commence)	NA (Works yet to commence)
Water Source (Ground/Surface)	- Contractor is using ground water bore system for drinking, cooking, toilet supplies and washing clothes. It's a self-treatment water bore. - Water for dust control and use in civil works in construction is sourced from nearby Girua River.	- Contractor is using water from the town water supply by connecting to the main supply. The water is used for drinking, cooking, toilet supplies and washing clothes. - Water for dust control and use in civil works in construction is sourced from nearby rivers.	- Contractor is using water from the town water supply by connecting to the main supply. The water is used for drinking, cooking, toilet supplies and washing clothes. - Water for dust control and use in civil works in construction is sourced from nearby Simbu River.	NA (Works yet to commence)	NA (Works yet to commence)

Table 7 shows the EMP Implementation that the contractors *CHEC/COVEC/Shorncliffe)* have taken after quarterly audits were undertaken.

Table 7.0 Summary of EMP implementation that contractors have undertaken

EMP CONCERN	MITIGATION MEASURES	Corrected (✓ / X)	Remarks
	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works		
Spoils	• Stockpiling away from drains and water bodies • Levelling of low areas within the airport.	✓	
Occupational Health & Safety	• Ensure proper provisions of PPEs to construction workers • Provision of wash-down area for trucks, cars • Provision of detergents and soap at washing area • Provision of good drinking water to workers • Installation of Safety Signage at appropriate areas	✓	• Partly done. • Need more improvement esp. to supply PPEs to additional local labourers
Spillage of petroleum products, hazardous and toxic materials on water (surface/ground) or ground	• Ensure spill kits are readily available on site and use to contain spillage. • Proper and well maintained storage area for petroleum products, hazardous and toxic materials storage area. • Fill and compact sand around the refuelling truck at the contractors' site.	✓	
Local Participation	• Sourcing of labourers from locals must be maintained. • Involvement of women or women groups must be considered.	✓	Employed 7 local woman (3 in kitchen works and 4 in office admin.)
	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works		
Spoils	• Used for landfilling and/or proper disposal • Stockpiling away from drains and water bodies • Levelling of low areas within the airport.	✓	
Occupational Health & Safety	• Provision of proper provisions of PPEs to construction workers • Provision of wash-down area for trucks, cars	✓	• Partly done. • Need more improvement esp. to supply PPEs to additional local labourers
Spillage of petroleum products, hazardous and toxic materials on water (surface/ground) or ground	• Ensure spill kits are readily available on site and use to contain spillage. • Proper and well maintained storage area for petroleum products, hazardous and toxic materials storage area. • Construct concrete pad around vehicle maintenance and workshop area.	✓	
Local Participation	• Sourcing of labourers from locals must be maintained. • Involvement of women or women groups must be considered.	x	Contractor is planning to employ local women in sundry works such as general cleaning of workers camp site, office, kitchen and do laundries.
	Kundiawa Airport Pavement Upgrading & Associated Works		
Spoils	• Used for landfilling and/or proper disposal • Stockpiling away from drains and water bodies • Levelling of low areas within the airport. • Correct disposal of excess spoils at public dump site or given to communities for their use.	✓	
Spillage of petroleum products, hazardous and	• Ensure spill kits are readily available on site and use to contain spillage.		

toxic materials on water (surface/ground) or ground	• Proper and well maintained storage area for petroleum products, hazardous and toxic materials storage area. • Used oil must be stored in sealed containers • Supply rages to wipe out/clean small amount of oil spills immediately.	✓	
Occupational Health & Safety	• Maintain proper provisions of PPEs to construction workers • Provision of wash-down area for trucks, cars	✓	• Partly done. • Need more improvement esp. to supply PPEs to additional local labourers
Dust control	• Use water trucks to sprinkle exposed soil areas to control dust pollution to the nearby surrounding communities, houses, roads and buildings.	✓	
Local Participation	• Sourcing of labourers from locals must be maintained. • Involvement of women or women groups must be considered.	✓	The contractor is planning to engage local woman groups to assist in the installation of the new airport fencing works.

32. EMP Implementation and mitigation measures on Tranche 2 projects from mobilization to civil works are satisfactory. There were no reports of major environmental impacts.

33. Emphasis was placed on HIV/AIDS Awareness to construction workers and nearby communities, Workers were advised to adhere and have Personal Protection Equipment (PPE) at the work place. No major casualties on site apart from some minor First Aid Cases were reported.

34. The engagement of the local community including women was encouraged.

35. Disposal of domestic waste from contractors' site was managed through the normal town disposal facilities. Littering and waste petrochemical products such as lubricants, chemicals, asphalts and fuel (diesel/petrol) were stored in sealed drums/containers.

7.1 Environmental Quality Monitoring Results

36. Dust is minimized using the water truck. However, surface runoffs from existing apron areas and the airport open areas in are collected in the existing drainage within landside and airside. Change of colour (i.e. brown) of the drained water comes from the debris/sediments and spoils that are collected in the other drains in the airports.

37. The contractor is advised to carry out water quality once every quarter or semi-annually. Water quality is done mainly on discharge areas into nearby water bodies and also from groundwater.

38. Measurement for the air and noise quality cannot be done since no monitoring equipment are available on-site to quantify the required data. However, machines/plants/equipment and trucks used for construction works are regularly serviced and undergoes complete service upon required mileage. This ensures emissions generated from the engines are minimized or controlled at low acceptable level.

8. SUMMARY AND CONCLUSIONS

39. For this mid 2015 environmental monitoring, all projects in Tranche 2 have not indicated any significant or major environmental impacts.

40. Generally works on all sites – campsite, construction site, crusher site comply with the implementation of the inspection items checklist as per the approved EMP/CEMP.

41. The Water truck suppresses dust on runway or apron surfaces. During transportation the dump trucks are hosed down to ensure there is very little mud sticking to the wheels of machines. Storm water is channeled through a network of surface drainage throughout the construction site discharging into the existing main storm water drainage system and/or the open unlined drain (OUD).

42. The crusher site is also near the main sealed road and also near the river. The graveled road leading to the crusher site is in good condition. All machines there are routinely

maintained and working in good conditions.

43. Minimal impacts or anticipated impacts are either corrected immediately on-site or left to be addressed later once resources are available to assist in the mitigation measure e.g. purchasing of PPEs may take time if to acquire all sets.

44. Periodic implementation of the Occupational Health and Safety issues not only to the construction workers but also to surrounding communities and public at large. This also includes HIV/AIDs awareness.

45. Another audit will be advised to follow-up on the Contractor's Environmental Compliance performance for the third quarter of this year 2015.

ANNEXES

ANNEX A: MONITORING ENVIRONMENTAL MANAGEMENT CHECKLIST FOR ALL TRANCHE 2 PROJECTS

Item/Impact	Action/Mitigation Measure	Mitigation Implementation		Impacts Observed/Location	Action Required (incl. by date)	Contractor Response/Comment
		Yes/No	Effectiveness (1 to 5)			
Contractor environmental awareness	- Aware of mitigation measures; - Has copy of IEE; - Delivering training and/or awareness to staff	Yes	4	Batching Plant Crusher Plant Campsite	No action required	No comment
EMP Implementation	- Strict implementation is to be done - The designated officers functions and responsibilities to be carried out	Yes	4	All sites of the project	No action required	No comment
Maintenance Works and Construction Methods	- On-going project sites has been properly implemented	Yes	4	All sites of the project	No action required	No comment
Site Conditions	- Local community issues on lands and employment were properly addressed and resolved.	Yes	2	Vanimo and Kundiawa still need to employ women	Contractor to engage local women in areas appropriate for them to work.	To monitor
Environment Management Measures	- Environmental issues as tabulated in the EMP will be properly implemented and mitigated as to the probable impact.	Yes	4	All sites of the project	Environmental and Project engineer to spearhead the implementation	To monitor

Effectiveness rating; 1 = non-compliant - corrective actions required; 2 = partial compliance – corrective or alternative actions required; 3 = adequately implementing CEMP measures; 4 = more than adequately implementing CEMP measures; 5 = excellent compliance, incl. measures in addition to CEMP

ANNEX B: EMP IMPLEMENTATION – GIRUA AIRPORT UPGRADE

PROJECT NAME:	GIRUA AIRPORT PAVEMENT UPGRADING, NEW TERMINAL BUILDING & ASSOCIATED WORKS	CONTRACT NO:		PROVINCE:	ORO PROVINCE
Date of Inspection:	June 2015	Inspected By (And Designation):	Barksy (PIU)	Initial	BP
Remarks:	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial:	MA
			Contractor (CHEC)	Initial:	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
SOIL EROSION						
Slope erosion and sedimentation of nearby water bodies	• Installation of silt traps on all drains • Minimize clearing of vegetation and time surfaces are exposed • Establish requisite temporary/permanent control structures • Undertake immediate re-vegetation after completion of construction works	Airport vicinities	Construction Phase	✓		- Sedimentation controls installed - Contractor is advised to prepare a Re-vegetation Plan - Involve women groups in the re-vegetation plan.
Sediment runoff which could damage aquatic and marine ecology or flooding issues	• Locate stockpiles in controlled areas • Sub-grade and sub-base material placed quickly after removal of topsoil • Planned construction work during dry season • Removal of spoils and construction debris	Downstream of Airport sites and waterways	Construction Phase	✓		- Sub-base and subgrade placed immediately and compacted and levelled out on topsoil areas. - No works during rainy season
WATER QUALITY/QUANTITY						
Disruption of Surface and Ground Water	• Dimension of drains • Diversion of stream • Use of grassed areas for runoff • Location of stockpiles on paved areas • Removal of stockpiles after construction • Re-vegetation after construction	Airport and surrounding areas and Downstream from construction areas	Duration of project	✓		- Proper drainage system installed in works area - All drains into main storm water drainage (i.e. the OUD) parallel to the main runway
Contamination of nearby water bodies by toxic and hazardous substances	• Installation of oil and traps in drains • Development of safe storage areas and proper handling of hazardous and toxic materials • Proper disposition of hazardous and toxic materials	Airport and surrounding areas	Duration of project	✓		- Site establishment area away from water bodies. - Emphasized on safe storage of toxic/hazardous materials
Pollution from domestic sewage and wastes	• Proper solid waste management system to be practiced in work areas • Installation of sanitation and treatment facilities in camps, offices and ancillary facilities	Airport, Camps, Offices and Ancillary Facilities	Duration of project	✓		- If camp site sewage not connected to the main town sewerage system, ensure to install a proper septic system

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Contamination from oil and grease	• Collect and recycle petroleum products • Development of spill contingency plans • Construction of bund walls and drainage systems around fuel storage areas	Ancillary Facilities	Duration of project	✓		- Bunding constructed around refueling area.
AIR POLLUTION						
Increase in levels of Total Suspended Particulates (TSP), SO2 and NO2	• Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- Vehicles and machineries are maintained at contactors workshop.
Health hazards and nuisances to nearby villages and settlements	• Regular monitoring of air quality in the vicinity of the airports and sensitive receptors	Airport site and adjacent villages and settlements	Operation Phase	✓		- Require environmental monitoring equipment to quantify. However, visual assessment indicated fewer nuisances tolerable to nearby settlement.
NOISE POLLUTION						
Health risks to workers and residents of nearby villages and communities	• Control vehicles speed in work areas and sensitive locations • Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	All construction areas, access routes, and quarry sites	Pre-Construction and Construction Phase	✓		- Proper and complete set of PPE for all construction employees. - Generators are housed-in with corrugated iron roofing fence. - Proper and routine maintenance of machines and vehicles are done
Nuisance to residents of nearby villages and communities	• Establishment of buffers between airport and nearby settlement areas • Preparation of operational procedures by Airport Operator based on ANZECC 1992 or Australian Noise Exposure Forecast (ANEF)	Nearby settlements	Operation Phase	✓		Contractors' vehicle and machineries Traffic is controlled and management strictly within airport are and main/access roads. Limit use of vehicles, machines, Crusher plant is done only during day time
OCCUPATIONAL HEALTH AND SAFETY						
Hazards to worker's health and safety	• Construction methodology under control of Safety Officer and CSC • Approved Contractor's Occupational Health and Safety Plan	Airport sites	Pre-Construction and Construction Phase	✓		- Contractors' Safety Officer ensures safety standards is maintained on-site. - OHS plan yet to submit
Spread of HIV and other communicable diseases	• Contractor to source labourers and workers from the nearby villages • Contractors to increase awareness of workers	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- HIV/AIDS awareness to include nearby communities.
SOCIAL /COMMUNITY CONCERNS						

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Changes in nearby land values	• Proper valuation of land	Surrounding areas and nearby villages	Operation phase	✓		- Not required
Loss of aesthetics	• Landscaping and re-vegetation	Vicinity of Airports	Duration of Project	✓		
Cultural differences risk/social conflicts	• Contractor to source labourers and workers from the nearby villages	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- Well implemented
Slum creation risks	• Demolition of structures as part of abandonment plan	Airport sites	Completion of Construction	✓		- Not applicable (NA) at this construction stage
Disruption of utilities	• Investigate limits to required services and minimize disruptions	Nearby settlements	Pre-Construction and Construction Phase	✓		- No disruption to utilities. Contactors are made aware of the public utilities
Increase in traffic	• Prepare traffic management plans	Airport vicinities and major roads into the Airports	Duration of Project	✓		- Movement of cars/machinery into airside aided by NAC Safety Officer - Landside traffic is on normal road networks accept when needed guidance from NAC Safety Officer.
SITE ABANDONMENT						
Decommissioning of work sites	• Preparation of abandonment plan • Return of all transient workers to original places of residences • Demolition of temporary offices and contractor's depot area • Dismantling of ancillary facilities • Re-vegetation of exposed areas • Proper disposition of construction debris	Construction and camp sites	After completion of construction	✓		- NA at this construction stage. - Contractor is required to prepare a Site Abandonment Plan

ANNEX C: EMP IMPLEMENTATION – VANIMO AIRPORT PAVEMENT UPGRADE

PROJECT NAME:	VANIMO AIRPORT PAVEMENT UPGRADING, NEW TERMINAL BUILDING & ASSOCIATED WORK	CONTRACT NO:		PROVINCE:	SANDAUN PROVINCE
Date of Inspection:	June 2015	Inspected By (And Designation):	Barksy (PIU)	Initial:	BP
Remarks:	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial:	MT
			Contractors' Environmental Rep.	Initial	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
SOIL EROSION						
Slope erosion and sedimentation of nearby water bodies	• Installation of silt traps on all drains • Minimize clearing of vegetation and time surfaces are exposed • Establish requisite temporary/permanent control structures • Undertake immediate re-vegetation after completion of construction works	Airport vicinities	Construction Phase	✓		- Vegetation clearing and topsoiling is done in stages to avoid soil exposure to dust and being washed off during rain - Contractor is advised to prepare a Re-vegetation Plan - Involve women groups in the re-vegetation plan.
Sediment runoff which could damage aquatic and marine ecology or flooding issues	• Locate stockpiles in controlled areas • Sub-grade and sub-base material placed quickly after removal of topsoil • Planned construction work during dry season • Removal of spoils and construction debris	Downstream of Airport sites and waterways	Construction Phase	✓		- Sub-base and subgrade placed immediately and compacted and levelled out on topsoil areas. - No works during rainy season - Installation of sedimentation ponds
WATER QUALITY/QUANTITY						
Disruption of Surface and Ground Water	• Dimension of drains • Diversion of stream • Use of grassed areas for runoff • Location of stockpiles on paved areas • Removal of stockpiles after construction • Re-vegetation after construction	Airport and surrounding areas and Downstream from construction areas	Duration of project	✓		- Proper drainage system installed in works area - All runway works area surface runoffs into main storm water drainage (i.e. the OUD) parallel to the main runway
Contamination of nearby water bodies by toxic and hazardous substances	• Installation of oil and traps in drains • Development of safe storage areas and proper handling of hazardous and toxic materials • Proper disposition of hazardous and toxic materials	Airport and surrounding areas	Duration of project	✓		- Site establishment area away from water bodies. - Emphasized on safe storage of toxic/hazardous materials

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Pollution from domestic sewage and wastes	• Proper solid waste management system to be practiced in work areas • Installation of sanitation and treatment facilities in camps, offices and ancillary facilities	Airport, Camps, Offices and Ancillary Facilities	Duration of project	✓		- If camp site sewage not connected to the main town sewerage system, ensure to install a proper septic system
Contamination from oil and grease	• Collect and recycle petroleum products • Development of spill contingency plans • Construction of bund walls and drainage systems around fuel storage areas	Ancillary Facilities	Duration of project	✓		
AIR POLLUTION						
Increase in levels of Total Suspended Particulates (TSP), SO2 and NO2	• Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- Vehicles and machineries are maintained at contactors workshop.
Health hazards and nuisances to nearby villages and settlements	• Regular monitoring of air quality in the vicinity of the airports and sensitive receptors	Airport site and adjacent villages and settlements	Operation Phase	✓		- Require environmental monitoring equipment to quantify. However, visual assessment indicated fewer nuisances tolerable to nearby settlement.
NOISE POLLUTION						
Health risks to workers and residents of nearby villages and communities	• Control vehicles speed in work areas and sensitive locations • Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	All construction areas, access routes, and quarry sites	Pre-Construction and Construction Phase	✓		- Proper and complete set of PPE for all construction employees. - Generators are housed-in with corrugated iron roofing fence.
Nuisance to residents of nearby villages and communities	• Establishment of buffers between airport and nearby settlement areas • Preparation of operational procedures by Airport Operator based on ANZECC 1992 or Australian Noise Exposure Forecast (ANEF)	Nearby settlements	Operation Phase	✓		Contractors' vehicle and machineries Traffic is controlled and management strictly within airport are and main/access roads. - Limit use of vehicles, machines, Crusher plant is done only during day time
OCCUPATIONAL HEALTH AND SAFETY						
Hazards to worker's health and safety	• Construction methodology under control of Safety Officer and CSC • Approved Contractor's Occupational Health and Safety Plan	Airport sites	Pre-Construction and Construction Phase	✓		- Contractors' Safety Officer ensures safety standards is maintained on-site. - OHS plan yet to submit

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Spread of HIV and other communicable diseases	• Contractor to source labourers and workers from the nearby villages • Contractors to increase awareness of workers	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- HIV/AIDS awareness to be incorporated during construction
SOCIAL /COMMUNITY CONCERNS						
Changes in nearby land values	• Proper valuation of land	Surrounding areas and nearby villages	Operation phase	✓		- Not required
Loss of aesthetics	• Landscaping and re-vegetation	Vicinity of Airports	Duration of Project	✓		- Regressing and landscaping taking shape along the drains
Cultural differences risk/social conflicts	• Contractor to source labourers and workers from the nearby villages	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- Well implemented
Slum creation risks	• Demolition of structures as part of abandonment plan	Airport sites	Completion of Construction	✓		- Not applicable (NA) at this construction stage
Disruption of utilities	• Investigate limits to required services and minimize disruptions	Nearby settlements	Pre-Construction and Construction Phase	✓		- No disruption to utilities. Contactors are made aware of the public utilities
Increase in traffic	• Prepare traffic management plans	Airport vicinities and major roads into the Airports	Duration of Project	✓		- Movement of cars/machinery into airside aided by NAC Safety Officer - Landside traffic is on normal road networks accept when needed guidance from NAC Safety Officer.
SITE ABANDONMENT						
Decommissioning of work sites	• Preparation of abandonment plan • Return of all transient workers to original places of residences • Demolition of temporary offices and contractor's depot area • Dismantling of ancillary facilities • Re-vegetation of exposed areas • Proper disposition of construction debris	Construction and camp sites	After completion of construction	✓		- NA at this construction stage. - Contractor is required to prepare a Site Abandonment Plan

ANNEX D: EMP IMPLEMENTATION – KUNDIAWA PAVEMENT UPGRADE

PROJECT NAME:	KUNDIAWA AIRPORT PAVEMENT UPGRADING & ASSOCIATED WORKS	CONTRACT NO:		PROVINCE:	CHIMBU PROVINCE
Date of Inspection:	June 2015	Inspected By (And Designation):	Barksy (PIU)	Initial	BP
Remarks:	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial	SR/KD/AD
			Contractors Rep.	Initial	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
SOIL EROSION						
Slope erosion and sedimentation of nearby water bodies	• Installation of silt traps on all drains • Minimize clearing of vegetation and time surfaces are exposed • Establish requisite temporary/permanent control structures • Undertake immediate re-vegetation after completion of construction works	Airport vicinities	Construction Phase	√		- Vegetation clearing and topsoiling is done in stages to avoid soil exposure to dust and being washed off during rain - Contractor is advised to prepare a Re-vegetation Plan - Involve women groups in the re-vegetation plan.
Sediment runoff which could damage aquatic and marine ecology or flooding issues	• Locate stockpiles in controlled areas • Sub-grade and sub-base material placed quickly after removal of topsoil • Planned construction work during dry season • Removal of spoils and construction debris	Downstream of Airport sites and waterways	Construction Phase	√		- Sub-base and subgrade placed immediately and compacted and levelled out on topsoil areas.
WATER QUALITY/QUANTITY						
Disruption of Surface and Ground Water	• Dimension of drains • Diversion of stream • Use of grassed areas for runoff • Location of stockpiles on paved areas • Removal of stockpiles after construction • Re-vegetation after construction	Airport and surrounding areas and Downstream from construction areas	Duration of project	√		- Proper drainage system installed in works area - All runway works area surface runoffs into main storm water drainage (i.e. the OUD) parallel to the main runway
Contamination of nearby water bodies by toxic and hazardous substances	• Installation of oil and traps in drains • Development of safe storage areas and proper handling of hazardous and toxic materials • Proper disposition of hazardous and toxic materials	Airport and surrounding areas	Duration of project	√		- Spillages are contained immediately with spill kit on site.

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Pollution from domestic sewage and wastes	• Proper solid waste management system to be practiced in work areas • Installation of sanitation and treatment facilities in camps, offices and ancillary facilities	Airport, Camps, Offices and Ancillary Facilities	Duration of project	√		- Contractors sewerage system connected to the main city sewerage system
Contamination from oil and grease	• Collect and recycle petroleum products • Development of spill contingency plans • Construction of bund walls and drainage systems around fuel storage areas	Ancillary Facilities	Duration of project	√		- Empty fuel drums and containers with lid closed used for storage
AIR POLLUTION						
Increase in levels of Total Suspended Particulates (TSP), SO2 and NO2	• Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	√		- Proper and complete set of PPE for all construction employees. - Vehicles and machineries are maintained at contactors workshop.
Health hazards and nuisances to nearby villages and settlements	• Regular monitoring of air quality in the vicinity of the airports and sensitive receptors	Airport site and adjacent villages and settlements	Operation Phase	√		- Require environmental monitoring equipment to quantify. However, visual assessment indicated fewer nuisances tolerable to nearby settlement.
NOISE POLLUTION						
Health risks to workers and residents of nearby villages and communities	• Control vehicles speed in work areas and sensitive locations • Locate Ancillary Facilities away from residential and settlement areas • Provide workers with Personal Protective Equipment (PPE) • Proper maintenance of vehicles, machineries and equipment	All construction areas, access routes, and quarry sites	Pre-Construction and Construction Phase	√		- Proper and complete set of PPE for all construction employees. - Vehicles and machineries are maintained at contactors workshop
Nuisance to residents of nearby villages and communities	• Establishment of buffers between airport and nearby settlement areas • Preparation of operational procedures by Airport Operator based on ANZECC 1992 or Australian Noise Exposure Forecast (ANEF)	Nearby settlements	Operation Phase	√		Contractors' vehicle and machineries Traffic is controlled and management strictly within airport are and main/access roads. - Limit use of vehicles, machines, Crusher plant is done only during day time
OCCUPATIONAL HEALTH AND SAFETY						
Hazards to worker's health and safety	• Construction methodology under control of Safety Officer and CSC • Approved Contractor's Occupational Health and Safety Plan	Airport sites	Pre-Construction and Construction Phase	√		- Contractors' Environmental and safety representatives ensure OHS is implemented on-site. - Site-medical kit present

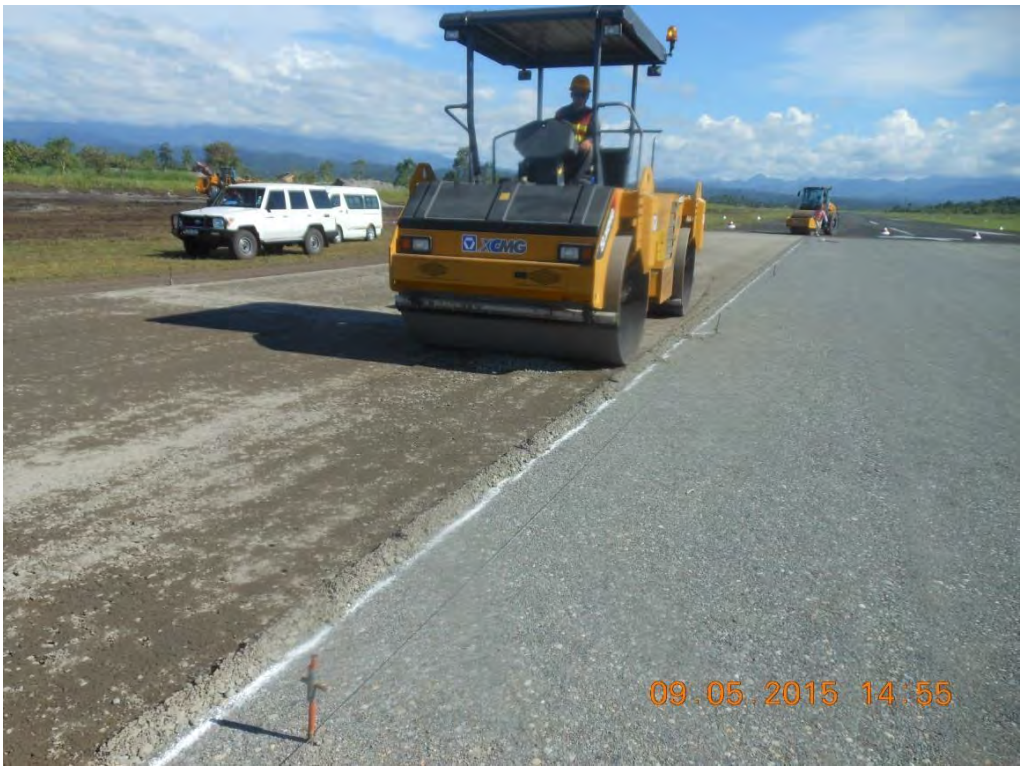
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMPLIED		REMARKS
				YES	NO	
Spread of HIV and other communicable diseases	• Contractor to source labourers and workers from the nearby villages • Contractors to increase awareness of workers	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	√		- HIV/AIDS awareness to be incorporated during construction
SOCIAL /COMMUNITY CONCERNS						
Changes in nearby land values	• Proper valuation of land	Surrounding areas and nearby villages	Operation phase	√		- Within aerodrome land
Loss of aesthetics	• Landscaping and re-vegetation	Vicinity of Airports	Duration of Project	√		
Cultural differences risk/social conflicts	• Contractor to source labourers and workers from the nearby villages	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	√		- Well implemented
Slum creation risks	• Demolition of structures as part of abandonment plan	Airport sites	Completion of Construction	√		- Not applicable (NA) at this construction stage
Disruption of utilities	• Investigate limits to required services and minimize disruptions	Nearby settlements	Pre-Construction and Construction Phase	√		- No disruption to utilities
Increase in traffic	• Prepare traffic management plans	Airport vicinities and major roads into the Airports	Duration of Project	√		- Movement of cars/machinery into airside aided by NAC Safety Officer - Landside traffic is on normal road networks accept when needed guidance from NAC Safety Officer.
SITE ABANDONMENT						
Decommissioning of work sites	• Preparation of abandonment plan • Return of all transient workers to original places of residences • Demolition of temporary offices and contractor's depot area • Dismantling of ancillary facilities • Re-vegetation of exposed areas • Proper disposition of construction debris	Construction and camp sites	After completion of construction			- NA at this construction stage. - Contractor is required to prepare a Site Abandonment Plan

ANNEX E: PHOTOS OF PROGRESSIVE WORKS – GIRUA AIRPORT UPGRADE

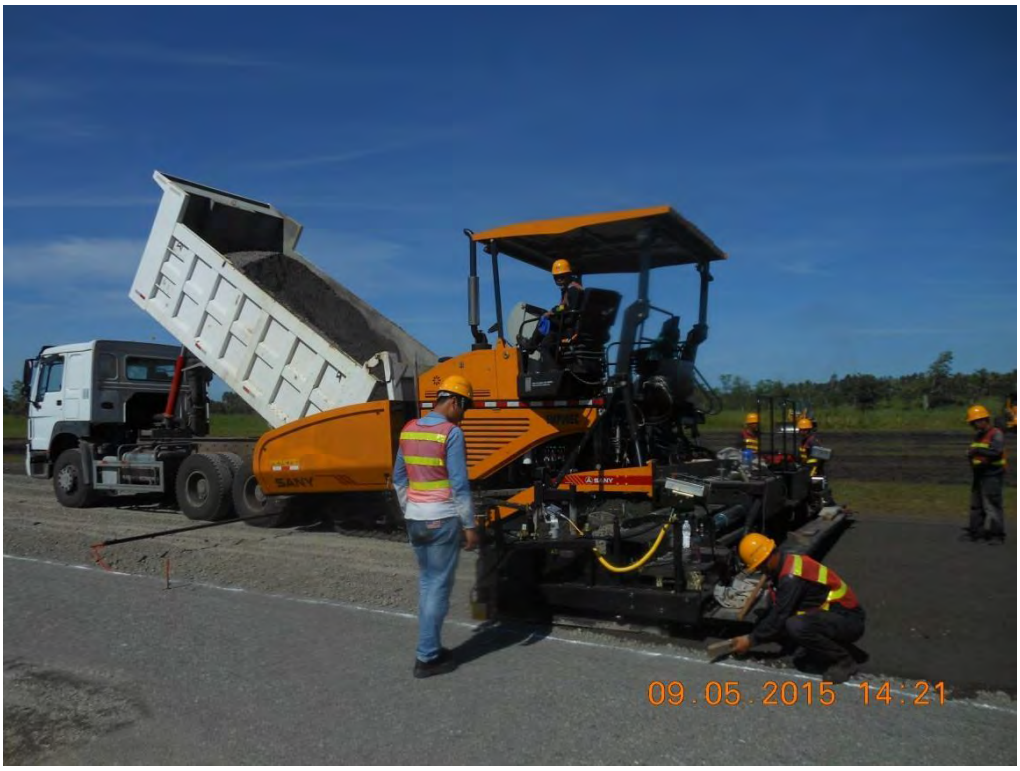
A). Pavement and Drainage Works

Picture 1: Grubbing scrubbing; topsoiling and proper stockpiling. Constructing of open unlined drain (OUD) with proper dimension design to collect and drain off surface runoffs at the highest rainfall.

Picture 2: Works undertaken at the designed alignment of the open unlined drain (OUD). Earthworks stockpile is immediately disposed at stockpile area away from the drain and later used for topsoiling and re-grassing

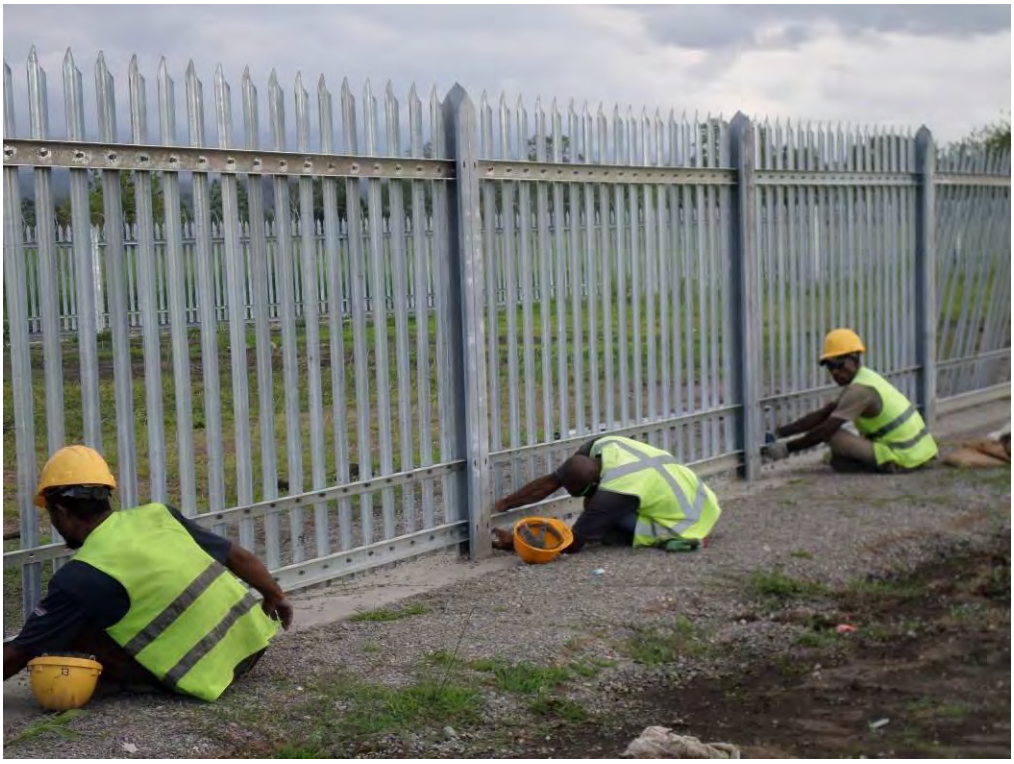


Picture 3: Compaction of the basecourse materials on main runway. Notice moisture content of the basecourse to control excessive dust emission.



Picture 4: Laying of the basecourse materials on the new design level at the main runway. Notice moisture content of the basecourse to control excessive dust emission.

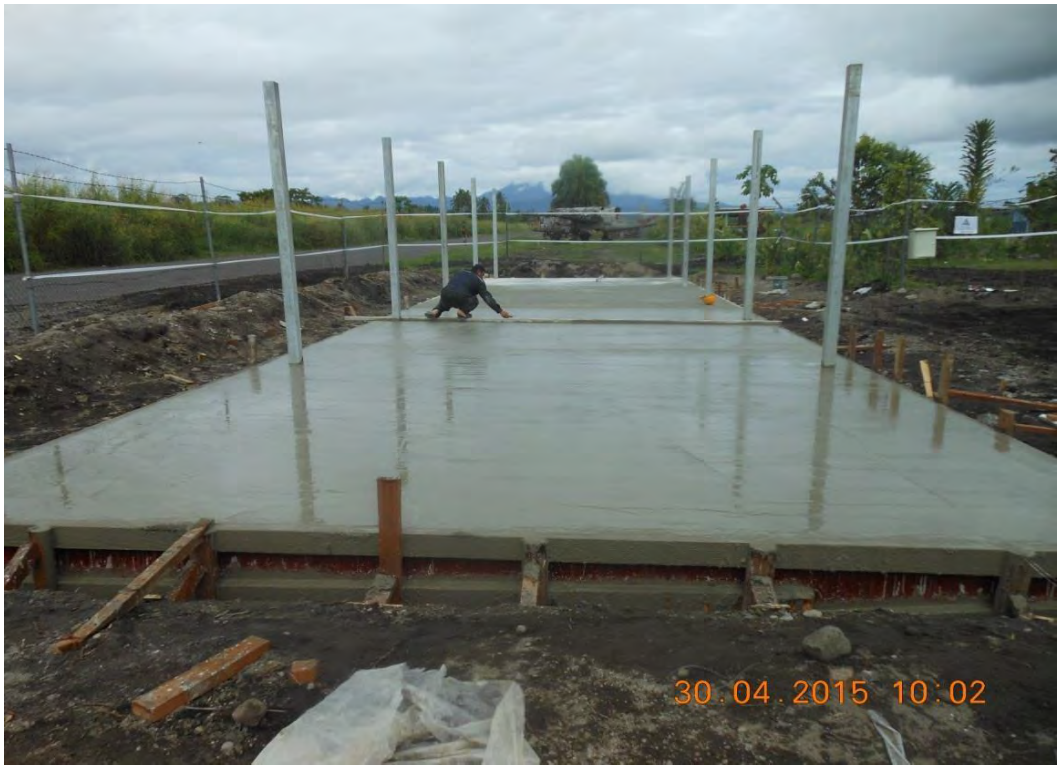
B). Fencing Installation Works



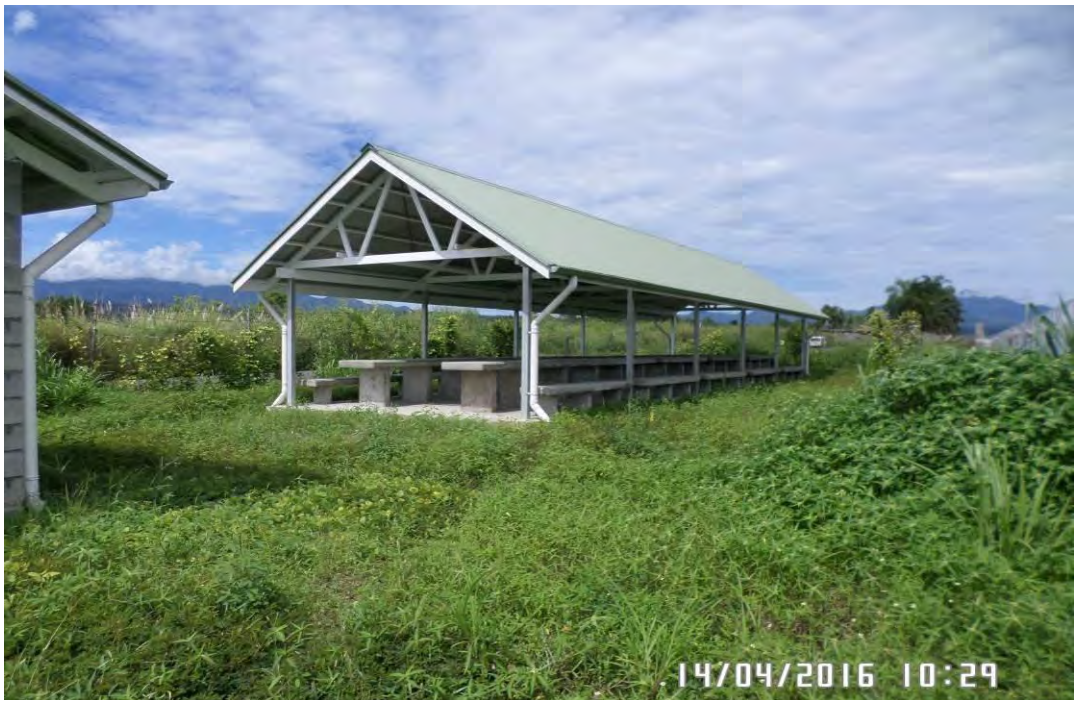
Picture 5: Installation of palisade fencing works done by locals.

Picture 6: Fencing embankments works done by locals and supervised by the contractor.

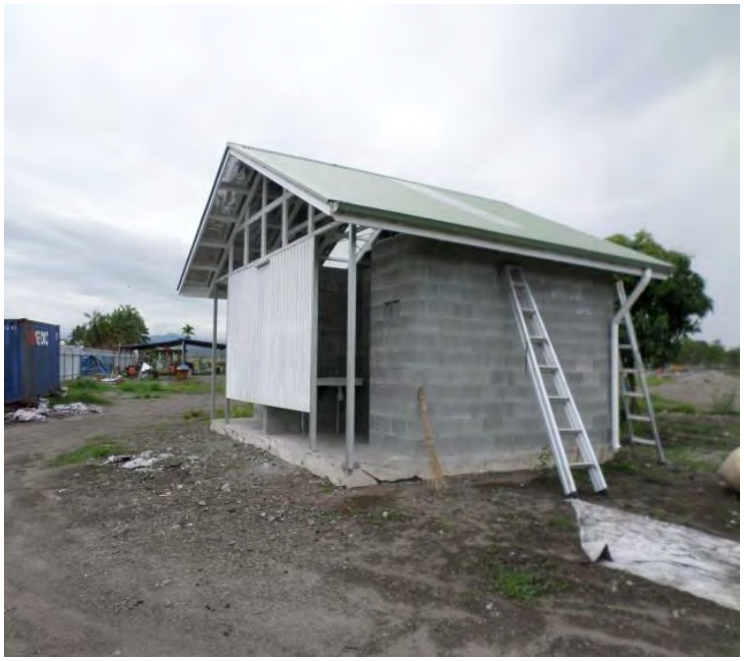
C). Airside Works



Picture 7: Construction of the airport market for the local community to use. Notice the main road 6meters on the side for ease accessibility to the market and other public utilities

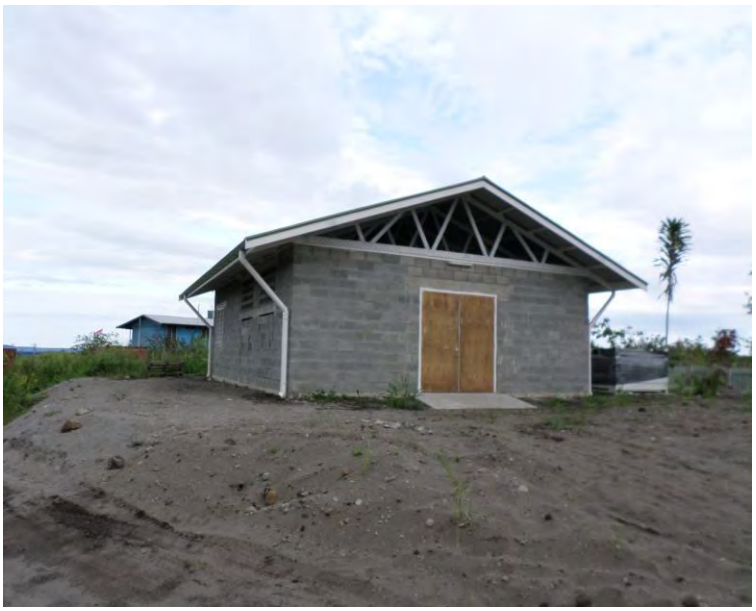


Picture 8: Completed airport market. About 24 market selling space is made available.

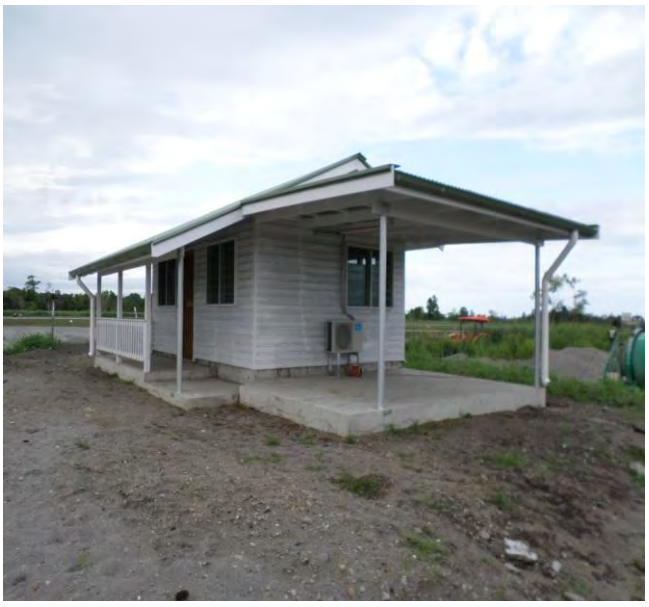


Picture 9: Public toilet with separate section for men and women Notice the area is kept clean and left for re-grassing

Picture 9: New tractor shed. Notice the area is kept clean and left for re-grassing

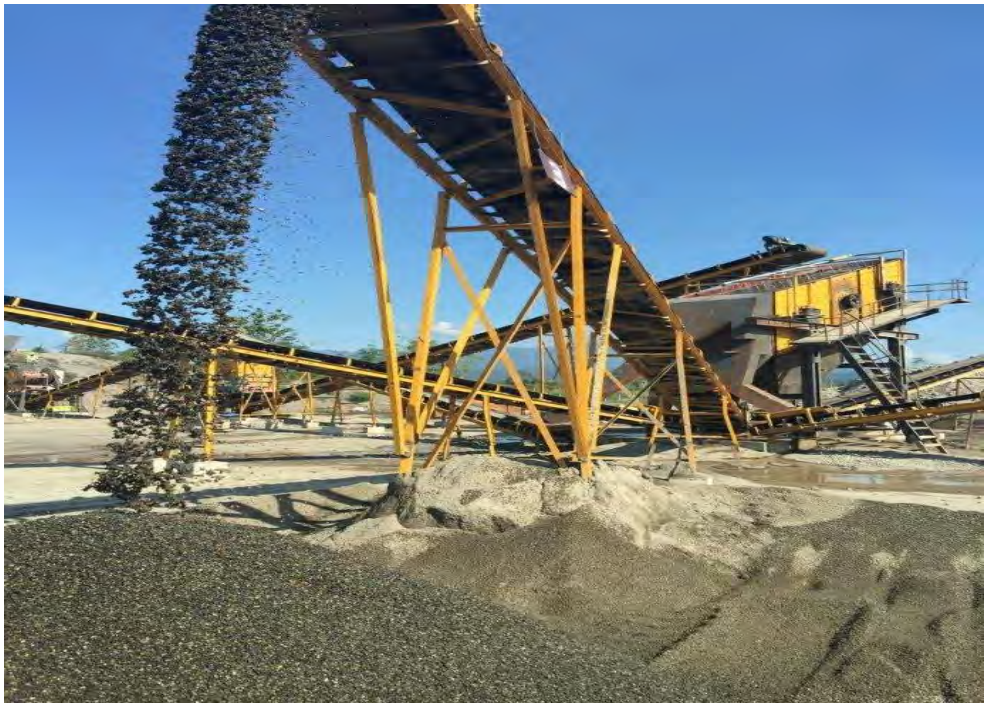


Picture 10: Completed new stand-by generator shed. Notice that it is housed-in as a buffer to control noise pollution

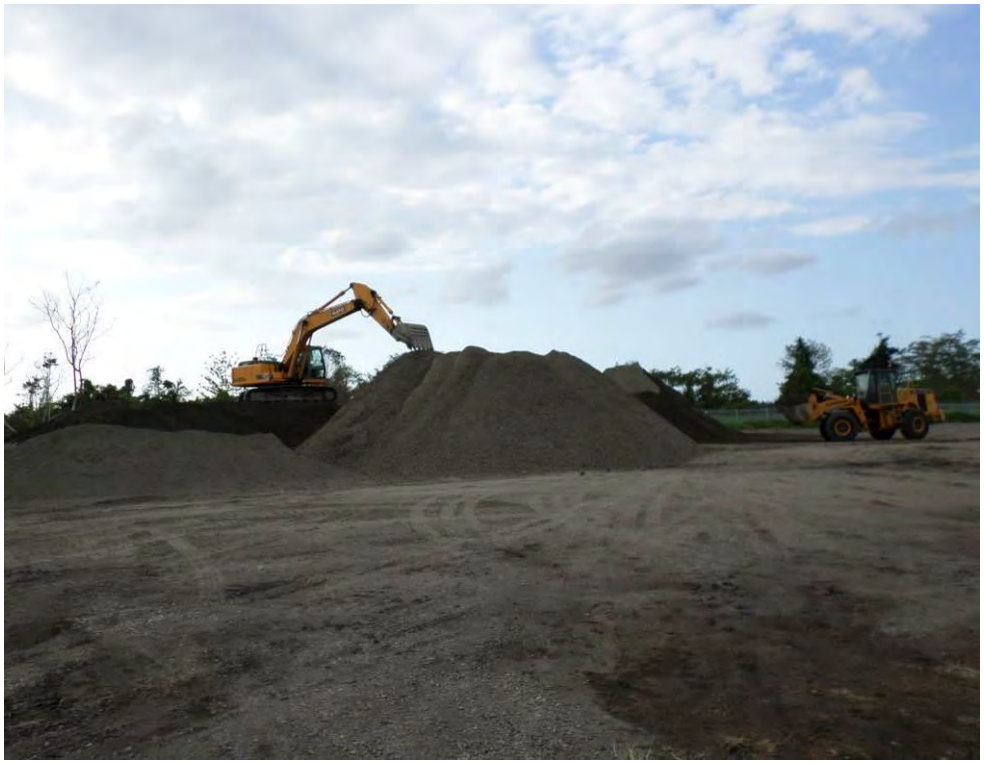


Picture 11: Painting finishes to the Engineers site office. Notice the area is kept clean and left for re-grassing.

C). Crusher Site



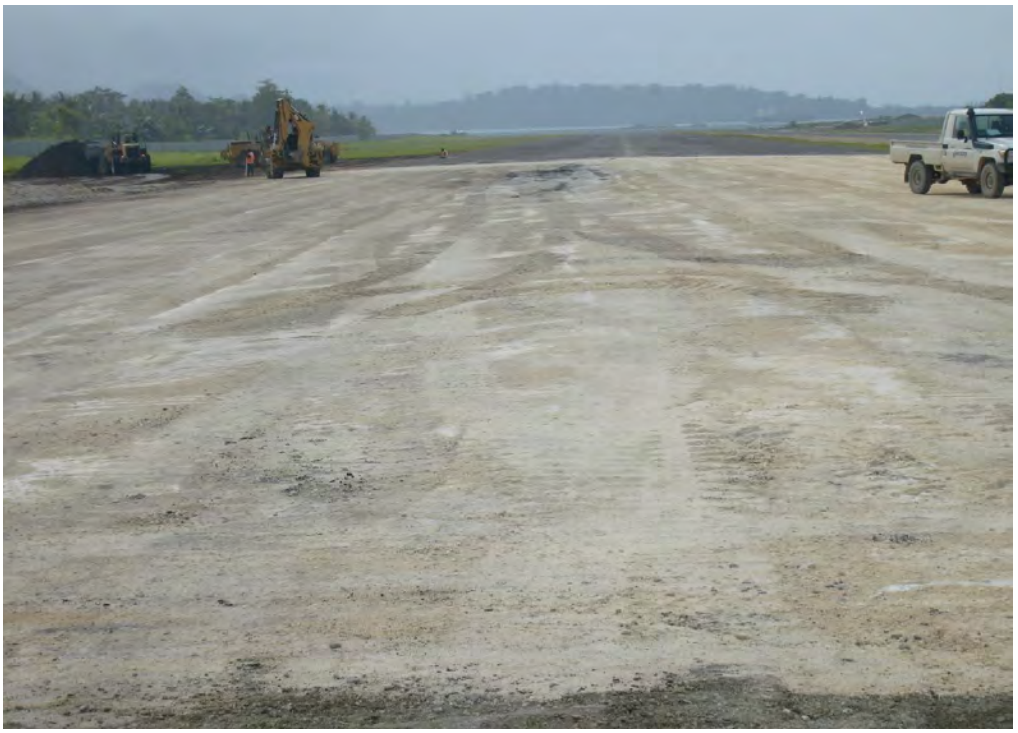
Picture 12: River gravels crushed into aggregates. The gravel is washed when running through the conveyor belt to minimize dust emission.



Picture 13: Proper stockpiling away from water bodies and secured clean working area

ANNEX F: PHOTOS OF PROGRESSIVE WORKS – VANIMO AIRPORT PAVEMENT UPGRADE

A) Pavement Upgrading

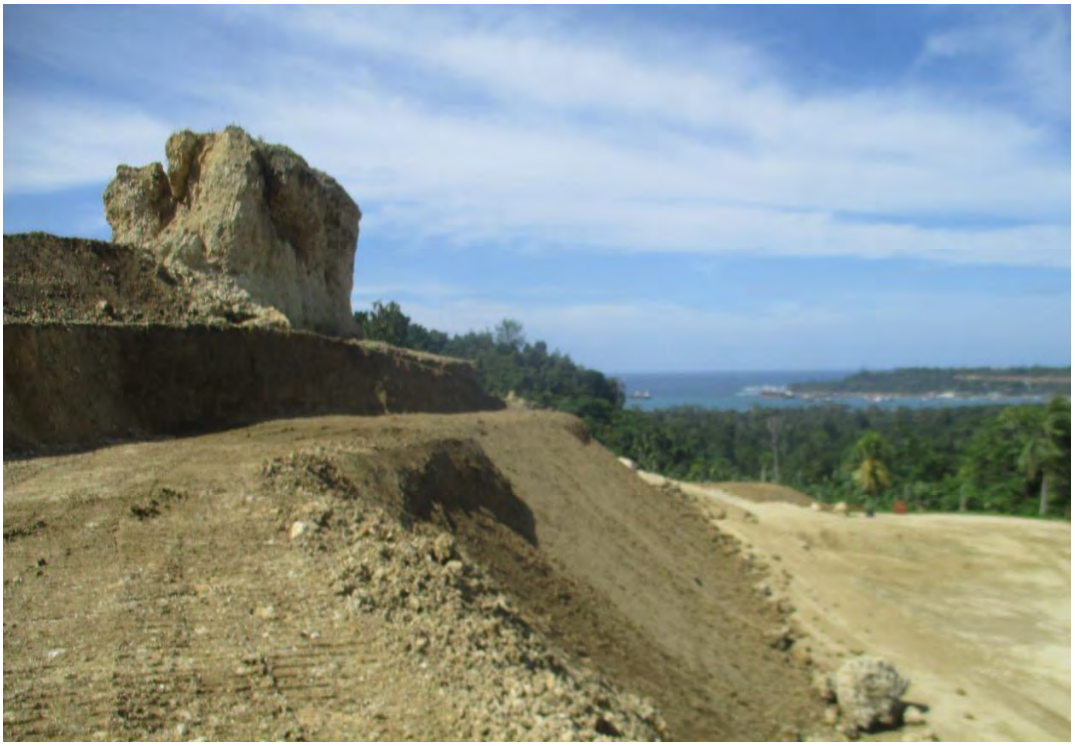


Picture 14: Grubbing and scrubbing; topsoiling and proper stockpiling begins. Water truck is issued to control dust.

B). Fencing Installation

Picture 15: Clearing and trenching for the 6m fence-line corridor for new palisade fencing installation.

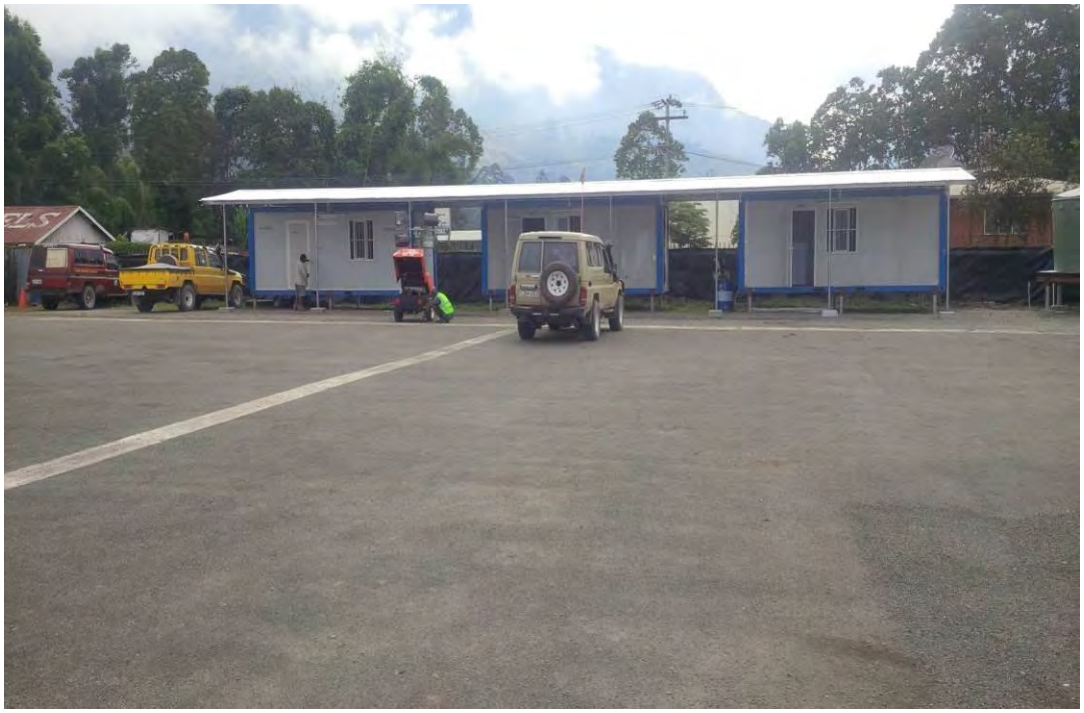
B). Gravel Extraction Site



Picture 16: Extraction of base course and sub-base is taken from coronus materials. The site is disturbed and away from local communities and surroundings.

ANNEX G: PHOTOS OF PROGRESSIVE WORKS – KUNDIAWA AIRPORT PAVEMENT UPGRADE

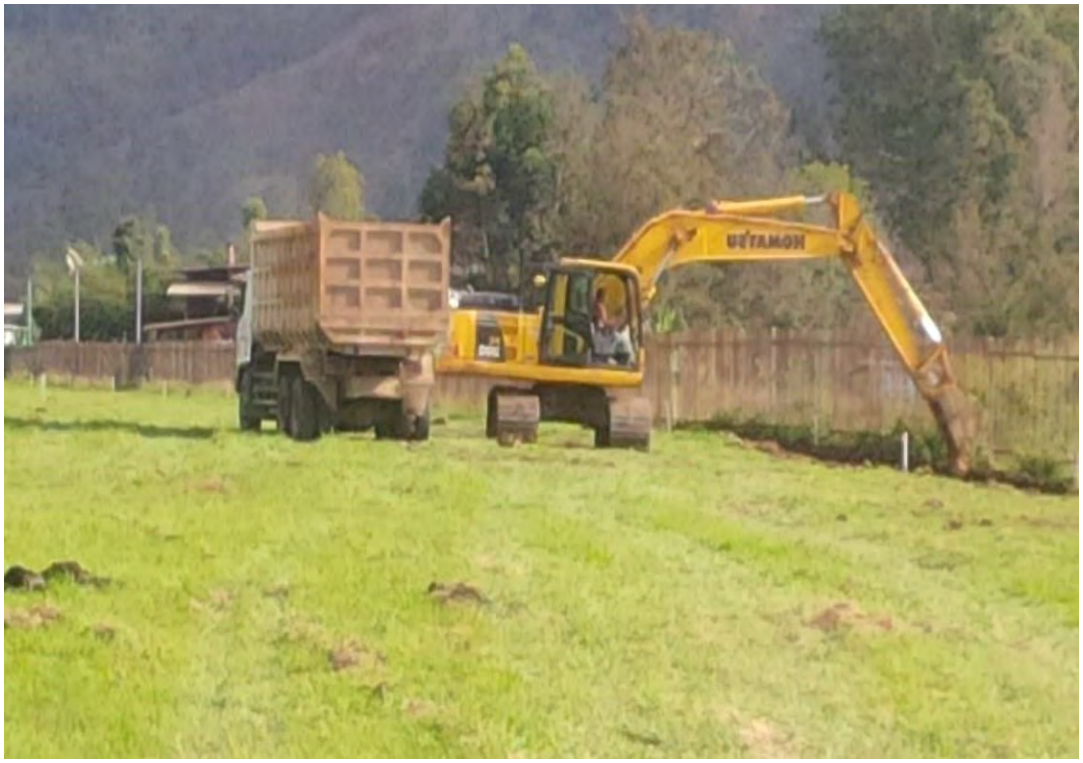
A). Site Establishment



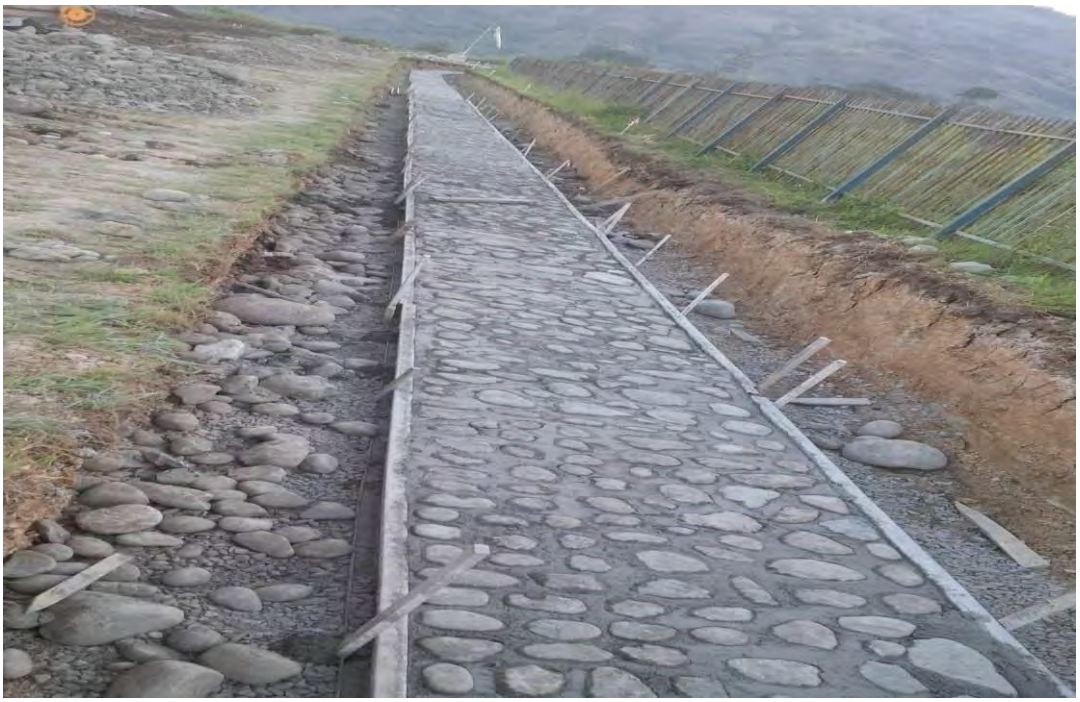
Picture 17: Complete set-up of the contractors' site office Notice water tank outside for storing water for use in office, drinking, personnel face and hand-wash after work.

Picture 18: Construction of the contractors' workshop. Containers will be used as the storage rooms for vehicles/machineries parts and petrochemical products. Any spillage will be contained inside the container and cleaned immediately without being exposed to the soil.

B). Drainage Works

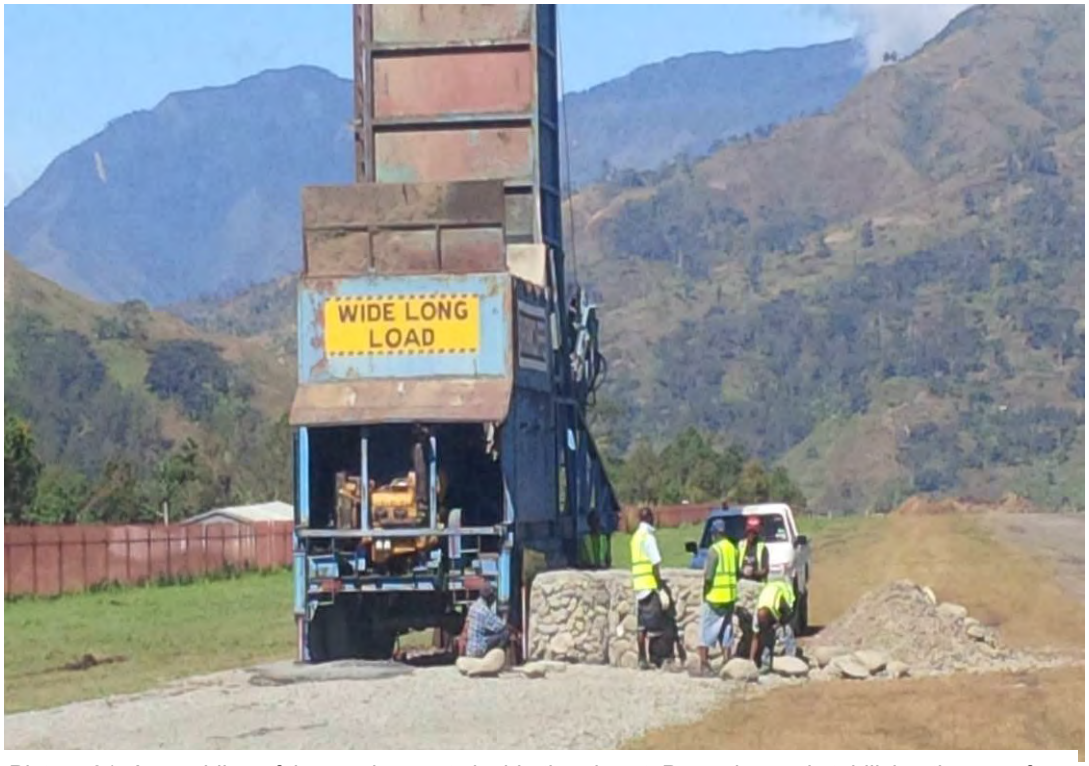


Picture 19: Grubbing and scrubbing; topsoiling and excavation begins for the construction of lined drain.

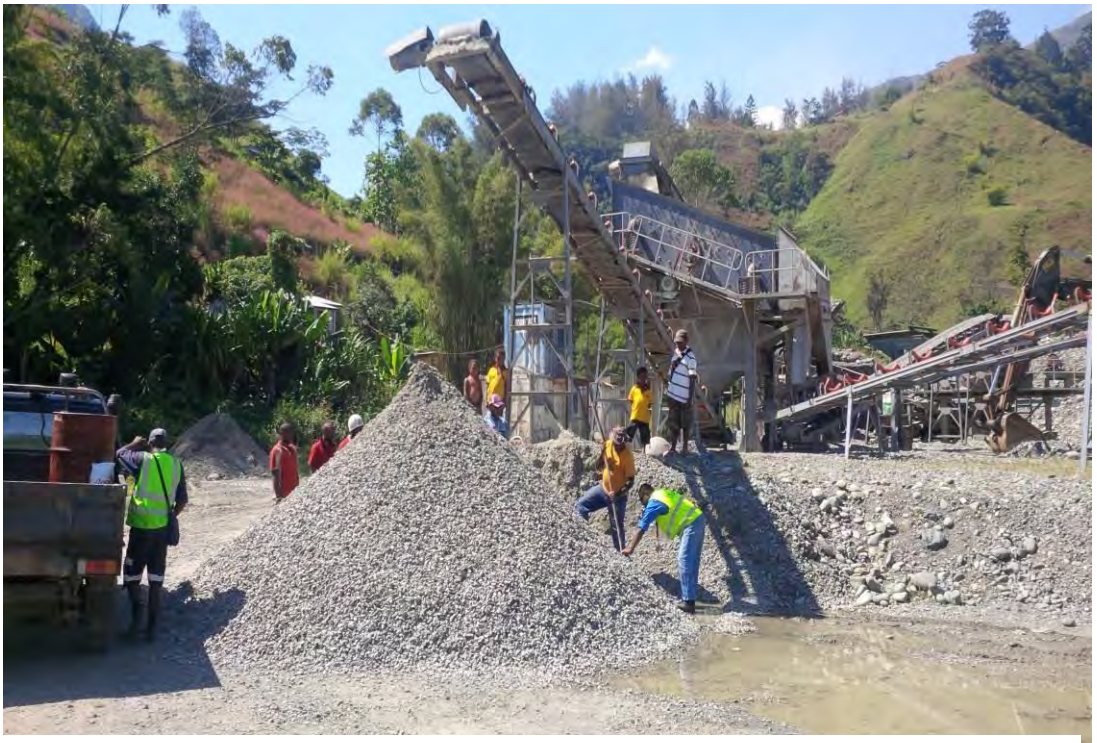


Picture 20: Construction of line drain close to the fence-line commence soon after excavation. High rainfall pattern including the exposed soil can easily be washed off if exposed so it is concreted to minimize sedimentation.

C). Crusher Site



Picture 21: Assembling of the crusher parts inside the airport. Preparing and stabilizing the area for aggregates stockpiling next to the crusher.



· Assembling of crusher and first crushing of river gravels at Simbu River. Locals are engaged at the Crusher site. Notice the area is clean, levelled and stabilize.