Environment Monitoring Report

Semi-annual Report

July 2016

CIVIL AVIATION DEVELOPMENT INVESTMENT PROGRAM – TRANCHE 2

Period Covering

January to June 2016.

Prepared by National Airports Corporation for the Asian Development Bank.

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Environmental Monitoring Report

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Project Number: 43141-043

Reporting Period: January – June 2016 (3rd Semi-Annual)

PNG: Civil Aviation Development Investment Program – Tranche 2

Prepared by National Airports Corporation through the Government of Papua New Guinea for the Asian Development Bank

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1.1 INTRODUCTION

1.2 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 a i r 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. There are three ADBs operational policies on safeguard: the Environment, Involuntary Resettlement and Indigenous People. All of these policies are embedded in ADB Safeguard Policy Statement (SPS) 2009. In addition, there is Environment Safeguard Good Practice Sourcebook Draft (2012). 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 the Project Implementation Unit (PIU) of CADIP in NAC.

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

5. This report incorporates EMP implementation status from on-site meetings, contractors' reports, environmental audits and general environmental issues observation for the five airports in Tranche 2, identified for upgrading and rehabilitation namely Girua, Vanimo, Kundiawa, Goroka and Buka.

6. An Environmental Assessment Resettlement Framework (EARF) documented for CADIP and disclosed on ADB website on May 2013 is part of the provisions of the environmental safeguard.

1.3 Project Brief

7. Projects identified and works carried out by the contractor under Tranche 2 is stated in Table 1.0.

Table 1: Component of Tranche 2 Projects

No.	PROJECTS	MAIN SCOPE OF WORKS	CONTRACTOR	STATUS
1	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Strengthening of the runway pavementto handle Q400 or similar aircrafttype. Apron widening Apron widening will cater for 2 -3 Q400 parking space	China Harbour Engineering Corporation (CHEC)	 Runway & Fencing Works is 100% complete 40% completed on new Terminal
		increasing passenger and cargo movements		Building and in progress
2	Vanimo Airport Pavement Upgrading,	Strengthening of the runway pavementto handle F100 or similar aircraft type.	Global Ltd	 75% completed and in progress
	& Associated Works	Apron widening Apron widening will cater for one F100 and Q400 parking space		 Detail design for terminal building in
		New terminal building to caterfor increasing passenger and cargo movements		progress awaiting ADB approval to vary the contract.
3	Kundiawa Airport Pavement Upgrading & Associated Works	Strengthening of the runway pavementto handle Dash 100 or similar aircrafttype.	Shorncliffe Ltd	97% completed and in progress
4	Goroka Airport Aircraft Pavement Upgrade &	Pavement strengthening and runway extension will allow for Fokker 100 or similar type aircraftsoperations.	China Overseas Engineering Corporation	 Secondary runway completed. Works on main runway to
	Associated Works	Apron widening will cater for 2 -3Fokker 100 parking space	(COVEC)	commence in June/July 2016.
		New terminal building to caterfor increasing passenger and cargo movements		 Detail design for terminal building completed
5	Momote Airport Fencing Installation & Associated works	Supply and installation of palisade security fencing to protect the land side for safe aircraft operations	Kaulong Estate	Mobilizing to site
6	Buka Airport Fencing Installation & Associated works	Supply and installation of palisade security fencing to protect the land side for safe aircraft operations	Yet to be decided	Not Applicable

8. The Contract for Momote airport security fencing project has been awarded to Kaulong Estate Ltd whilst for Buka airport is yet to be awarded. Civil works for the runway pavement construction for Girua, Vanimo, Goroka and Kundiawa airport is currently in progress.

9. 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

Part of the contract is the environmental management and monitoring to ensure that civil works done at the construction sites are environmentally friendly within the allocated time assigned to it. The key environmental impacts on natural and human e n v i r o n m e n t s have been assessed on-site and mitigation measures are presented in this report.

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

1.4 Environmental Category

11. 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.

12. The PNG Environmental Act 2000 and guidelines governs environment and conservation aspects in projects implementation. Within Tranche 2, projects have been classified as;

- (i) Level 1 for all the fencing projects and
- (ii) Level 2A for the airport pavement and terminal upgradingworks.

13. 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.

14. 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.

1.5 Environmental Performance Indicators

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

1.6 Institutional Arrangement for Project Environmental Management

16. NAC is responsible for managing the construction contract including monitoring and the implementation of the contractors EMP.

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

- i. Strengthening the environmental management of the project during detailed design, bidding process, contract process, construction, and implementation,
- ii. Supervision and guidance of the environmental assessment process for all subprojects under the MFF,
- iii. Supervision of the EMP implementation of subprojects, and
- iv. 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.

18. The Project Environmentalist (PE) of PIU is responsible for monitoring the contractors' implementation of the EMP and to coordinate EMP implementation of the project.

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

2.0 MONITORING ACTIVITIES

1.6 Methodologies

20. 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 the contractors' Environmental Representative. Monitoring is performed continuously with reporting done every month by the contractor to The Engineer and/or the ER of the Contract.

21. 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 January to June 2016 for all Tranche 2 projects is summarized in AnnexA.

22. 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 T ranche 2 is presented in Annex B, C and D.

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

- i. Contractors' site establishment & lay down area,
- ii. Drainage works and Grave/water extraction area,
- iii. Pavement works and building areas,
- iv.Batching plant area,
- v.Workers compound,
- vi.OHS for permanent workers,
- vii. Nearby communities/settlements consultation, and
- viii. Local participation

24. The contractors' environmental representative ensures all mitigating measures contained herein and thereafter is adhered to including necessary instructions from the Engineer whenever environmental impacts are observed and corrected.

3.0 WORKS IN PROGRESS

25. Tranche 2 projects works in progress during the period January to June 2016 (1st semiannual) is summarized in Table 2.

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

Girua Airport Pavement Upgrading, New Terminal Building & AssociatedWorks Runway upgrading and civil works on the main runway including the installation of security fencing is 100% completed. Completion of apron and taxiway pavement upgrading. Line marking on the runway is completed.

Stripping and topsoil stockpiling on the new terminal building construction area. Foundation works and installation of structural steel (building frame). In the process of constructing the block wall.

Stripping of top soil has been completed and carted away to designated disposal areas. Grading of all flank areas to specified grades and supplying and placing of topsoil and grass.

Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works Striping of the flight strip and topsoil stockpiling commences toward one end of the runway and into the apron and taxiway now. Pavement repair works is about 78% complete and fencing installation works in 100% complete. Part of the main runway is open for aircraft operations whilst construction is progressing to the last stage,

External works to include drainage, sewerage, and storm water, domestic and fire water piping. Excavation and removal of top soil at the air side area was done, backfilling and compaction is progressing along the runway, taxiway and apron.

Stripping and stockpiling of top soil is continuing. Stockpiled topsoil is spewed one pavement works completed areas to utilize and manage stockpiling inside airport. Grading of all flank areas to specified grades and supplying and placing of topsoil and grass.

Kundiawa Airport Pavement Upgrading & Associated Works

Sealing works in the main runway is 97% complete and still in progress. Final 200m of sealing in progress on the apron area. Striping and stockpiling of graded materials is dumped at the towns' designated dumping area. Fencing installation works completed.

Goroka Airport Aircraft Pavement Upgrade & Associated Works

Secondary runway repairs and sealing completed. Works on main runway to commence in June/July 2016. Detail design for terminal building completed

Momote Airport Fencing Installation & Associated Works

Contractor is mobilizing to site for establishment. Shipment of construction plants and equipments from Kimbeto Momote to be completed by August 2016.

Buka Airport Fencing Installation & Associated Works

Works are yet to commence.

4.0 COMPLIANCE WITH ADBS AND NATIONAL ENVIRONMENTAL REQUIREMENTS

26. Compliance status with national / state / local statutory environmental regulatory requirements is shown in Table 3.0.

Table 3: Compliance Status for Tranche 2 Projects

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 preparatoryWorks' Contractor's site specific EMP documentation and submission to NAC Review of Contractors site specific EMP Approval of contactors site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting	Completed and no further action (NFA) April 2015 Two reviews were done. Revision 1 was on 8/5/2015 & Revision 2 was on 12/6/2015 Completed on the 7/7/2015 Yes (done by contractor on monthlybasis) Yes (one to be done this 3 rd quarter 2016)	NFA Document an audit report for the contractor to implement this 3 rd quarter, 2016
2.	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Environmental Clearance under the 'Notification of preparatory Works' Contractor's site specific EMP documentation and submission to NAC Review of Contractors site specific EMP Approval of contactors site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting	Completed and no further action (NFA) early March 2015 Only one review done on 27/3/2015 Completed on April 2015 Yes (done by contractor on monthly basis) Yes (one to be done this 3 rd quarter 2016)	NFA Document an audit report for the contractor to implement this 3 rd quarter, 2016
		Environmental Clearance under the 'Notification of preparatoryWorks' Contractors site specific EMP documentation and submission to NAC	Completed and no further action (NFA) 20/3/2015	NFA
3.	Kundiawa Airport Pavement Upgrading & Associated Works	Review of Contractors site specific EMP Approval of contactors site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting	Only one review done on 24/3/2015 Completed on April 2015 Yes (done by contractor on monthlybasis) Yes (one to be done this 3 rd quarter 2016)	Document an audit report for the contractor to implement this 3 rd quarter, 2016

4.	Goroka Airport Aircraft Pavement Upgrade & Associated Works	Environmental Clearance under the 'Notification of preparatoryWorks' Contractors site specific EMP documentation and submission to NAC Review of Contractors site specific EMP Approval of contactors site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting	Completed and no further action (NFA) Two EMPs (revision 1 & 2) were done on early October 2015 and 4/11/2015 respectively. Two reviews done. Revision 1 was on 30/10/2015 & revision 2 on 19/11/2015. Completed on 30/11/2015 Yes (done by contractor on monthly basis Yes (one to be done this 3 rd quarter 2016)	NFA
				Document an audit report for the contractor to implement this 3 rd quarter, 2016
5.	Momote and Buka Airport Fencing Installation & Associated works	Contractors site specific EMP documentation and submission to NAC Review of Contractors site specific EMP Approval of contactors site specific EMP EMP Implementation and Monitoring Construction EMP progress auditing and reporting	Contractors still drafting site specific EMP Not yet Not yet Not yet. Contract is still mobilizing Not yet. Construction not yet	To be done this Qtr 3, 2015 Document an audit report for the contractor to implement this 3 rd quarter, 2016
		Consent for vegetation / food gardens / crops / assets clearance	in progress	Consent through an MOU or records of minute of meetings with food crop owners and locals

5.0 COMPLIANCE STATUS WITH EMP AS STIPULATED IN AGREEMENT WITH ADB

27. The compliance of the environmental management and monitoring plan with the ADB requirement is stated in Table 4.

Table 4: Project Compliance with ADB Environment Requirement

NO.	PROJECT	EMP PART OF		STATUS OF EMP	MITIGATION MEASURE
		(Yes/No)	(Yes/No)	(Excellent/Satisfactory/Partially Satisfactory/Below Satisfaction)	
1	Girua Airport Pavement Upgrading, New Terminal Building & Associated Works	Yes	Yes	Partially satisfactory	Needs improvement on waste management and proper storage
2	Vanimo Airport Pavement Upgrading, New Terminal Building & Associated Works	Yes	Yes	Satisfactory	No Further Action. Maintain compliance to EMP.
3	Kundiawa Airport Pavement Upgrading & Associated Works	Yes	Yes	Partially Satisfactory	Needs installation of sedimentation controls on drains.
4	Goroka Airport Aircraft Pavement Upgrade & Associated Works	Yes	Yes	Satisfactory	Needs further amendments to the EMP before acceptance
5	Buka Airport Fencing Installation & Associated works	Yes	Initial stage (drafting & reviewing of contractors	Not yet. No construction works	
6	Momote Airport Fencing Installation & Associated works		EMP Initial stage (drafting & reviewing of contractors EMP	Not yet. No construction works	

6.0 MONITORING RESULTS AND ACTIONS REQUIRED

28. EMP monitoring for Tranche 2 projects covered the main areas of concern summarized in Table 5.0 below. Main EMP concerns and mitigation measures applied during this period (January to June 2016) is shown in T able 6.0. For Buka and Momote airport fencing projects, EMP monitoring will start from site establishment.

Table 5: Summar	y of the main areas	of EMP monitoring	ן undertaken during Janเ	ary – June 2016
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		P	ROJECTS		
	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	Assembling of batch plant inside airport land on stable area.	- NA - (Wo n't be required)
Crusher Plan Area	 Continued production of gravels and stockpiling inside crushercompound. No dust emission due to rain and water use in crushing. Proper maintenance of all machines on site. Controlled water extraction and sedimentation in place Regular maintenance to minimize nose nuisance and emission to nearby residences and communities. Ensure all construction workers have proper PPEs. Machines, equipments and the plant are turned off when not in used and also shutdown during night time. Proper waste management is maintained at satisfactory level. 	 Continued production of back filling materials and aggregate at the contractors' crusher plant in Wewak and barged to Vanimo. Stockpiling of more coronus base course materials and aggregates inside compound vicinity. Ensure all workers are supplied with proper PPEs. Machines, equipments and the plant are turned off when not in used and also shut down during night time. Proper waste management is maintained at satisfactory level. 	 Continued production of gravels and stockpiling inside crusher compound. Routine maintenance to all machines on site to ensure there is no excessive leakage and exhaust emission which conforms to EMP standards. Ensure all construction workers have proper PPEs. Machines, equipments and the plant are turned off when not in used and also shutdown during night time. Proper waste management is maintained at satisfactory level. 	 Located at the Kamaliki River about 10km away from the project site. It is an already disturbed area. Other companies and individuals have extracted gravels from that area in the past. Machines, equipments and the plant are turned off when not in used and also shut down during night time. Proper waste management is maintained at satisfactory level. 	- NA (Won't be required)

 Hygiene and cleanliness is maintained at a satisfactory level. Proper waste management is maintained at satisfactory level. Noise and kept at the minimum through routine maintenance and turning off machines, plants, vehicles and equipments Most of the construction workers have proper PPEs. Proper waste management is maintained at satisfactory level. 	 Hygiene and cleanliness is maintained at a satisfactory level. Proper waste management is maintained at satisfactory level. 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 Proper waste management is maintained at satisfactory level. 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. 	 Contactor mobilizes to site and set up the camp. EMP for civil works in setting up the camp facilities is applied. Proper waste management system in place. All PPEs, occupation health & safety policy /practice, and Environmental, Policy to be in place 	Initial stage of mobilization to site and setting up on laydown area/camp site
 Maintain compliance to EMP on the main runway pavement upgrading and associated works Maintain compliance to company Rules and Regulations, Company Policy on Health and Safety at Workplace Maintaining the dimension of the drains construction to drain runway surface runoffs Ensure that stripping of grass and top soil on the flight strip with controlled mitigation measures on dust, sedimentation and stockpiling. 	 Maintain compliance to EMP on the main runway pavement upgrading and associated works Maintain compliance to company Rules and Regulations, Company Policy on Health and Safety at Workplace PPEs were provided but few new workers will require new PPEs supplies 	 Maintain compliance to EMP on the main runway pavement upgrading and associated works All construction activities on site are strictly monitored to ensure the objectives of EMP are achieved. Maintain compliance to company Rules and Regulations, Company Policy on Health and Safety at Workplace 	 Maintain compliance to EMP on the main runway pavement upgrading and associated works All construction activities on site are strictly monitored to ensure the objectives of EMP are achieved. Maintain compliance to company Rules and Regulations, Company Policy on Health and Safety at Workplace 	NA (Works yet to commence)

Camp Site Area

Construction Site

Weather Impact on Project	- The overall weather pattern clear and sunny with moderate showers and cloud cover towards the afternoons.	- Generally clear and sunny during the day. Scattered clouds with frequent showers in the afternoons.	- Overall weather pattern was fine and dry with periodic heavy rainfall	- Fine during day time and cloudy to afternoon light to moderate showers.	NA (Works yet to commence)
Water Source (Ground/Surface)	 Controlled usage of ground water bore system for drinking, cooking, toilet supplies and washing clothes. Water for dust control and use in civil works in construction is sourced from nearby Girua River. 	Storage water tank from water extracted from river used for drinking, cooking, toilet supplies and washing clothes. Cooking, toilet supplies and washing clothes. - Water for dust control and use in civil works in construction is sourced from nearby rivers.	 Controlled usage of water from the town water supply by connecting to the main supply 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. 	 Controlled usage of water from the town water supply by connecting to the main supply for drinking, cooking, toilet supplies and washing clothes. Water for dust control and use in civil works in construction is sourced from nearby rivers. 	NA (Works yet to commence)

NA = Not Applicable; EMP = Environmental Management Plan; PPE = Personal Protective Equipments

6.1 EMP Implementation after Audit

29. Table 6 below presents a summary of the EMP being implemented after the quarterly audits were undertaken with corrective measures. **Table 6: Summary of EMP implementation by the contractors after quarterly audits**

EMP CONCERN	MITIGATION MEASURES	Correct ed (√ / X)	Remarks
	Girua Airport Pavement Upgrading, New Terminal Building & Associate	edWorks	
Spoils	 Stockpiling away from drains and waterbodies 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 satisfactory for PPEs. Need to maintain provision of proper PPEs to construction workers
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 storagearea. Fill and compact sand around the refueling truck at the contractors' site. 	~	
Local Participation	Sourcing of laborers from locals must be maintained.	√	Maintaining the employment of 7 local
Spoils	Vanimo Airport Pavement Upgrading, New Terminal Building & Associa Used for landfilling and/or proper disposal Stockpiling away from drains and waterbodies	ated Works √	women (3 in kitchen works and 4 in onice
Occupational Health & Safety	 Provision of proper provisions of PPEs to construction workers Provision of wash-down area for trucks, cars 	~	Partly satisfactory for PPEs. Need to maintain provision of proper PPEs to construction workers
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 laborers from locals must be maintained. Involvement of women or women groups must be considered. 	~	 Employed 3 local woman to do laundries, general cleaning of office, kitchen and assist in cooking. Employed a local woman to work in office

	Kundiawa Airport Pavement Upgrading & Associated Works		
0 "	Used for landfilling and/or proper disposal		
Spoils	Stockplling away from drains and waterbodies	1	
	Levening of low areas within the aliport.	v	
	Correct disposal of excess spoils at public dump site of given to communities for their upo		
Spillago of potroloum	given to communities for their use.		
products bazardous and	• Ensure spill kits are readily available on site and use to		
toxic materials on water	Proper and well maintained storage area for petroleum	\checkmark	
(surface/ground) or	products hazardous and toxic materials storage area		
around	Used oil must be stored in sealed containers		
9	 Supply rages to wipe out/clean small amount of oil spills immediately. 		
Occupational Health &	Maintain proper provisions of PPEs to construction workers	✓	Partly satisfactory for PPEs. Need to maintain
Safety	 Provision of wash-down area for trucks, cars 		provision of proper PPEs to construction workers
Dust control	 Use water trucks to sprinkle exposed soil areas to control dust 	\checkmark	
	pollution to the nearby surrounding communities, houses, roads and		
	 Sourcing of laborers from locals must be maintained. 	\checkmark	Employed 5 local women as ancillary staff in
Local Participation	 Involvement of women or women groups must be considered. 		maintaining general cleanliness at contractors'
Sodimontation	Installing addimentation controls down aviating drainage autlette		Compound.
Sedimentation	 Installing sedimentation controls down existing drainage outlet to control flow velocity of runoffs: erosion and widening of the drain 		implemented
	Goroka Airport Pavement Upgrading, New Terminal Building & Asso	ociated Works	
	Used for landfilling and/or proper disposal	1	
Spoils	 Stockpiling away from drains and waterbodies 	\checkmark	
	 Levelling of low areas within the airport. 		
Spillage of petroleum	Ensure spill kits are readily available on site and use to		
products, hazardous and	contain spillage.		
toxic materials on water	 Proper and well maintained storage area for petroleum 	\checkmark	
(surface/ground) or	products, hazardous and toxic materials storage area.		
ground	 Used oil must be stored in sealed containers 		
	 Supply rages to wipe out/clean small amount of oil spills 		
Occupational Health &	 Maintain proper provisions of PPEs to construction workers 	\checkmark	Partly satisfactory for PPEs. Need to maintain
Safety	Provision of wash-down area for trucks, cars		provision of proper PPEs to construction workers
Dust control	Use of water to minimize dust emission to surrounding	~	
Local Darticipation	communities, houses, roads and buildings.		Employed Q local warran to do lows drive
Local Participation		· · ·	
	 Involvement of women or women groups must be considered 		approximation of office, kitchen and assist in

30. EMP Implementation and mitigation measures on Tranche 2 projects construction site were satisfactory except for the provisions of proper Personal Protective Equipment (PPEs). Again there were no reports of major environmental impacts. Corrective measures noted during the last quarter 2015 audit were undertaken by the contractors. Timely and effective implementation of contractors' conformance to EMP implementation will be applied and maintained.

31. General local participation is maintained under the Tranche 2 projects. More locals are being employed as permanent and casual laborers as construction works continues in the initial phase. Gender mainstreaming into the project has been challenging and rewarding. Total of eighteen (18) local women were employed to work in areas of responsibilities within their capacity. No major casualties or incidences were reported on site apart from some minor First Aid cases.

32. Disposal of domestic waste from contractors' site is managed through the n o r m a I town disposal facilities. Littering and waste petrochemical products such as lubricants, chemicals, asphalts and fuel (diesel/petrol) were stored in sealed drums/containers. Waste management is in place and implemented.

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33. Surface runoff in Kundiawa airport is collected along the concrete drains. With the sloping profile of the airport itself, runoff has increased drainage flow velocity, carrying sediments on the flight strip area flowing into the drains outside of the airport thus eroding and widening its dimension. Sedimentation and drainage flow controls has been designed and will be put in place to mitigate the eroding drainage impacts.

6.2 Environmental Quality Monitoring Results

34. Dust is minimized using the water truck during dusty days.

35. The contractor is advised to carry out water quality checks once every quarter or semiannually. Water quality is done mainly on discharge areas into nearby waterbodies and also from groundwater that is extracted for us by the contractor.

36. 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 s e r v i c e d and undergo complete service upon required mileage. This ensures emissions generated from the engines are minimized or controlled at low acceptable levels.

7.0 GRIEVANCE REDRESS MECHANISM

37. Grievances associated with project related environmental management and implementation issues were not significant for all projects in Tranche 2. Most of the grievances reported were manageable by the contractor through strict implementation of the EMP.

38. Anticipated issues that seem insurmountable were discussed and addressed through the office of the Provincial Administration with its' established committee including the Contractor and CADIP PIU of NAC. This is the Grievance Redress Mechanism (GRM). Table 7.0 below highlights environmental issues or complaints addressed through the GRM.

Table 7.	Grievance	Redress	Mechanism	at '	Tranche	2 projects

AIRPORT	ITEM		DESCRIPTION
Girua Airport Pavement Upgrading, New Terminal Building & Associated Works		Issue	Continuous rain and accumulation of surface runoffs and overflow from the runway pavement to one end of the open unlined drain (OUD) parallel to the runway has caused erosion of the near river bank forcing its way to the newly installed palisade fence eroding the soil and embankment of the fence. This has caused a collapse in that section of the fenceline.
	1	Proposed Action(s)	 Construct cross trenching to control and divert surface runoffs Plant grass immediately on topsoil areas Backfill and construct gabion along the river bank section of the fenceline. Provincial Authorities to assist in finance and/or carry out the works.
		Follow-up Issues/Actions	CADIP Environmentalist to follow-up and report on outcome CADIP Project Engineer to monitor daily and issue instruction as for the appropriate action to be undertaken by the contractor,
		Final Resolution	 Construction of two cross trenches at required intervals along the OUD to drain off runoffs. This has minimize runoff accumulation at one end of the runway and stopped further erosion on the river banks It was resolved last quarter (Q2), 2015
		Issue	Improper market shed for local men and women folks
		Proposed Action(s)	Construct proper market place
	2	Follow-up Issues/Áctions	CADIP Environmentalist to follow-up and report on outcome CADIP Project Engineer to ensure design, scope and costing for a market shed is captured and implemented under the contact.
		Final Resolution	Construction of market shed including a public toilet. Both facilities already completed in quarter 2, 2015.
Vanimo Airport Pavement	1	Issue	 Nearby locals' complaints of dust pollution along the coronus unpaved road towards the gravel extraction site. Gravel extraction agreement with gravel owners
New Terminal Building & Associated Works		Proposed Action(s)	Apply water spray frequently Install slow down speed limit signboard at least 20m away from local residences to notify vehicles entering the gravel extraction area.
			Awareness to locals of the movement of vehicles in and out of the site Gravel owners and contractor to formalize an agreement for gravel extraction

		Follow-up Issues/Actions	CADIP Environmentalist to follow-up and report on outcome
		Final Resolution	A water truck spray was assigned to the gravel site to spray water on the access unpaved road on full time basis. An agreement was done between the gravel owner and the contractor in 4 th quarter, 2015 after gravel extraction site at Wewak; East Sepik Province ceased to operate by the contractor.
Kundiawa Airport		Issue	Airport surface runoffs into the line drains parallel to the runway has resulted in the overflow, erosion and widening of drainage outside of airport area with minor damages to properties and food gardens.
Pavement	1	Proposed Action(s)	 Construct bioswale along intervals of the lined drains to slow drainage velocity and sedimentation Backfill and compact the line draincompletely. Inform the Provincial Administration to assist in the restoration of the drains and affected properties and food gardens outside of the airport land. Prepare an Environmental Report on the associated impacts and provide copies to Provincial Administration. Do a re-design and request for additional funding to carry out remedial works
		Follow-up Issues/Actions	CADIP Environmentalist to follow-up and report on outcome Contractor to do an Environmental Assessment Report with assistance from CADIP Environmentalist
		Final Resolution	An Environmental Assessment Report jointly done on the 15/2/2016 by the contractor and CADIP Environmentalist The report including drainage re-design request for additional funding for the remedial works completed and submitted to relevant agencies around April 2015.
		Issue	Locals affected by overflow of drains outside of the airport raised concerns of the impacts to their properties and gardens
	2	Proposed Action(s)	 To compensate for the temporary loss and grievances, contractor shall; Give them apriority in local employment under the contract. Give them some works in package such as installation of fencing materials around the airport.
		Follow-up Issues/Actions	CADIP Environmentalist to follow-up and report on outcome Contractor to implement
		Final Resolution	Given priority in employment with good package as an ongoing measure to be undertaken by the contractor
Goroka		Issue	Unauthorized occupancy of declared aerodrome land by an individual
Airport Pavement Upgrading, New Terminal	1	Proposed Action(s)	 NAC, Provincial Government and Department of Lands & Physical Planning (DLPP) to resolve DLPP Secretary to formally inform the occupant to allow for the fencing works to

	proceed at his section whilst compensation issues to be dealt with DLPPaccordingly.
Follow-up Issues/Actions	CADIP Environmentalist to follow-up and report on outcome
Final Resolution	 Letter from DLPP Secretary delivered to the unauthorized occupant on the 24/6/2016 Airport fencing works to commence around his section of the land area on aerodrome land boundary this 3rd quarter, 2016. Unauthorized occupant to be sorted out by DLPP separately form the project and not hindering the works currently undertaken at the airport runway.

8.0 SUMMARY AND CONCLUSIONS

39. Generally works on all sites – campsite, construction site, crusher site and batch plant site have improved and complied with the implementation of the inspection items checklist as per the approved EMP/CEMP.

40. There is periodic implementation of the Occupational Health and Safety awareness not only to the construction workers but also to surrounding communities and public at large. This also includes HIV/AIDs awareness.

41. Local women were engaged to work in areas appropriate for them under the project.

42. Another audit will be done on the Contractor's Environmental Compliance performance in the first quarter of next year 2017.

43. For the first six months of 2016, all projects in Tranche 2 have not indicated any significant or major environmentalimpacts.

ANNEX A: MONITORING EMP CHECKLIST FOR TRANCHE 2 PROJECTS

Item/Impact	Action/Mitigation	Mitigatio Impleme	n ntation	Impacts Observed/Location	Action Required (incl. by date)	Contractor Response/Comment
	Measure	Yes/No	Effectiveness (1 to 5)			
Contractor environmental / HIV AIDSawareness	 Aware of EMP mitigationm easures and effective implementation Delivering training and/or awareness to 	Yes	4	Batching Plant Crusher Plant Campsite	No action required	Refer to Annex E,F,G and H for detail checklist and/or EMP reporting
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	Refer to Annex E,F,G and H for detail checklist and/or EMP reporting
Maintenance Works and Construction Methods	- On-going project sites has been properly implemented	Yes	4	All sites of the project	No action required	Refer to Annex E,F,G and H for detail checklist and/or EMP reporting
Site Conditions	 Local community issues on lands and employment wereproperly addressed and resolved. 	Yes	4	all site	No further action required	Refer to Annex E,F,G and H for detail checklist and/or EMP reporting
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	Environmentalist and Project engineer to take control the implementation	Refer to Annex E,F,G and H for detail checklist and/or EMP reporting

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

UPGRAIDNGECT Name:	GIRUA AIRPORT PAVEMENT UPGRADING, NEW TERMINAL BUILDING & ASSOCIATED WORKS	Contract No:		PROVINCE:	ORO PROVINCE
Date of Inspection:	June 2016	Inspected By (And Designation):	Barksy (PIU)	Initial	BP
Remarks [.]	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial:	MA
Komano.	Galiolaciony		Contractor (CHEC)	Initial:	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEERAME	COMPLIED		REMARKS	DATE TO UNDERTAKE
		LOCATIONS		YES	NO		REMEDIAL ACTIONS STATED IN REMARKS.
SOIL EROSION							
Slope erosion and sedimentation of nearby water bodies	 Installation of silt traps on alldrains 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 maintained Contractor is aware of preparing a Re- vegetation Plan Local women will be involved in the re-vegetation plan. 	September 2016 Before decommissioning Before decommissioning
Sediment runoff which could damage aquatic and marine ecology or flooding issues	 Locate stockpiles in controlledareas Sub-grade and sub-base material placed quickly after removal oftopsoil Planned construction work during dryseason Removal of spoils and construction debris 	Downstream of Airport sites and waterways	Construction Phase	~		- No works during rainy season	
WATER QUALITY/QUANTITY							
Disruption of Surface and Ground Water	 Dimension of drains Diversion of stream Use of grassed areas forrunoff Location of stockpiles on pavedareas Removal of stockpiles afterconstruction Re-vegetation afterconstruction 	Airport and surrounding areas and Downstream from construction areas	Duration of project	~			
Contamination of nearby water bodies by toxic and hazardous substances	 Installation of oil and traps indrains Development of safe storage areas and proper handling of hazardous and toxic materials Proper disposition of hazardous and 	Airport and surrounding areas	Duration of project	~			

Pollution from domestic sewage and wastes	 Proper solid waste management system tobe 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	✓			
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMF YES	PLIED NO	REMARKS	DATE TO UNDERTAKE REMEDIAL ACTIONS STATED INREMARKS.
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 	Ancillary Facilities	Duration of project	✓		- proper handling of petroleum products should be emphasized.	September 2016 To monitor and on-going
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) 	Airport site and adjacent villages and settlements	Pre-Construction and Construction Phase	✓		- Maintain vehicles and machineries.	On planned routine at least once a fortnight
Health hazards and nuisances to nearby villages and settlements	 Regular monitoring of air quality in the vicinity of the airports and sensitivereceptors 	Airport site and adjacent villages and settlements	Operation Phase	 Image: A mathematical state of the state of		- Require environmental monitoring equipment to quantify. However, visual assessment indicated fewer nuisances tolerable to nearby settlement.	To monitor and on-going
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, 	All construction areas, access routes, and quarry sites	Pre-Construction and Construction Phase	 Image: A manual state of the st		 Need improvement on provisions of PPEs Proper and routine maintenance of machines and vehicles are done 	End of August 2016
Nuisance to residents of nearby villages and communities	 Establishment of buffers between airport and nearby settlementareas Preparation of operational procedures by Airport Operator based on ANZECC 1992 or Australian Noise Exposure Forecast(ANEF) 	Nearby settlements	Operation Phase	~		Limit or turn off use of vehicles, machines, crusher plant when not in use.	Ongoing To re-notify the contractor on the 10/8/2016 through the environmental audit to be undertaken
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	~			

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 construction personnel done but to also include nearby communities.	September 2016
SOCIAL /COMMUNITY CONCER	INS						
Changes in nearby land values	Proper valuation of land	Surrounding areas and nearby villages	Operation phase		~	- Not required	
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COM	PLIED	REMARKS	DATE TO UNDERTAKE
				YES	NO		REMEDIAL ACTIONS STATED IN REMARKS.
Loss of aesthetics	Landscaping and re-vegetation	Vicinity of Airports	Duration of Project	~			
Cultural differences risk/social	Contractor to source laborers 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	Monitor daily by Project Safety Officer
Increase in traffic	Prepare traffic management plans	Airport vicinities and major roads into the Airports	Duration of Project	~		- Maintain movement of cars/machinery into airside aided by NAC Safety Officer	On planned routine at least once a fortnight
						- Landside traffic is on normal road networks accept when needed guidance from NAC Safety	
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 ancillaryfacilities 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

PROJECT NAME:	VANIMO AIRPORT PAVEMENT UPGRADING, NEW TERMINAL BUILDING & ASSOCIATED WORK	Contract No:		PROVINCE:	SANDAUN PROVINCE
Date of Inspection:	June 2016	Inspected By (And Designation):	Barksy (PIU)	Initial:	BP
Remarks:	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial:	MT
itemaits.	Galisiaciory		Contractors' Environmental Rep.	Initial	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES		TIMEERAME	COMPLIED		REMARKS	DATE TO UNDERTAKE
		LooAnono		YES	NO		REMEDIAL ACTIONS STATED IN REMARKS.
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	✓		 Maintain staging in works for vegetation clearing and top soiling Contractors' preparation of Re-vegetation Plan in progress to involve locals and women as well. 	On-going and on stages of works Before decommissioning
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 oftopsoil Planned construction work during dry season Removal of spoils and construction debris 	Downstream of Airport sites and waterways	Construction Phase	~		 Stockpiling away from waterbodies and drains. No works during rainy season 	- September 2016 To monitor and on-going
WATER QUALITY/QUANTITY							
Disruption of Surface and Ground Water	 Dimension of drains Diversion of stream Use of grassed areas forrunoff 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	✓			
Contamination of nearby water bodies by toxic and hazardous substances	 Installation of oil and traps indrains Development of safe storage areas and proper handling of hazardous and toxic materials Proper disposition of hazardous and 	Airport and surrounding areas	Duration of project	✓		- Maintain safe storage of toxic/hazardous materials	August 2016

ENVIRONMENTAL ISSUE	MITIGATION MEASURES			COMPLIED		REMARKS	DATE TO UNDERTAKE
		Looknono		YES	NO		REMEDIAL ACTIONS STATED IN REMARKS.
Pollution fromdo 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	~			
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.	On planned routine at least once a fortnight
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.	To monitor and on-going
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	~		- Maintain provision of PPEs for all construction employees.	September 2016
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	To monitor and on-going To monitor and on-going
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	~		- Maintain safety standardsand practices on-site.	-
ENVIRONMENTAL	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	COMF	PLIED	REMARKS	DATE TO UNDERTAKE
ISSUE				YES	NO		REMEDIAL ACTIONS STATED IN REMARKS.
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	~		- Well implemented	- Completed one awareness in May 2016
SOCIAL /COMMUNITY CONCE	RNS						
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	~		- Not at this construction stage	
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 and will be responsible to any disruptions caused.	Safety Officer to monitor
Increase in traffic	Prepare traffic managementplans	Airport vicinities and major roads into the Airports	Duration of Project	~		- Movement of cars/machinery into airside aided by NAC Safety Officer	- To monitor and on-going
						- Landside traffic is on normal road networks accept when needed guidance from NAC Safety Officer.	To monitor and on-going
						- Contractors have operational procedures of inflow and outflow of traffic	To monitor and on-going
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 ancillaryfacilities Re-vegetation of exposed areas Proper disposition of construction debris 	Construction and camp sites	After completion of construction	~	- Not applicable at this construction stage. However, contractor is preparing a Site Abandonment Plan	To monitor and ensure the draft plan is provided to NAC by end of this 4 th quarter, 2016.
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ANNEX D: EMP IMPLEMENTATION – KUNDIAWA AIRPORT

PROJECT NAME:	KUNDIAWA AIRPORT PAVEMENT UPGRADING & ASSOCIATED WORKS	Contract No:		PROVINCE:	CHIMBU PROVINCE
Date of Inspection:	June 2016	Inspected By (And Designation):	Barksy (PIU)	Initial	BP
Remarks:	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial	SR/KD/AD
Remarks.	Cutionationy	Withessee by (And Designation).	Contractors Rep.	Initial	

ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEERAME	COMPLIED		REMARKS	DATE TO UNDERTAKE
ENVIRONMENTALIOODE		LOOATIONO		YES	NO		REMEDIAL ACTIONS STATED IN
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 control in place Contractors' preparation of Re-vegetation Plan in progress to involve locals and women as well. 	- This 3 rd quarter , 2016 Before decommissioning
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 oftopsoil Planned construction work during dry season Removal of spoils and construction debris 	Downstream of Airport sites and waterways	Construction Phase	✓		 Stockpiling away from waterbodies and drains. No works during rainy season Installation of 	- Completed in 1 st quarter 2016 To monitor andon-going
WATER QUALITY/QUANTITY							
Disruption of Surface and Ground Water	 Dimension of drains Diversion of stream Use of grassed areas forrunoff 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	~		- Sedimentation control in place. Drainage flow designs in progress to control flooding and erosion of drains outside of airport.	 Cost of design to be determined by 12/8/2016 Works to commence 19/8/2016 and completes on October 19/8/2016

ENVIRONMENTAL ISSUE MITIGATION MEASURES LOCATIONS TIMEFRAME		COMF	PLIED	DEMARKS	DATE TO UNDERTAKE		
ENVIRONMENTALISSUE		LOCATIONS		YES	NO	KEMAKK5	REMEDIAL ACTIONS STATED IN
Contamination of nearby water bodies by toxic and hazardous substances	 Installation of oil and traps indrains Development of safe storage areas and proper handling of hazardous and toxic materials Proper disposition of hazardous and 	Airport and surrounding areas	Duration of project	~			
Pollution fr om domestic	 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	~			
Contamination from oil and grease	 Collect and recycle petroleum products Development of spill contingencyplans 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 settlementareas 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.	To monitor and on-going
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.	To monitor and on-going
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	~		- Maintain provision of PPEs for all construction employees.	- To monitor and on-going
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 	- To monitor and on-going

OCCUPATIONAL HEALTH AND SAFETY

ENVIRONMENTAL ISSUE	MITIGATION MEASURES		TIMEERAME	COMPLIED		REMARKS	DATE TO UNDERTAKE
ENVIRONMENTALIOODE		LOOAHONO		YES	NO		REMEDIAL ACTIONS STATEDIN
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	>		- Maintain safety standardsand practices on-site.	- To monitor and on-going
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 implemented	- To monitor and on-going
SOCIAL /COMMUNITY CONCER	NS						
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	~		- Not at this construction stage	Prepare for re-grassing this 3 rd quarter, 2016
Cultural differenc esrisk/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	Prepare decommission plan by 19/8/2016
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 and will be responsible to any disruptions caused. 	- Safety Officer to monitor daily
Increase in traffic	Prepare traffic managementplans	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	Safety Officer to monitor Safety Officer to monitor daily
						when needed guidance from NAC Safety Officer.	Safety Officer to monitor daily
						operational procedures of inflow and outflow of traffic	
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 ancillaryfacilities Re-vegetation of exposedareas 	Construction and camp sites	After completion of construction	✓	- Not applicable at this construction stage. However, contractor is preparing a Site Abandonment Plan	Prepare decommission plan by 19/8/2016
	 Proper disposition of construction debris 					

ANNEX E: EMP IMPLEMENTATION – GOROKA AIRPORT

PROJECT NAME:	GOROKA AIRPORT PAVEMENT UPGRADING, NEW TERMINAL BUILDING & ASSOCIATED WORK	CONTRACT NO:		PROVINCE:	SANDAUN PROVINCE
Date of Inspection:	June 2016	Inspected By (And Designation):	Barksy (PIU)	Initial:	BP
	Satisfactory	Witnessed By (And Designation):	Project Engineer(s)	Initial:	AD
Remarks.	Salislacioly	Withessed by (And Designation).	Contractors' Environmental Rep.	Initial	

				COM	PLIED		
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	YES	NO	REMARKS	DATE TO UNDERTAKE REMEDIAL ACTIONS STATED
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	~		 Maintain staging in works for vegetation clearing and topsoiling Contractors' preparation of Re-vegetation Plan in progress to involve locals and women as well. 	- This 3 rd quarter , 2016 Before decommissioni ng ng
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 dryseason Removal of spoils and construction debris 	Downstream of Airport sites and waterways	Construction Phase	~		Stockpiling away from waterbodies and drains. No works during rainy season Installation of	- Well maintained
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	✓		- Maintain proper drainage system to contain surface runoffs	- September 2016
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 	Airport and surrounding areas	Duration of project	√		- Maintain 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	✓			

			COMP	PLIED			
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	YES	NO	REMARKS	DATE TO UNDERTAKE REMEDIAL ACTIONS STATED
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.	- To monitor and on- going
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.	- To monitor and on- going
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	✓ 		- Provision of PPEs for all construction employees.	- September 2016
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	Safety Officer to monitor daily Safety Officer to monitor daily
OCCUPATIONAL HEALTH AND SA	AFETY						
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	✓		 Maintain safety standards and practices on- site. Final OHS Plan to be submitted and approved 	October 2016
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	-

				COMPLIED			
ENVIRONMENTAL ISSUE	MITIGATION MEASURES	LOCATIONS	TIMEFRAME	YES	NO	REMARKS	DATE TO UNDERTAKE REMEDIAL ACTIONS STATED
SOCIAL /COMMUNITY CONCERNS	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	✓		- Not at this construction stage	-
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 	Safety Officer to monitor daily
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	Safety Officer to monitor daily
						 Landside traffic is on normal road networks accept when needed guidance from NAC Safety Officer. 	Safety Officer to monitor daily -
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 constructiondebris 	Construction and camp sites	After completion of construction	~		- Not applicable at this construction stage. However, contractor is preparing a Site Abandonment Plan	-

ANNEX F: PHOTOGRAPHS OF PROGRESSIVE WORKS – GIRUAAIRPORT



A). Camp site

Photo1: HIV/ AIDS Awareness to contractors' personnel







Photo 2: Weed Control and general grass cutting to maintain cleanliness at contractors camp site



Photo 3: Contractor personnel cleaning rubbish around the camp site.

B). Pavement & Drainage Works



Photo 4: Apron and taxiway pavement completed. The area is always kept clean and left for grassing.

C). Landside Works



Photo 5: Top soiling and placing of base course on the new car park area. Proper stockpiling of topsoil away from works area. Notice moisture content of the base course to minimize dust emission.



Photo 6: Foundation works for the new Terminal Building. Stockpiles are kept away from the works area

ANNEX G: PHOTOGRAPHS OF PROGRESSIVE WORKS - KUNDIAWA AIRPORT



A). Pavement Works

Photo 7: Water spraying of the completed pavement to control dust

B). Fencing Installation Works



Photo 8: Complete installation of the new palisade fence around the airport boundary.



Photo 9: Stockpile of top soil spread evenly to allow forgrassing



Photo 10: Excess stockpile of top soil spread is transported off site and disposed in public dumped site or given to communities who might be need thesoils.

ANNEX H: PHOTOGRAPHS OF PROGRESSIVE WORKS – GOROKA AIRPORT





Photo 11: Topsoiling and pavement repairs of the existing secondary runway



Photo 12: Excavation 12m width for subgrade replacement; and then will be followed by placing and compaction of basecourse. Stockpiles are kept away from works are and drains.



Photo 13: Construction and completion of secondary runway. Applying paint marking on the secondary runway.

B). Temporary Terminal Building



Photo 14: Dismantling of old hanger wall and roof cladding.



Photo 15: Use of crane to carry out dismantling works at height as a safety precautionary measure.



Photo 16: Clearing of salvage materials and



Photo 17: Footing foundation excavation



Photo 18: Formworks and concrete pouring for column stumps. Iron roofing is used as an aidto ensure no concrete pour on the soil.



Photo 19: Backfilling and compaction for the footing. Covered with plastic to stop water/rain from interfering with the cement of the column.



Photo 20: Structural works



Photo 21: Installing underground public utility service



Photo 22: Concrete works



Photo 23: Wall framing and roofing woks. Use of scaffolds



Photo 24: Gravel extraction at Kamaliki River. Notice the turbidity of the river stretches from headwaters although the length of the river

c). Others



Photo 25: Gravel stockpile are kept inside the airport fence area



Photo 26: Fuel storage is kept in fully kited refuel mobile containers. No spillage is noticed and the area is fenced in.



Photo 27: Maintain cleanliness of camp site and toilet areas



Photo 28: HIV/AIDS awareness and security meeting carried out by local health department to the contractors' personnel.



Photo 29: Using of HIV/AIDS awareness aid such as posters and newsletters.

ANNEX I: COMPLIANCE STATUS WITH THE ENVIRONMENTAL COVENANTS

The status of compliance with the environment covenants in the loan agreement for Tranche 2 projects is presented below

REFERENCE	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 followingmeanings: (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. 	Complying
Loan agreement (special Operations) – CADIP SCHEDULE 4 Procurement of Goods, Works and Consulting Services	Conditions for Award of Contract 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.	Complying

Loan agreement (special Operations) – CADIP SCHEDULE 5 Execution of Project; Financial Matters	Environment 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.	Complying
	<u>Safeguards – Related Provisions in Bidding Documents and Works</u> <u>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:	Complying Complied and budget made available/allocated in the contract agreements
	 (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 	Complied 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 corrective action.
	 (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 semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons 	Contractors' monthly monitoring report has not been submitted to NAC on time.

 (b) if any unanticipated environmental risks and impacts arise during construction, implementation or operation of the Project that were not 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. 	
Health 17. The Borrower shall ensure, or cause NAC to ensure, that the contractor 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