

SEMI-ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

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JULY 2017 TO DECEMBER 2017

ROAD NETWORK DEVELOPMENT SECTOR PROJECT (RNDSP): GRANT 0180 TIM
ROAD NETWORK UPGRADING PROJECT (RNUP): LOAN 2857/2858 TIM
ROAD NETWORK UPGRADING SECTOR PROJECT (RNUSP): LOAN 3020/3021 TIM
NATIONAL ROAD #1 UPGRADING PROJECT (NR1UP): LOAN 3456 TIM

JANUARY 2018

This environmental management report is a document of the Proponent. The views expressed herein may be preliminary in nature.

In preparing the environmental management report and making reference to a particular territory or geographic area in this document, the Proponent does not intend to make any judgments as to the legal or other status of any territory or area.

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APPENDICES

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Abbreviations and Acronyms

ADB	–	Asian Development Bank
CAFI	–	Conselho de Administração do Fundo Infraestrutura
CEMP	–	Contractors environmental management plan (submitted preconstruction for approval by PMU & ADB)
CITES	–	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
DMMR	–	Directorate of Mines and Mineral Resources
DNCPIA		National Directorate for Pollution Control and Environmental Impact
DRBFC	–	Directorate of Roads, Bridges and Flood Control
EHSG	–	Environmental Health and Safety Guidelines (of World Bank Group)
EIS	–	Environmental impact statement
EL	–	Environmental License
ELL	–	Environmental Licensing Law (Decree No. 5/11)
EMP	–	Environmental management plan (as submitted for approval to obtain EL)
mEMR	–	Monthly environmental monitoring report (as submitted by PISC for approval by PMU)
ESO	–	Environment and safety officer (of the civil works contractor)
ESU	–	Environment and Social Unit (within the DPW's PMU)
GRC	–	Grievance redress committee
GRM	–	Grievance redress mechanism
GOTL	–	Government of Democratic Republic of Timor-Leste
IEC	–	International Environmental Consultant (PISC)
IES	–	International Environmental Specialist (ET - PMU)
JICA	–	Japan International Cooperation Agency
MAF	–	Ministry of Agriculture and Fisheries
MOF	–	Ministry of Finance
DPW	–	Ministry of Public Work, Transport and Communications
NDLPCS	–	National Directorate of Land and Property and Cadastral Services (within MOJ)
NEC	–	National Environmental Consultant (PISC)
NES	–	National Environmental Specialist (ESU - PMU)
NET	–	National Environmental Technical Officer (ET - PMU)
NGO	–	Non – government organization
NR1	–	National Road No. 1
PISC	–	Project implementation and supervision consultant (supporting the PMU)
PMU	–	Project Management Unit within DPW
ROW	–	Right-of-way
RP	–	Resettlement plan
SAEMR	–	Semi Annual Environmental Monitoring Report (this report)
SPS	–	Safeguard Policy Statement 2009 (of the ADB)
SEIS	–	Simplified environmental impact statement (as submitted for approval to obtain EL)
TA	–	Technical assistance

1. Introduction

A. Background

1. Roads are the primary mode of transport Timor-Leste. The core network of national roads connects the capital Dili, 13 districts, and 900 km of district roads that link major population centers to the national roads. About 80% (1,800 km) of core roads are (or used to be) paved.

2. The road network deteriorated in the period that preceded independence in 2002 due to a lack of investment in maintenance and rehabilitation; deteriorating further during 2002–2011 due to inadequate reinvestment in the road network. Frequent landslides and road closures caused by intense rainfall and geotechnical instability in mountainous areas make the situation worse.

3. Timor-Leste's development partners have responded to the challenge in a substantial and coordinated way. The Government of the Democratic Republic of Timor Leste, Directorate General of Public Works (DGOP) with ADB assistance, has developed the Medium-Term Road Network Development Program, the implementation of which started in 2010. ADB support is closely coordinated with the World Bank (WB) the Japan International Cooperation Agency (JICA) the Government of Australia, and the European Union (EU). With the support of ADB, JICA and the WB, the government will have advanced the upgrading about 515km or 36% of the national road network by the end of 2018.

4. ADB has been the lead development agency in the road sector and the ADB-financed road project portfolio that includes six TA projects, three project grants, one sector grant, and two loans for the sector. In this reporting period ADB has supported the Road Network Upgrading Project (RNUP), the Road Network Upgrading Sector Project (RNUSP) and the National Road No.1 Upgrading Project (RNUP). The Road Network Development Sector Project (RNDSP) was completed in 2016. Details of the road projects are summarized in Table 1. The location of the projects is shown in Figure 1.1. ADB's projects are on track to upgrade about 285km of national roads by 2018.

Table 1.1: Summary of ADB Financed Road Projects

Project	Approval date	Length (km)	Subprojects	Status
RNDSP	20-Nov-09	(i) 37 (R1-R2); (ii) 33 (RMC 1-4)	(i) A03-03/04 Liquica-Mota Ain-Batugade (R1-R2); (ii) Balibo – Maliana (RMC 1-4)	(i) R1 completed 2013 & R2 Completed 2015- DNP 2016). (ii) RCM 2 completed 2014.
RNUP	30-Mar-12	52	(i) Tibar - Liquica (R3); (ii) Tibar - Gleno (R4)	(i) R3 completed 2016. (ii) R4 completed 2016.
RNUP-AF	Oct. 2014	6.8	Tacitolu - Tibar (dual carriageway)	TTNPR Progress 13.5%
RNUP-AF	June 2016	43.8	(i) C13 Ermera - Fatubessi; (ii) C17 Aipelo-Bazertete	District Roads - Contractor to mobilize 2018
			(iii) C17-C16 Bazertete-Lorema-Tokolui	Project Preparation
RNUSP	19-Sep-13	81	(i) Manatuto – Laclubar Junction (ii) Laclubar Junction – Natabora	(i) Construction Progress 70% (ii) Construction Progress 47%
RNUSP-AF	03-Dec-15	99	(i) Baucau – Lautem;	Contractor mobilized Oct 2017 Construction Progress 0.9%
			(ii) Maubare – Karimbala; (iii) Atabae – Mota Ain	Contractor to mobilized Oct 2017 Construction Progress 1.2%
NR1UP	31-Mar-16	46.74	A01-01 Dili - Manatuto (TLS-P1)	Contractor mobilized Jul. 2016 Construction Progress 24.7%
		57.70	A01-02 Manatuto – Baucau (TLS-P2)	Contractor mobilized Aug. 2016 Construction Progress 31.6%
BVHP	In Prep.	58.27	A03 Baucau - Viqueque	Project Preparation

AF = additional funding

B. Description of Projects

5. **Road Network Development Sector Project.** The RNDSP was physically completed in September 2015 and the project closed in May 2016. The project targeted improving routine maintenance practices on existing national roads, and upgraded continuous road lengths incorporating climate-resilient designs. The RNDSP has completed upgrading for 37km of the 78km length of A03-03/04 from Liquica - Mota Ain (R1-R2) and 33Km in the Batugade-Balibo-Maliana sections (RMC 1, 2, 3 & 4). RNDSP was concluded in the reporting period July to December 2016.

6. **Road Network Upgrading Project.** The RNUP complements the RNDSP by financing the upgrading the roads from Dili to Liquica and from Tibar to Gleno and results in substantial improvement in access to Dili from the west. The project comprises (i) upgrading of the road from Dili to Liquica (21km), (ii) upgrading of the road from Tibar to Gleno (31km), (iii) feasibility study and detailed design of the road from Manatuto to Natarbora, and (iv) supervision of construction of the Dili - Liquica and Tibar - Gleno roads. Additional financing was approved in March 2014 to allow construction of a 6.8km section of the Dili - Liquicia road to be constructed to a significantly higher standard than originally envisaged and realignment of another section (Tacitolu to Tibar) to provide for traffic associated with the proposed Tibar Bay port development. Further additional financing is proposed to administer three district feeder roads financed by the EU; (i) C17-C16 Part 1 Aipelo – Bazertete; (ii) C13 Ermera – Fatubessi and (iii) C17-C16 Bazertete – Lorema - Tokolui (43.8 km). In this reporting period the active construction contract is Tasitolu to Tibar which is under the additional financing (RNUP-AF).

7. **Road Network Upgrading Sector Project.** The RNUSP focuses on the roads servicing the north coast in the eastern and western region of Timor-Leste. This includes the north-south links from Manatuto to Natarbora, from Baucau to Viqueque, and inland from Lautem to Lospalos. The project will: (i) upgrade and climate-proof national roads of about 117 km of roads to a climate-resilient standard including 81km of priority roads from Manatuto to Natarbora. Two construction contracts have been active since 2015: namely (i) Manatuto to Laclubar Junction and (ii) Laclubar Junction to Natarbora. This project also includes preparation of detailed designs for future priority road links including detailed engineering design and social and environmental due diligence; prepared for about 169km of national roads (Baucau –Lospalos – Lautem – Com and Baucau – Viqueque). In addition community-based road safety awareness and HIV/AIDS awareness are included and project management support through further strengthening of the project management unit (PMU). Two more construction contracts have been active since October 2015 under additional financing: (i) Baucau – Lautem (ii) Maubara – Karimbala : Atabae – Mota Ain. In this reporting period the section from Baucau to Viqueque is being prepared as a separate project called the Baucau to Viqueque Highway Project.

8. **National Road No.1 Upgrading Project.** The NR1UP project road is 105 kilometers long and is the primary national road near the the north coast which connects the Capital city (Dili) with the second largest town Baucau and municipalities and agricultural areas further to the east. The NR1UP has two packages A01-01 (Dili to Manatuto 46.7km) and A01-02 (57.7km Manatuto to Baucau). ADB is cofinancing the project on a parallel basis with the Japan International Cooperation Agency (JICA). JICA will support upgrading 46.7km of the A01-A01 section between Dili and Manatuto and ADB will support upgrading of 57.7km of the A01-A02 section between Manatuto and Baucau. Construction of both sections commenced in early 2017. The Manatuto to Baucau section was taken up for financing by ADB in the June to December 2017 reporting period.

C. Status of Projects

9. Environmental assessments have been conducted for all projects and environmental management plans (EMP) have been prepared. The environmental assessments and EMPs for the five contracts currently under construction have been approved by the National

Directorate for Pollution Control and Environmental Impact (DNCPIA) and the licenses have been obtained in a timely manner.

10. The environmental licenses for A01-02 (Manatuto-Baucau) and RNUP-AF (Tasitolu-Tibar) were issued in January 2017 and both valid until April 2019. The Environmental License for RNUSP (Manatuto –Laclubar – Natarbora) was renewed in December 2016 with validity until March 2019.

11. The environmental assessments and EMPs for the two contracts under RNUSP AF were submitted between December 2016 and January 2017 and are in processing by the National Directorate for Pollution Control and Environmental Impact (DNCPIA). The environmental assessments and EMPs for the two new contracts under RNUP AF (EU) were submitted in July 2017 and are in processing by the DNCPIA. The licenses are expected obtained in the next reporting period.

12. The environmental assessments and EMPs for six other sub-projects (that are proceeding with additional funding under RNUP-AF and RNUSP-AF) have been submitted to DNCPIA earlier in 2016 & 2017. The environmental specialists in PMU have provided the applications for six environmental licenses (national roads Atabae-Mota-Ain Jan-2016, Maubara-Karimbala Jan-2016, Baucau-Lautem May-2016 and Baucau-Viqueque Mar-2017 and district feeder roads. Aipelu-Bazartete Dec-2016 and Ermerra-Fatubesi Dec-2016). Environmental assessments were completed and submitted for (Baucau-Lautem Dec -2016, Atabae-Mota-Ain Dec-2016, Maubara-Karimbala Jan-2017, Aipelu-Bazartete Jun-2107 and Ermerra-Fatubesi Jun-2017. Baucau-Viqueque is in press). The Environmental Team will progress issue of these environmental licenses in the next reporting period.

13. The application for environmental license for the third district feeder road (Bazartete to Tokoluli) will be made during the next reporting period. The draft environmental assessments and EMP will be submitted following categorization by DNCPIA during the next reporting period. The status of the projects' documents is shown in Table 1.2 (following page).

D. Institutional Arrangements

14. The executing agency for the upgrading and improvements projects is the Conselho de Administração do Fundo Infraestrutura (CAFI) and the implementing agency is the DPW. The agency for implementation within DPW is the Project Management Unit (PMU) established to manage and implement projects financed wholly or partially by GOTL's development partners.

15. The PMU is embedded in the DPW and is responsible for managing programs with financing from GoTL development partners, e.g. ADB, JICA, and WB etc. The PMU is responsible for day to day management of the programs, including implementation of requisite safeguards measures on all projects.

16. Through program support, the PMU has developed an environmental and social safeguards unit (ESU) which comprises international and national specialists who are financed jointly by ADB and WB. The environmental specialists in PMU responsible for ensuring compliance with safeguard requirements, environmental management and monitoring and capacity development for environmental safeguards within DPW and for contractors. In practice PMU has accumulated considerable experience in dealing with the safeguard requirements of development partners and other government agencies.

17. The implementation of each subproject is supervised by a team of consulting engineers known as the Project Implementation and Supervision Consultants (PISC). Within each project there are one or more contract packages or components which are undertaken by contractors. The Contractor is required to have an officer to oversee environmental matters, health and safety and traffic control who are responsible to supervise the workforce in the implementation of mitigation measures for environment, health, safety and traffic control as required in the EMP. This staff in the Contractor team is generally referred to as the Environmental and Safety

Officer (ESO) or in some cases the contractors have an Environmental Officer (EO) and a Safety Officer (SO).

18. The need of construction materials (gravel and sand) to support the project has led the contractors to establish numerous mountain and river quarries in the vicinity of the project corridors. Under the Ministerial Diploma 64/2016 on Specific Rules for the Licensing of the Mining Activity the contractor is required to apply for a mineral license before setting up a quarry or other source for mineral extraction. The National Authority of Petroleum and Minerals within the Ministry for Mineral Resources is the authority responsible to control the mining activity around the country. A good coordination has been achieved by the environmental specialists in PMU by regular liaison with ANPM to address the concerns on mineral licenses requirements and to facilitate road projects.

19. In December 2016 the MINISTRY OF COMMERCE, INDUSTRY AND ENVIRONMENT (MCIE) the MINISTRY OF PETROLEUM AND MINERAL RESOURCES (MPMR) and the MINISTRY OF PUBLIC WORKS, TRANSPORT and COMMUNICATIONS (DPW) reached an agreement to establish cooperative arrangements in the process of securing environmental and mineral licenses for the extraction of construction materials in order to accomplish the desire of the Government to complete the major investments being utilized for the rehabilitation of roads. The cooperative arrangements are called the memorandum of understanding (MOU).

20. In the MOU the three ministries agreed to recognize the Environmental License, including the Environmental Management Plan (EMP) and Simplified Environmental Impact Statement (SEIS) used to secure the Environmental License for the Project as evidence of satisfactory compliance with the environmental requirements of DNCPIA for purpose of securing mineral licenses. The Environmental License obtained by DPW from MCIE for the road construction being evidence of compliance to the requirement of mitigating the environmental impact due to the construction of the road project including the incidental activities (associated facilities of quarrying; borrow pits; installation of asphalt plant, crushing plant, batching plant, fabrication plant and other facilities necessary for the road project).

21. When construction companies identify a potential source, Location Approval must first be sought from ANPM. Each location is approved individually by ANPM in principal at this stage. Construction companies must then complete the requirements of the Ministerial Diploma 64/2016 as agreed in the MOU including Mining Plan and a Site Specific Environmental Management Plan (SSEMP) for each location to obtain the Mineral License. Construction companies will not be fully authorized to extract construction materials without subsequently obtaining the Mineral License.

22. In practice the Mineral License will be issued subject to documents above being completed and that DNCPIA gives its endorsement of the mineral extraction activities and associated facilities.

Figure 1.1 Location of ADB financed projects

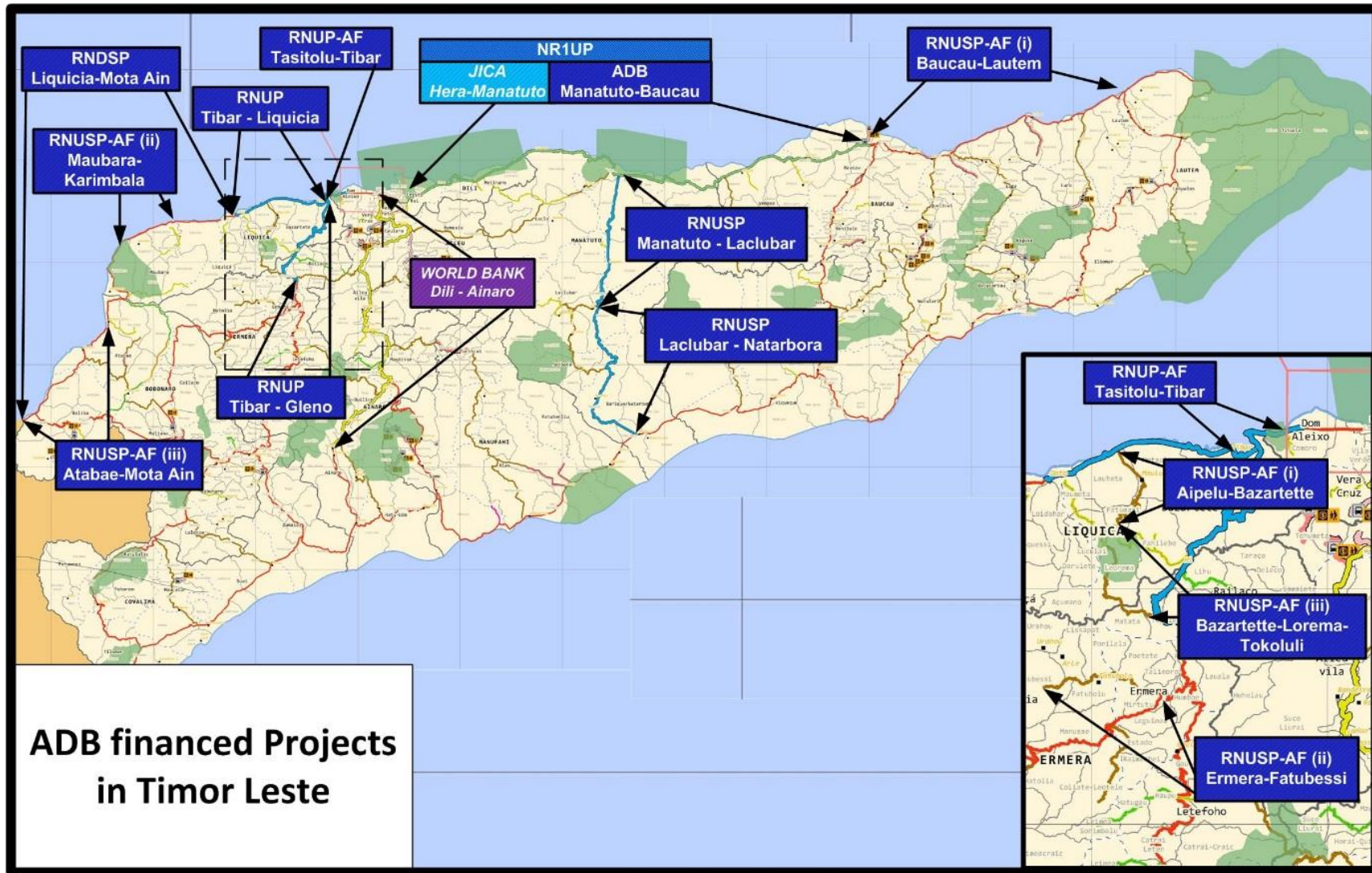


Table 1.2: ADB Road Projects Status, Categorization and Documents

Project	Subprojects	Category	Documents	Environmental License(Original)	Environmental License(Renewal)
RNDSP	(i) A03-03/04 Liquica-Mota Ain-Batugade (R1-R2); (ii) Balibo – Maliana (RCM 1-4)	B	(i) SEIS 2012 (ii) Maintenance only but followed EMP for R1 & R2.	(i) 21 Sep 2011	(i) 13 Jan 2014
RNUP	(i) Tibar – Liquicia(R3); (ii) Tibar – Gleno(R4)	B	SEIS & EMP June 2016	(i) 31 May 2012 (ii) 161 Aug 2012	(i) 19 Sep 2014 (ii) 02 Oct 2014
RNUP-AF	Tacitolu– Tibar(4 lane - dual carriageway)	B	SEIS & EMP June 2016	18Jan 2017	Due 17Apr 2019
NR1UP	A01-01 Dili - Manatuto	B	SEIS & EMP May 2014	13 Jul 2015	Due 17Apr 2019
NR1UP	A01-02 Manatuto – Baucau	B	SEIS & EMP Jun 2016	18 Jan 2017	Due 17Apr 2019
RNUSP	Manatuto – Laclubar – Natabora	B	SEIS & EMP June 2014	02 Jul 2014	Due 16 Mar 2019
RNUP-AF	(i) C13 Ermera - Fatubessi	B	(i) C13 Ermera - Fatubessi; SEIS & EMP Submitted 14 th June 2017	(i) C13 Ermera-Fatubessi; SEIS & EMP Comment issued DNCPIA 6 th July 2017. DNCPIA comments addressed. Presentation expected March 2018	N/A
	(ii) C17 Aipelo-Bazertete Part 1	B	(ii) C17-C16 Part 1 Aipelo-Bazertete SEIS & EMP Submitted 14 th June 2017	(ii) C17-C16 Part 1 Aipelo-Bazertete SEIS & EMP Comment issued DNCPIA 6 th July 2017. DNCPIA comments addressed Presentation expected March 2018	N/A
	(ii) C17-C16 Bazertete-Leorema-Tokolui Part 2	TBC	(iii) C17-C16 Part 2 Bazertete-Lorema-Tokolui Draft SEISs(i) & (ii) submitted to ADB Apr. 2016 Additional study required for ecology.	(iii) C17-C16 Part 2 Bazertete-Lorema-Tokolui Project Document in preparation & draft SEIS (awaiting input from detailed avifauna study Aug Sep 2017). EMP in press.	N/A
RNUSP-AF	(i) Baucau – Lautem;	B	(i) SEIS & EMP updated November 2016	SEIS & EMP Comment issued DNCPIA 6 th Jul 2017 (7 months).DNCPIA comments addressed Presentation March 2018	N/A
	(ii) Maubara – Karimbala;	B	(ii) SEIS & EMP January 2017	SEIS & EMP Comment issued DNCPIA 12 th Jun 2017(after 5 months). DNCPIA comments addressed. Presentation March 2018	N/A
	(iii) Atabae – Mota Ain	B	(iii) SEIS & EMP January 2017	SEIS & EMP Comment issued DNCPIA 12 th Jun 2017(after 5 months). DNCPIA comments addressed. Presentation March 2018	N/A
BVHP	Baucau – Viqueque	B	SEIS & EMP drafted to ADB May 2017	Comment ADB July 2017. SEIS and EMP to be amended.	N/A

N.B. Environmental License validity minimum 2 years and 3 months. NYR = not yet received.

E. Arrangements for monitoring

23. The environmental specialists in PMU currently comprise an international environment specialist (IES) and one national environment specialist (NES) responsible for the coordination of environmental management, environmental monitoring and capacity development across all ADB, JICA and WB projects. A national environment technical officer recently renamed national environmental assistant (NEA) joined the environmental specialists in 2016 and remains in post. The IES (intermittent) and NES and NEA (full time) each have a 12 month contracts; renewable each year. IES and NES liaise directly with the Project Implementation and Supervision Consultant's (PISC). NES keeps a site diary for each contract. NET supports the NES and IES as required in reporting and field operations as necessary.

24. The Project Implementation and Supervision Consultants (PISC) for each project have one international environment consultant (IEC-intermittent) and one national environment consultant (NEC–full time) responsible for environmental management and monitoring for the project component contracts under their control. In practice there are one or more contractors under each project. NEC liaises directly with the contractors ESO on a daily basis. NECs keep a site diary for each contract that they are responsible. The IEC provides intermittent (usually about 3 weeks to one month every quarter) mentoring for the NEC and training for the contractor staff. The IES and NES mentor the PISC's NEC environmental officers when the IEC is off the project.

25. Each contractor is required to have officers covering environmental and safety that are sometimes combined in one position of Environmental and Safety Officer (ESO); also overseeing traffic management. The ESO liaises directly with and receives instructions from NEC and IEC through the PISC.

2. Monitoring Activities

26. **Methodology.** In order to achieve consistency and harmonisation, monitoring is conducted in a similar way for all projects, by following the approved environmental management plan (EMP). Monitoring is conducted by visual observation to check if the project activities are mitigated in line with the EMP; checking that mitigation measures are being implemented. The EMPs for some early projects (e.g. RNDSP and RNUP) were less developed but the implementation of later projects has led to more comprehensive EMP with a more extensive suite of core mitigation measures; that can generally be applied to all road projects. The core mitigation measures have been promulgated in the past four years and will continue to be applied to all new projects going forward. The EMP is designed to be updated by the contractors ESO in the pre-construction stage. In practice the contractors environmental awareness is very low and capability is limited although this has improved in many cases after training. The first stage of interaction is to provide environmental compliance and awareness training (ECAT). However, even when training is completed, experience shows that ESOs require very significant support from both PMU and PISC staff to update the Contractors EMP (CEMP) and to complete monthly environmental reports. Project specific issues such as location of associated facilities (quarries and asphalt mixing plant etc.) are also included in each CEMP.

27. Checklists have been prepared for all the main project activities. The general checklist designed to be completed on each monitoring occasion to identify the location and type of impacts that are not being controlled sufficiently well. Other checklists are designed to provide guidelines for specific construction activities and the required mitigation measures in the EMP (e.g. contractor camp, spoil disposal, quarry and manufacturing areas health and safety etc.). The IEC and NEC instruct the ESOs as necessary to complete the checklists or NECs complete the checklists if the contractor does not. Checklists are appended to the monthly progress reports in the environmental section or summarised. Stand alone monthly environmental monitoring reports (mEMR) are submitted each month. If mitigation measures are not implemented, in practice, the first case is to request action verbally. If there is no response this is followed by written instructions and Corrective and Preventative Action Requests (CPARs).

28. The coverage of the checklists is presented in Table 2.1. After group discussions with all NECs from ADB, WB and JICA projects (ECAT 6 December 2017) the checklists are seen as adequate, although there may be some changing to the wording were necessary. Checklists were updated in September 2016 in English with corresponding translation to Chinese (simplified) as currently all contractors are Chinese or Philipino and this covers the working languages on all the projects. Translation into local languages can be provided by the NES and NET as necessary. At the round of capability development training (ECAT 6 December 2017) it was agreed that further refinement of the checklists would be made, based on project experience. The checklists will be updated in the next reporting period. Checklists are common to all projects. The effectiveness of checklists and any emerging problems with contractors will be reviewed again at an ECAT workshop in the next reporting period. Although the contractors' environmental awareness is generally very low, the core mitigation measures have been promulgated since the IES was engaged in October 2013 and will continue to be applied to all aspects of the subprojects until they are completed.

Table 2.1: Environmental Checklists

NUMBER	TITLE	FREQUENCY OF COMPLETING
CL 01	GENERAL MONITORING PROGRESS & ACTION	At least weekly
CL 02	CONSTRUCTION YARD/CONTRACTOR BASE CAMP / OFFICE	At least monthly
CL 03	SPOIL DISPOSAL – SETUP & CLOSE OUT (includes macadam)	At least monthly
CL 04	SPOIL DISPOSAL OPERATION (Monitoring includes macadam)	At least monthly
CL 05	BORROW PIT/QUARRY – SETUP & CLOSE OUT	At least monthly
CL 06	BORROW PIT / QUARRY OPERATION	At least monthly
CL 07	MANUFACTURING AREAS (CRUSHER & Asphalt Mixing Plant AMP, Batching Plant, Casting Yard etc.)	At least monthly
CL 08	CONTRACTOR WORKER ACCOMODATION	At least monthly
CL 09	HEALTH AND SAFETY	At least monthly

29. The IEC, NEC refer to the EMP and checklists and instruct the ESOs as necessary. In practice the first case is to request action verbally. If this does not illicit an acceptable improvement, written instructions to the contractor are usually by letter from the PISC to the contractor. If verbal and written instructions from PISC, IEC and NEC to the contractor have not achieved the necessary action then the IES and NES will revisit the site and issue a letter listing contraventions of the EMP and/or a corrective and preventative action request (CPAR) to the PISC to enforce on the contractor. In unusual circumstances (safety or danger) an instruction from the PISC may be issued to stop work. The intermittent monitoring undertaken by the PMU is presented in Appendix 1A. The summary of monitoring from monthly environmental monitoring progress reports undertaken by the PISC is presented in Appendix 1B. Letters listing any non-compliances with EMPs are issued after periodic site inspections for all projects.

30. **Participants in the monitoring.** The IES, NES, NEA, IECs, NECs and ESOs all participate in environmental monitoring. Other staff in PMU and PISC will also report back problems if they are observed. The ESOs and the NECs work with each other on a daily basis. The IECs are present intermittently; generally during the pre-construction stage for setting up associated facilities and just before and after submission of license renewals and the quarterly environmental reports. IES, NES and NET participate intermittently during any given month and respond to specific issues or problems and keep a watching brief on all projects. In addition the IES and NES mentor the NECs when the IECs are out of country. IES and NES have also conducted group training and workshop activities (ECAT 1 - November 2015, ECAT 2 – May 2016, ECAT 3 Contractors only June 2016, ECAT 4 - September 2016, ECAT 5 - June 2017 and ECAT 6 - December 2017) for the NECs and additional on site training sessions for monitoring with the NECs, to mentor the NECs when the IECs are out of country. Project specific ECATs have taken place with all Contractors and PISC staff either individually or in groups as contractors have mobilised. ECAT 7 is planned for the next reporting period to follow up on the amended reporting format, checklists in the updated format and to provide more training on aspects of the EMP and report writing. Safety issues may also be covered more formally in the next ECAT. In the past IES and NES have also conducted occasional training presentations on specialist subjects such as environmental management and bioengineering which include reference to monitoring procedures. There is no third party monitoring for environment. The PMU participants in the monitoring are indicated in Appendix 1.

31. **Frequency of monitoring.** The ESOs and the NECs work together daily and the NEC keeps the site diary up to date. The NES / NEA will visit each project / site for a joint inspection with the NEC and ESO targetting at least twice per quarter (or more frequently if special needs arise). The IES will usually attend the monthly joint inspection with NEC and ESO. Unannounced spot inspections can be carried out at any time by the NES and IES, such as after heavy rain or earth tremors or if there is a complaint. Under normal operations the IEC, NEC will be instructed by the NES and IES to improve any EMP matters that need attention and improve mitigation as necessary. In practice interaction between the PMU and each project takes place several times per quarter.

32. The checklists are designed for use on a regular basis each month by Contractor ESOs and the NECs in the PISC and reported in the monthly environmental monitoring reports (mEMR).

33. The general checklist (CL01) is expected to be completed on each monitoring occasion during and after field visits by ESOs and NECs. The checklist is used to identify any locations where there is a non-compliance with the mitigation measures specified in the EMP and the type of impacts giving rise to the non-compliance at that location. This can provide an overview of the locations visited and the types of impacts that are occurring which require mitigation. The locations can be identified and necessary action noted for follow up.

34. Checklists CL02, CL07, CL08, CL09 are designed to provide a guide to focus on the key mitigation measures for certain key construction activities and are recommended to be completed at least once a month. CL02 is for contractor base camp – maintenance yard. CL07 covers manufacturing areas such as crushers batching plant, casting yard and asphalt mixing

plant. CL08 focusses on the mitigation measures needed at the contractors accomodation. In some cases the accomodation is located within the base camp, in others the accomodation is separate. These four checklists may need to be completed more frequently if there are many non-compliances with the EMP requirements and more inspections are necessary such as when activities that create environmental impacts are very intense or are changing or if the Contractor does not respond to request to improve comnpliance with the EMP.

35. The Checklists CL03 and CL05 focus, respectively, on the activities and potential impacts during the setting up of designated spoil disposal areas and borrow pits/quarries. The Checklists CL03 and CL05 should be followed once during preparation of the sites, while the necessary permissions and approvals are being put in place. CL04 and CL06 focus, respectively, on the decommissioning of spoil disposal areas and borrow pits/quarries and the procedures and potential impacts that need to be controlled. Decommission and rehabilitation of spoil disposal areas and borrow pits/quarries is covered in the approved EMP.

36. Consultants have generall supported the PMU well in the completion of checklists, and Contractors are generally responding to the requests made for improvements (with some exceptions) as reported in monthly monitoring reports. However continued vigilance is required from all the PISCs to make sure the contractors apply all the EMP requirements on every project. The checklists can also be used by any interested parties to identify the key impacts for the main construction activities.

37. **Main activities.** The main activities during monitoring are direct observations on site of the status of the implementation of the mitigation measurres in the SEIS, EMP and Environmental Licanse for each project. In addition there are monthly progress meetings held with the PISC during which environmental and safety matters can be raised. The dates for the site monitoring undertaken by the PMU is presented in Appendix 1A. The monthly progress meetings are attendeed by the IES and or NES during which environmental issues and priorities are raised. For reporting issues such as preparation of CEMP, preparation of monthly environmental reports, applications to extract construction minerals and for quarry and batching plant etc., and other reports. *Ad hoc* meetings are arranged in PMU, on site or PISC and contractors offices as necessary.

Table 2.2: Summary of Monitoring ADB Road Projects for monitoring period

Project	Location	Monitoring Inspections PMU	Monitoring Monthly Report PISC
RNDSP	(i) A03-03/04 Karimbala – Atabae (R2)	Completed	Completed
RNUP	(i) Tibar – Liquicia(R3)	Completed	Completed
	(ii) Tibar – Gleno(R4)	Completed	Completed
RNUSP	(i) Manatuto – Laclubar Junction (P1)	05	121
	(ii) Laclubar Junction – Natabora (P2)	03	111
RNUP-AF	Tacitolu– Tibar (dual carriageway)	04	23
NR1UP	A01-02 Manatuto – Baucau	03	53

3. Works in Progress

38. **Road Network Development Sector Project.** The RNDSP was physically completed in September 2015 and closed in May 2016. Environmental compliance and awareness training was conducted at the commencement of the project and repeated in November 2013 and June 2014. Regular monitoring of RNDSP was concluded in September 2015. However, several areas of bioengineering were completed by the Contractor by September 2015. The PMU ET team has been observing the progress of these bioengineering sites informally in order to collect empirical information on the success of these measure as a basis for future guidance on bioengineering installations. A checklist was also prepared to cover boengineering on RNDSP. The bioengineering using live stakes on fill slopes has been successful and many trees are now fully mature at over 3m with crowns of 1m to 2m diameter. These inastallations provide a good example for future bioengineering installatios on fill slopes.

39. **Road Network Upgrading Project.**The RNUP was physically completed in August 2016. TheTibar – Gleno road (R4) was completed and inaugurated in June 2016. R3 (Tibar – Gleno) was completed in August 2016.The defects notification period has expired and two years performance based maintenance is following on each contract. Regular monitoring of RNUP was concluded in September 2015. However, several areas of bioengineering were completed by the contractors by September 2016. The environmental spacialists have been observing the the progress of the bioengineering sites in order to collect empirical information on the success of these measure as a basis for future guidance on bioengineering installations. The bioengineering using various techniques such as pallisades, mixtures of grasses, brush layers, live stakes on both cut fill slopes has been successful and large stands of vegetation are well established in over 20 locations with many trees and shrubs fully mature at over 3m with fully developed crowns. These inastallations also provide a good example for future bioengineering installations on cut and fill slopes.

40. **Road Network Upgrading Project – Aditonal Financing.** The Contractor for RNUP-AF for Tacitolu to Tibar New Port Road mobilized in February 2017. Environmental compliance and awareness training was conducted both before mobilization in December 2016, again in February 2017 and repeated in June 2017. Further training was carried out in December 2017. Major works in this period have included excavation of cut slopes and construction of embankment between Km11 and Km12, further development of the Contractor's compound, crushers, batching plant and sand washing. The access road to the telecom towers is completed. Clearing and grubbing, earthworks and construction of line drains and retaining walls is well advanced. The construction of the Tibar Bridge was proceeding well before a massive innundation with flood water in early December and subsequent heavy rains set the works back significantly. The operation of the spoil disposal sites is acceptable. About 12% of the project works have been completed, mostly on earthworks, embankment and construction of line drains and retaining walls.

41. The RNUP-AF (Tacitolu to Tibar) Contractor has applied for mineral licenses for both a mountain quarry and river borrow pit in Tibar in February 2017. The documantation has been completed and the payments and issue of mineral licanses is now under reviwed by the ANPM. The Contractor has also identified other commercial third party sources of sand and gravel materials in the vicinity with location approval from ANPM. The alternative commercial source of sand and gravel materials at the nearby Ai-Pelu River will also be used for the project. The location will be inspected during the next reporting period.

42. By December 2017 the Contractor for district feeder roads had not been mobilised and consequently there was no construction for the feeder roads administered by ADB and financed by the EU; C13 Ermera – Fatubessi and C17-C16 Aipelo – Bazertete – Leorema - Tokoluli.

43. **Road Network Upgrading Sector Project.** The RNUSP from Manatuto to Natarbora has been under construction since 2015. The section from Manatuto to Laclubar Junction (Package 1) commenced in February 2015. The section from Laclubar Junction to Natarbora (Package 2) commenced in July 2015.Since the last reporting period both projects have

suffered delays in construction. There have been several explanations given but unseasonal inclement weather has been the main reason cited the Contractors for slow work. The works for both projects have proceeded at a moderate pace after some initial delays.

44. Package 1 (Manatuto to Laclubar Junction) completed clearing and grubbing in all sections in 2016. Works in this period have included reconstruction of the road from Km85 to Km95 in Cribas and slope cutting and earthworks in the mountain sections, earthworks, laying sub-base and base course, laying the asphalt wearing course, bridge construction of crossing drains and side drainage and slope protection works. Sections of the road are in various stages of completion. Slope cutting is in progress. Line drains and crossing drains are completed in some sections. About 52% of the length has base course laid and the surface course is laid for about 39%. In other sections the embankment and sub-base layers, drains and slope protection works are being completed. Overall completion is about 48%. Environmental compliance and awareness training was conducted for the Contractor 2015 at the commencement of the project and there has been further interaction on an intermittent basis with the Contractor's ESO and senior management since commencement. Environmental compliance and awareness training was conducted for the PISC in 2015 and on the job training has continued in 2017 for the PISC and NES during as the different aspects of works are carried out.

45. Three mineral licenses have been successfully obtained at two river borrow pit locations. The contractor, as the proponent of the borrow pits, with the assistance of the PISC and the PMU has applied for and secured the mineral licenses in reasonable time. The RNDSP Package 1 (Manatuto-Laclubar Junct.) so far has a good record, based on feedback from ANPM and PMU observations, concerning how they have addressed the mining license requirements. Two mineral licenses (sand and gravel) are secured for Laclou River (Cribas) and one (gravel) is secured for Sumassi River. All three mineral licenses are valid until 2018.

46. Package 2 (Laclubar Junction to Natarbora) has completed clearing and grubbing in all sections. Works in this period have included earthworks, laying sub-base and base course and drainage and slope protection works. Laying of asphalt has commenced. Sections are in various stages of completion. Slope cutting is in progress. Line drains and crossing drains are completed in some sections. About 16% of the length has base course laid. In other sections the embankment and sub-base layers are being completed. Surface course is laid for about 5%. Overall completion is about 31%. Environmental compliance and awareness training was conducted for the Contractor 2015 at the commencement of the project however the further interaction with the Contractor's ESO has been limited to site visits. Environmental compliance and awareness training was conducted for the PISC in 2015 and on the job training has continued in 2017 for the PISC and NES as the different aspects of works are carried out.

47. RNDSP Package 2 Contractor worked in 2015 to secure one mineral license for two stone quarries (Barique Km105 and Km115) and Lamara river (Km140) which expired in January 2017. The renewal application for the quarries has been submitted to ANPM, however the information provided in the documents is insufficient and the revisions are not addressed the ANPM comments. Additionally, the contractor has established a new river quarry in Mahehat River (Km134 right). The ANPM suspended the extraction activity in February 2017 as the contractor did not complete the application documents for the issuance of mineral license as requested in accordance with the conditions under provisional license issued on December 2016. The capability of the contractor staff to process the supporting documents for mineral licenses is the main obstacle and cause of delay of securing the mineral licenses. PMU ET has supported the Contractor and a joint meeting ANP / Contractor / PMU was held in March 2017 to go through the applications in detail. Despite reassurances in March at that meeting from the Contractor that they understood how to complete the necessary documents, there has been meagre progress. This support from PMU and ANPM and intervention by the PISC has not caused the Contractor to engage to the point where they can comply with the requisite documentation. Another joint meeting is planned early in the next reporting period. This Contractor has a very poor record on how they have addressed the mining license requirements based on feedback from ANPM and PMU observations.

48. By June 2017 there was no construction under RNUSP additional financing for Baucau – Lautem, Maubara – Karimbala or Atabae – Mota Ain.

49. **National Road No.1 Upgrading Project;Part 2 Manatuto to Baucau.**The commencement date of A01-02 (Manatuto to Baucau) was on 18 August 2016. The project based on the schedule should be completed within 1,000 Calendar days (May 2019). Works in this period have included clearing and grubbing, earthworks, construction of engineer's facility,preparation for embankment, bridges and culverts construction, drainage and slope protection works. Sections of the road are in various stages of completion. Slope cutting is in progress. Line drains and crossing drains are completed in some sections. Fill material has been laid up to Km99. In other sections the embankment and sub-base layers, drains and slope protection works are being completed.Overall completion is about 10%. Environmental compliance and awareness training was conducted for the Contractor 2016 at the commencement of the project and there has been further interaction with the Contractor's ESO and senior management since commencement. The Contractor's National ESO resigned in March 2017, leaving no staff in post to continue the progress that has achieved on the environmental and mineral licenses in 2016/2017.The PISC instructed the Contractor to immediately replace the National ESO. The National ESO was replaced and was in post by June. Environmental compliance and awareness training was followed up for the new ESO in June 2017 and on the job training for the PISC and NES will continue in 2017 as the different aspects of works are carried out.

50. The contractor has applied for five mineral licenses to allow provision of construction materials. There are four locations in river borrow pits (Sumassi, Laleia, Vemassee and Manlede rivers) and a mountain quarry adjacent to the river at Vemassee. The applications have been submitted to ANPM starting September 2016. As of May 2017 there were no mineral licenses issued for these quarries, however the contractor is allowed to extract the material under the provisional license issued by ANPM earlier. Capability of the contractor staff on processing the mineral license is the main obstacle showing on the delay of securing the mineral license.

51. Photographs of the works in progress on each project are presented in Appendix 2.

4. Monitoring Results and Actions

53. **Road Network Upgrading Project – Additional Financing.** The Contractor for RNUP Tacitolu to Tibar New Port Road has not been issued with any CPAR for environmental matters to date. Several letters regarding environmental issues have been issued by the PISC in March-April (9 letters) and May (4 letters). The letters have been followed up by the PISC NEC. The main issues are submission of a CEMP covering minimum requirements from ADB. correct procedures for spoil disposal, health and safety reporting, traffic management reporting and mineral licenses. Joint inspection is planned for early in the next reporting period.

54. **Road Network Upgrading Sector Project.**Package 1 (Manatuto - Laclubar) was issued with two CPAR from January to June 2017. The last CPAR in the form of a letter in March 2016. Package 2 (Laclubar - Natarbora) was issued with one letter CPAR in March 2017 following observation of 41 matters in the EMP that were not complied with in a reasonable timeframe up to March 2017.

55. RNUSP Package 1 (Manatuto - Laclubar) has by now encountered several of the problems encountered with other projects. Although the Contractor for RNUSP was well prepared in the pre-construction stage and the CEMP was prepared in a timely manner there has been some lack of attention to the EMP and some more instructions have been needed in this reporting period. The requirements for spoil disposal and dust suppression have generally been complied with. Pack1CPAR004 issued in March 2017 for the Contractor to create temporary line drains and clear existing line drains and maintain newly constructed drains that were blocked. The construction of retaining walls and line drains in the interim has relieved this problem and we are now in a period of less rain. Existing line drains were cleared and some new temporary line drains were excavated. This may need to be repeated in the next reporting period before the onset of heavy rains. Waste materials were disposed of to the designated waste disposal areas as covered in Pack1CPAR002. There has been no repetition of the incident of burning general waste (cardboard etc.) identified in 2016 and there is an improvement in waste disposal. Waste items such as plastic bottles and cans are being targeted to be recycled to local recyclers. Cement bags are also reused being passed to a local NGO that can use them to support propagation of grasses used in bioengineering. This will reduce general waste disposal requirements. These principles are being applied to other projects in future. Another issue has been construction of bunding to fuel storage areas. These matters were covered in Pack1CPAR003 and whereas secondary containment has been provided for the fuel storage tanks at the contractor base camp the containment requires improvement. Bunding installed on the first tank requires repairs and bunding for the additional tank is satisfactory.

56. RNUSP Package 2 (Laclubar - Natarbora) Contractor has encountered several problems encountered with other projects. Dust control has not been an issue for much of this reporting period due to frequent unseasonal heavy rain however continued attention to dust control is required and will be required in the next reporting period as drier weather will be expected. Watering the road according to a fixed schedule three times a day was requested in the letter (Pack2CPAR005) issued in March 2017. The issue of bunding to fuel storage areas was partially responded to (as requested by the letter Pack2CPAR003) requires further improvement. The secondary containment on the fuel storage tanks at the contractor base camp and asphalt plant need to include an effective bund wall. Existing line drains and newly constructed drains have generally been kept clear and temporary line drains have been excavated before the onset of heavy rains. Spoil materials are now being disposed of to the designated waste disposal areas (as requested Pack2CPAR004 2016). The incident of burning general waste (cardboard etc. at the camp) in 2016 has not been repeated and waste disposal was adequate at the last inspection. However one incident of burning cement bags was dealt with in the field and there has been no repetition observed since. Most recently the key issues drawn to the contractor's attention have been to do with routine safety procedures. Signage, segregation and barriers need to be installed or improved to many working areas especially those with deep excavation. Workers are frequently found without proper PPE and have been informed to wear at all times. Fences are required to the deep tanks in the casting yard and

protective coverings are required on some of the flywheel pinchpoints on the crusher machinery.

57. The PISC and the contractor have been informed on several occasions that the mineral licenses must be kept up to date and renewals must be dealt with efficiently in a timely manner. A joint meeting with ANPM, Contractor, PISC and PMU is expected early in the next reporting period.

58. The pre-construction activities under RNUSP additional financing for Baucau – Lautem, Maubare – Karimbala and Atabae – Mota Ain is expected to commence in the next six monthly reporting period.

59. The CPARs for each project are tabulated in Appendix 4.

5. Summary and Conclusion

60. **Summary.** The monitoring and capacity development programmes are generally proceeding in a satisfactory manner, albeit that several non-conformances with the EMP have been brought to the attention of the PISCs and contractors; as is to be expected in any environmental monitoring programme. The contractors and PISCs on all projects have been given awareness training on the policy, legal, and administrative framework and the requirements for mitigation measures and environmental monitoring and procedures. They have been consulted on the checklists; recommended to be used in environmental monitoring. No particular difficulties were encountered by the PISCs during the monitoring. The IEC and NEC positions in all but one project (RNUSP) are filled. The exception will be in post by January 2018.

61. For most contractors' whereas ESOs did not have the general capability to compile substantial reports in English and have required much help in compiling the CEMP the situation improved as expected in the last monitoring period as the translators have been more involved in the capacity building and CEMPs have been drafted for all projects. These will be reviewed early in the next monitoring period. The checklists are designed to remove the need for extensive narrative in report writing and they can be completed at least weekly for general monitoring and at least monthly for specific sites such as contractor camp, spoil disposal and quarry operation and manufacturing areas as described in the monitoring section above. One copy of the checklists for the month is sufficient to be submitted to PMU in the monthly environmental monitoring report and it is sufficient for this to be on CD Rom in order to conserve paper resources. Consultants have generally supported the contractors and PMU well in the completion of checklists, monthly monitoring reports and other documents required from the contractors. The amendments to the mEMR format for harmonisation across all projects will be introduced early in 2018 following the last round of discussion and ECAT training in December 2017. However a concerted effort is still required from all the PISCs to make sure the contractors present clear and concise documentation for any outstanding mineral license applications and apply all the EMP requirements and mitigation measures on every project at all times.

62. Environmental monitoring, capacity building and follow up have been intensively incorporated in the ECAT training, joint site inspections, on-the-job training for NES, NET and NECs, and CPARs and in letters to PISCs following site inspections where non-compliance with the EMPs have been identified.

63. In the PISCs the vacated post of IEC on RNUSP Packages 1 & 2 will be replaced in January 2018 and will be present again in the next reporting period. The IECs on NRUP and RNUP-AF are in post and have visited the projects in this reporting period and will visit the projects again in the next reporting period. In PMU the NES and NET are in post full time. The IES contract is intermittent but was more or less full time during this reporting period.

64. The addition of the National Environmental Technical Officer continues to provide advantages. The NET will be renamed National Environmental Assistant (NEA) in 2018. The NEA has been of great assistance with administrative tasks, is gaining solid experience in general environmental monitoring and assisted with the avifauna surveys for RNUP-AF in August 2017. The other environmental specialists will continue to be supported by the NEA as further monitoring for the existing and additional projects is rolled out in the next reporting period.

65. **Limitations.** Lack of ability of some contractors to allot the necessary resources to complete applications for mineral licenses (often due to their lack of ability to work in the English language) has been a concern for the report writing and prompt implementation and reinforcement of the mitigation measures. The NES officer on RNUSP is now covering Package 1 and Package 2. However since Package 1 is more than 70% complete and Package 2 more than 45% complete the NES can focus more on Package 2. The ESO on RNUSP Package 1 speaks English and attended ECAT 6 training in December 2017. The ESO on RNUSP Package 2 does not speak English and did not attend ECAT 6. The ESO officer on RNUP-AF Tasitolu-Tibar has limited environmental experience but has responded

very well to training and speaks good English and although having other responsibilities was performing to an acceptable level (resigned December 2017 replacement due Jan 2018). The ESO on NRUP Package 2 speaks good English and has liaised well with his health and safety counterpart; who although having limited English is coordinating well and both are performing to an acceptable level. The ESOs on RNUSP-AF Bau-Lau and Mau-Mot both speak adequate English and are liaising well with their health and safety counterparts; who although having limited English are also aware of the environmental requirements and all are performing to an acceptable level.

66. In previous reporting periods it was observed that the IECs in the PISCs had continued focussed more on monitoring and not mineral license applications; which put an additional burden on the IES and NES in the PMU to follow up on renewal of licenses. However, in this reporting period the IECs in the PISCs have responded further to earlier encouragement to drive the Contractor to complete mineral license applications in a timely manner. This has improved the situation in general and the Contractors have in some cases shown initiative and applied for mineral license renewals at least a month before they are due. Hold ups with mineral licenses are now more due to administrative and payment issues than technical difficulties with document submissions. Having said this some contractors are still having difficulties completing SSEMP to the satisfaction of the ANPM. Notwithstanding the impasse with DNCPIA on requirement for site specific environmental licenses as well as SSEMP for mineral licenses. In this reporting period the time allotted for the intermittent IECs in the PISCs has been better used to effectively assist the contractors with the completion of necessary documentation. More emphasis will be applied by the PMU environmental specialists in the next reporting period to encourage the PISC's IECs to focus more on assisting the contractors on outstanding administrative issues such as updating CEMP, updating mineral license applications and supporting documentation as well as more emphasis on applying all the mitigation measures in the EMP.

67. There have been four contracts under ADB projects, three contracts under the WB and one contract under Jica from June to December 2017. Two contracts under ADB also mobilized in September 2017. The frequency of monitoring has remained more or less as for the previous reporting period for PMU with a slight increase in monitoring by PISCs. In total there have been site inspections on more than 300 days spread across four projects for the the six months in this reporting period. There has been parallel emphasis on other development partner projects and upcoming projects requiring follow up on applications for Environmental Licenses. Another four projects are expected to be under construction under ADB requirements in the next reporting period. Another one is expected under World Bank (making a total of 10 in the next reporting period). The current projects are further afield than the previous suite of projects. However three of the new projects will be within an hours travel by car from the PMU base in Dili. Other new projects are much further and will take much longer to travel to and from.

68. **Outstanding Issues.** At the end of this reporting period there were no outstanding environmental issues on RNUSP Package 1 (Manatuto-Laclubar Junct.) however monthly progress meetings during the period have highlighted issues where necessary. RNUSP Package 2 Contractor still has had difficulty to provide the information to complete the requirement for renewal of Mineral License for three quarry sites. IEC in PISC was requested several times by PMU to assist the contractor completing the requirements. This will be reiterated to the new IEC for RNUSP in January 2018. On both RNUP-AF and NR1UP P2 the mineral licenses need to be concluded efficiently. RNUP-AF contractor requires to submit acceptable CEMP in the next reporting period. RNUP-AF and RNUSP-AF and all other projects received another package of environmental compliance awareness training and monitoring in December 2017 which will be repeated as necessary in the next few months as new consultant and contractors are mobilized for new projects.

69. The staffing issue on RNUSP for (Manatuto-Laclubar-Natarbora) was resolved as the contract for the NEC for Package 1 (Manatuto-Laclubar) was extended and the NEC will now also cover Package 2 (Laclubar-Natarbora) to supervise the contractors' compliance on the EMP.

70. In addition the environmental specialists in PMU will continue to monitor and inspect all other projects as they are coming on stream. For the main construction works, a close watch was kept on all packages. In this reporting period close follow up has been made on renewal of one environmental license and following up on application for the Environmental License for upcoming projects.

71. **Recommendations.** The current strategy, systems and procedures for environmental management and monitoring has generally been acceptable in with ADB requirements. In order to keep this level of compliance in the forthcoming reporting period, sufficient attendance in the field and observation and interaction with consultants and contractors must be maintained. The environmental specialists in PMU must remain focussed on all aspects of the portfolio, in particular joint field inspections, on the job training for Contractor's and productive interaction with the PISCs and Contractors. This is once more especially relevant at this time as there are potentially five new project road contracts that will reach the construction stage in the next reporting period. In addition there are two existing and one potential new project from World Bank to cover. The strategy has been to try and make a joint inspection on each project at least every six weeks (twice per quarter). The present strategy for monitoring and environmental awareness training programme will be continued for new contractors and consultants; with refresher training, updated as necessary to take account of recent trends and developments.

72. In the past it has been emphasised that when on assignment in Timor Leste, IECs in the PISCs need to balance time equally between monitoring, report writing, renewal of mineral licenses and assisting the contractor to deal with location approvals and mineral license requirements. Mobilization and demobilization in Timor Leste for IECs need to be agreed in advance between PISC and PMU and deliverables for the mobilisation period to be agreed at the outset of the mobilisation period with the environmental specialists in PMU. The programme for each IEC should be agreed at least three months in advance with each IEC; at least by the point of demobilization from the previous tour of duty. However some degree of flexibility should be included to allow for any unforeseeable impacts and changes. Whereas IEC time in Timor Leste should be more focused on report writing, addressing outstanding issues and renewal of licenses, mentoring the NEC and making sure contractors are in compliance with the EMP are still key functions of the IEC.

73. Communications on the projects are being improved and the PISC consultants are being able to use the Contractor's translator. Generally these translators can speak the home language of the contractor (e.g. Chinese) as well as English and Tetum; and with some technical / engineering training can function adequately. The communications have been facilitated both on-site and in progress meetings by the Contractor's translators.

74. Contractors have been recommended to engage a sufficiently qualified and properly resourced Environmental Officer and Health and Safety Officer (or combined Health Safety and Environmental Officer) full time on site capable in compiling the required environmental documents for the project (CEMP, SSEMP, Health and Safety and Traffic Management plans) as well as being capable to follow up in a timely manner on the necessary completion of requirements for mineral license applications and complete the necessary monitoring and reporting on mineral extraction for ANPM.

75. Considering that in the past the turnover of staff in the PISCs for IEC and NEC has been high it is very important that staff for both IEC and NEC positions in the PISC are replaced promptly; if they have to be replaced. It is recommended that the replacement of the staff should be provided immediately but no later than one month after resignation of the previous staff.

76. This will be essential to back up the existing PMU environmental specialists efforts to ensure implementation of the EMPs in the field. Sufficient resources and support from the PISCs is required so that the PMU can sustain the level of input to support the operational procedures that allowed compliance with ADB requirements in the past. In the meantime environmental management and monitoring on all PMU projects must proceed with the available resources to achieve an acceptable level of compliance.

6. APPENDICES

- Appendix 1A – Monitoring conducted by PMU (IES and NES) during monitoring period
- Appendix 1B – Monitoring conducted by PISC (IEC and NEC) during monitoring period
- Appendix 2 – Sample Photographs of Projects during the reporting period
- Appendix 3 – Compliance with Environmental Management Plan
- Appendix 4 – Corrective and Preventative Action Requests
- Appendix 5 – Responsibilities for Environmental Management

Appendix 1 –Monitoring conducted by PMU (IES, NES&NET) during reporting period

DATE OF MONITORING	SINOTECH		NIPPONKOE		KATAHIRA
	RDIJ	CNI22	Sinohydro	SCG	China Wu Yi
	Package 1	Package 2	Part 1	Part 2	TTNPR
6-Jul-17	JPP+JB	JPP+JB	JPP+JB		
16-Jul-17	JPP+JB		JPP+JB		
8-Aug-17					DWG + JPP + JB
10-Aug-17				DWG+JPP+JB	
19-Sep-17	JPP+JB				
20-Sep-17		JPP+JB			
22-Sep-17					JPP+JB
28-Sep-17			JB	JB	
20-Nov-17	DWG + JPP	DWG + JPP			
21-Nov-17			DWG + JPP	DWG + JPP	
24-Nov-17					DWG + JPP
12-Dec-17					DWG + JPP + JB
14-Dec-17	DWG + JPP + JB				

ABREVIATION	
KEI	Katahira and Engineers International
SINOTECH	Sinotech Engineering Consultants Limited
PP	PT PP Construction and Investment
SJ	Constructora San Jose SA.
RDIJ	R. D. Interior Junior Construction
CNI22	China Nuclear Industry 22nd Construction Co., Lda.
R3	Road Network Upgrading Project ADB Loan Nos. 2857/2858-TIM (Tibar-Liquica)
R4	Road Network Upgrading Project ADB Loan Nos. 2857/2858-TIM (Tibar-Gleno)
P1	Road Network Upgrading Sector Project Contract Package 1 Manatuto-LaclubarJn.
P2	Road Network Upgrading Sector Project Contract Package 2 LaclubarJnctn.-Natarbora
DWG	Dr. David W. Green (PMU International Environmental Specialist)
JPP	Jose Paulo Pinto (PMU National Environmental Specialist)
JB	JovenBaretto(PMU National Environmental Technical Officer)

Appendix 2 –Monitoring conducted by PISC (IEC and NEC) during reporting period

Monthly Monitoring Report	SINOTECH		NIPPON KOEI CO., LTD		KATAHIRA
	RDIJ	CNI22	Sinohydro	SCG	CWY
	Pack 1 (Manatuto-Laclubar)	Pack 2 (Laclubar-Natarbora)	Part 1 (Dili-Manatuto)	Part 2 (Manatuto-Baucau)	Tasitolu-Tibar Port Road
July	03,04,05,06,07,08,10,11,12,13,14,15,17,18,19,20,24,25,26,27,28,29,31.	01,03,04,05,06,07,08,10,11,12,13,14,15,17,18,19,20,24,25,26,27,28,29,31.	02,04,05,08,11,10,12,15,19,16,20,25,27,28,	01,08,12,13,14,15,18,19,24,27,29	27
August	01,02,03,04,05,07,08,09,10,11,12,14,15,16,17,18,19,21,22,23,24,25,26, 28,29,31.	01,02,03,04,05,06,07,08,09,10,11,12,14,15,16,17,18,19,21,22,23,24,25,26,28,29,30,31	02,04,07,08,12,14,15,18,19,20,23,24,25	01,03,05,08,11,12,15,19,21,26,	03,08,23,28
September	02,04,05,06,08,09,11,12,13,14,15,16,17,18,19,20,21,22,23,25,26,27,28,29,30.	04,05,06,07,08,09,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30.	01, 02, 03, 04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19,25,26.	08,09,10,11,13,14,15,16,18,19,20,22,23,25	04,09,15,22,27
October	02,03,04,05,06,07,09,10,11,12,13,14,16,17,18,19,20,21,23,24,25,26,27,28,30,31.	25,26,27,28,30,31	02, 04,,07,08, 12, 14,15, 18,19,20, 23, 24, 25.	02,10,17,18,19,20,23,	03,10,18,24,30
November	06,07,08,09,14,15,16,17,18,20,21,22,23,24,25,30	06,07,08,09,10,11,14,15,16,17,	01, 02, 03, 04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30.	01,06, 07, 14, 27, 28, 30	05,10,17,22,30
December	01,05,11,13,15,19	02,04,06,12,14,16,18	01, 02, 03, 04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24,25,26,27,28,29,30.	07, 11, 19, 27	02,11,23

Abbreviations same as Appendix 1a

Appendix 2–Sample Photographs of Projects during the reporting period

RNUSP Package 1 Manatuto-Laclubar Sample Site Inspection Photographs July – December 2017

<p>November (Km88+100 left side) Contractor compound, fuel tanks banded and oil storage are –need clean up and improvement (CPAR003).</p>	<p>November (Km89 right side) Cribas river borrow pit continuing extraction in dry season after replenishment in March wet season.</p>
	
<p>November (Km89) Completed asphalt pavement.</p>	<p>November (Km74 approx.) complete crossing drains & structures.</p>
	

RNUSP Package 2Laclubar-Natarbora Sample Site Inspection Photograph July – December 2017

<p>September (Km115 left side) Contractor camp fuel and oil storage, fuel tank not bunded, needs improvement. (CPAR008)</p>	<p>November (Km1400. right side) Lamara river materials extraction to close to bridge and right river bank.</p>
	
<p>November (Km139 approx.) Completed asphalt course & parapet walls.</p>	<p>November (Km105 approx.) Extraction construction materials and general roadworks lacks proper signage and barrier.</p>
	
	

NR1UP Package 2 Manatuto – Baucau Sample Site Inspection Photographs July – December 2017

<p>November (Km96 right side) Contractor compound, Bund to fuel tank constructed. Needs Improvement).</p>	<p>March (Km95) Construction culvert. Signage and barrier somewhat improved.</p>
	
<p>November (Km91 to Km93 right & left side) Excavated unsuitable soil and spoil not all disposed yet. (CPAR003)</p>	<p>November (Km104) Large feature tree (Ficus benjamina – weeping fig) One of 25 avoided by minor adjustment in alignment).</p>
	
	

RNUP-AF Four Lanes 2 Tasitolu – Tibar Sample Site Inspection Photographs July – December 2017

<p>September 2017 Km 12 (R/S) Burning vegetation and grubbing waste at spoil disposal area (CPAR 003 September 2017)</p>	<p>September 2017 Slope cutting and construction of embankment at Tibar (Km12)</p>
	
<p>September 2017 (Km10 – Km11) Clearing and grubbing Cutting of saddle started at top of hill</p>	<p>December 2017 (Km13). Tibar Bridge construction inundated with mud and flood waters after heavy rains in early December. (CPAR 004)</p>
	
	

Appendix 3 – Compliance with EMP

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Climate change adaptation	Risk of increased erosion and damage to road infrastructure	<ul style="list-style-type: none"> Ensure all measures incorporated in design are implemented 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH
Contractor EMP prepared Awareness and orientation of Contractor	All foreseeable impacts captured in CEMP.	<ul style="list-style-type: none"> The following sections or method statements shall be included in the CEMP based on the EMP and the CEMP shall be prepared by the Contractor in the preconstruction stage for approval by PISC and endorsement by PMU and implementation by the Contractor: Waste Disposal (covering spoil disposal, general waste and hazardous waste); Quarries, borrow areas and construction materials management; Blasting and vibration; Asphalt, hot mix plant, rock crushers and bitumen supply; Erosion control and runoff; Bridge repairs and river protection; Water contamination prevention; Dust and noise minimization; Tree cutting and replanting; Enhancement planting; Construction camp operations, sanitation and diseases; Power and utilities protection; Drainage system, irrigation and water resources; Safety precautions - workers and public; Temporary traffic management; and Accidental discovery of archaeological assets, sites or resources. Decommissioning, rehabilitation, revegetation and recontouring of quarries, borrow areas and construction materials processing areas. 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	PARTLY COMPLIED WITH
PISC Check on legitimacy of material sources	Project complies with donor bank requirements, best practice and material suppliers are fit for purpose	<ul style="list-style-type: none"> PISC checks legitimacy of material supplies proposed by Contractor in the CEMP and reports to PMU. 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Surveying and demarcation of centre-line	Minor loss of vegetation during demarcation	<ul style="list-style-type: none"> Vegetation clearance during surveying and demarcation activities, especially of trees along the river banks and road-side, will be minimized. Major trees (especially in suco areas) to be removed will be clearly marked, only marked trees will be removed; In order to minimize loss of trees the trees that are not within the paved area or hard-shoulder but are in the embankment will not be cut unless for justifiable engineering or safety reasons; The contractor will be responsible for providing adequate knowledge to construction workers in relation to existing laws and regulations regarding illegal logging. Contract documents and technical specifications will include clauses expressly prohibiting the felling of trees, not requiring to be cleared by the project, by construction workers for the term of the project; and Construction workers will be informed about general environmental protection and the need to avoid un-necessary felling of trees wherever possible. 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH
Site clearance, digging, excavations	Accidental discovery of PCR or cultural property sites	<ul style="list-style-type: none"> Contractor's CEMP to include section on "chance finds" Site agents will be instructed to keep a watching brief for relics in excavations. Should any potential items be located, the PMU will immediately be contacted and work will be temporarily stopped in that area. The PMU with the assistance of the PMU will determine if that item is of potential significance and contact MPW to pass the information to the relevant department in GOTL (i.e. Secretary of State for Culture) who will be invited to inspect the site and work will be stopped to allow time for inspection. 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH
	Removal of trees	<ul style="list-style-type: none"> Based on the schedule of trees that are unavoidably to be cut made by PMU make a plan to remove trees and include this in the CEMP. Consultation with owner and compensation as per Resettlement Action Plan (RAP) 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH
Mobilization of contractor, presence of construction workers, establishment of camp, associations with local people	Social disruption	<ul style="list-style-type: none"> Suco (village) protocols discussed with workers as part of awareness and mobilization training; At all times workers should respect village and land owner's boundaries and recognize and follow village rules and terms of conduct (especially addressing women and elders), avoiding damage to productive trees and gardens, and access to the resources and springs; 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> The contractor is to ensure that workers' actions outside work site are controlled and Suco codes and rules of conduct are observed at all times; The contractor will identify one member of their staff to be the liaison between the Suco chiefs and elders and contractor, as well as between the contractor and PMU; Worker camp location and facilities will be located at least 500m from settlements and agreed with local communities and facilities approved by PMU and managed to minimize impacts; Adequate signage and security provided at the site office and works yard and prevention of unauthorized people (especially children) entering the area; Hire and train as many local workers as possible by using labour from each suco as the work proceeds along the road from suco to suco. 				
	Health & safety	<ul style="list-style-type: none"> Provide adequate housing for all workers at the construction camps and establish clean canteen/eating and cooking areas; Potable water, clean water for showers, hygienic sanitation facilities/toilets with sufficient water supply, worker canteen/rest area and first aid facilities will be provided. Separate toilets shall be provided for male and female workers; Portable lavatories (or at least pit latrines in remote areas) shall be installed and open defecation shall be prohibited and use of lavatories encouraged by cleaning lavatories daily and by keeping lavatory facilities clean at all times; Wastewater effluent from contractors' workshops and equipment washing-yards will be passed through gravel/sand beds and all oil/grease traps and contaminants will be removed before discharging it into natural streams. Oil and grease residues shall be stored in drums awaiting disposal in Tibar in line with the agreed waste management section of the EMP and the Environmental License; Predictable wastewater effluent discharges from construction works shall have the necessary permits from DNCPIA and local authorities before the works commence; As much as possible, food shall be provided from farms nearby or imported to the area. Bush meat supplies from protected areas will be banned to discourage poaching. Solid and liquid wastes will be managed in line with the provisions of the waste management section of the EMP; 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Use of guns and hunting equipment by workers will be banned and dismiss workers taking or using green timber or hunting or in possession of wildlife; Entry to the protected areas, IBAs and/or sensitive areas (beaches and mangrove areas) by workers will be banned; Provision of adequate protection to the general public in the vicinity of the work site, including advance notice of commencement of works, installing safety barriers if required by villagers, and signage or marking of the work areas; Provision of safe access across the works site to people whose suco and access are temporarily affected or disconnected during construction works (especially across drainage works in sucos); 				
	Spread of communicable diseases	<ul style="list-style-type: none"> Construction camp(s) will be established in areas with adequate drainage in order to prevent water logging at the camp and formation of breeding sites for mosquitoes in order to facilitate flow of the treated effluents; Implementation of HIV/AIDS awareness and prevention program – community (villages) 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH
Operation of construction plant and vehicles generating emissions	Emission of exhaust from vehicles and machinery; Dust from aggregate crushing plant; generated by heavy vehicles transporting materials on roads; Uncovered loads on trucks; Dust from exposed stockpiles	<ul style="list-style-type: none"> Construction equipment will be maintained to a good standard. The equipment will be checked at regular intervals to ensure they are maintained in working order and the checks will be recorded by the contractor as part of environmental monitoring; Prohibition of the use of equipment and machinery that causes excessive pollution (i.e. visible smoke) at the Project site; Material stockpiles being located in sheltered areas and be covered with tarpaulins or other such suitable covering to prevent dusty material becoming airborne; Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with adequate tail-boards and side-boards, and are adequately covered with a tarpaulin (covering the entire load and secured at the front, sides and tail of the vehicle) during transportation. This is especially important as there are a number of suco along the road; Damping down of the road, especially within 100m the sucos along the road and any roads being used for haulage of materials, during the dry season shall take place four times per day; and <p>Periodic qualitative air quality monitoring.</p>	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Works in, or adjacent to, rivers and streams and in the vicinity of the coast	Erosion of riverbanks,; Effects on river structure including (i) changes to river water flows, including levels and velocity; (ii) changes to channel depth, structure & location resulting from excavations; and (iii) changes to riverbanks; Increased turbidity of river waters due to gravel extraction; Increased siltation at culverts; Construction materials are washed out into rivers and other areas	<ul style="list-style-type: none"> Material stock-piles will not be located within riverbeds or the islands in the centre of rivers. Similarly, they will not be located within the current area of floodplain in areas subject to regular flooding (i.e. once per year or more). All land will be for temporary uses will be rehabilitated to original condition or better condition upon completion of the works to the satisfaction of the PMU; Scour protection will be used as temporary measures, as needed, to ensure temporary structures do not damage river configuration; Movements of vehicles and machinery, and hence disturbance, within the riverine habitats will be minimized at all times; No vehicles or machinery shall be washed in the river; In the event that the contractor causes damage to the river bank or other structural parts of a river, the contractor is solely responsible for repairing the damage and/or paying compensation; Embankments and in-stream/river activities will be monitored during construction for signs of erosion; Re-vegetation with local fast growing species, or other plants in consultation with the land owners and suco chiefs, will be carried out incrementally and as quickly as possible after work within any river habitat has been completed; and Spoils, rubbish or any material will not be disposed of within any river system including riverbed, banks or floodplain areas. Suitable disposal sites will be designated in consultation with land owners and suco chiefs and approved by PMU. 	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH
Sourcing of materials (river gravels, aggregates etc)	Extraction of river gravels from the beds or active channels of rivers changes hydrology altering channel & erosion; Extraction from quarries or borrow pits leaves unusable land, exposed water table, attracts rubbish dumping, reduces visual values	<ul style="list-style-type: none"> Contractor to prepare materials extraction plan as part of CEMP; Stockpile topsoil for later use and fence and re-contour borrow pits after use. Properly remove topsoil, overburden, and low-quality materials and stockpile near the site to be covered and preserved for rehabilitation; Gravel and alluvial material shall not be removed within 10m of the river bank or within 200m upstream or downstream from a bridge; Gravel and alluvial material shall not be removed to a depth of greater than 2m and holes in river bed shall be re-contoured when extraction is complete; Alluvial terraces or alluvial deposits which lie on the river beds but not covered by water in normal hydrological conditions; shall be preferred; 	COMPLIED WITH License obtained for quarry Feb n 2017.	COMPLIED WITH License obtained for quarry Jun 2016.	COMPLIED WITH License obtained for quarry Feb n 2017.	PARTIALLY COMPLIED WITH License obtained for quarry applied in 2017 - under processing).

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> • Use quarry with highest ratio between extractive capacity (both in terms of quality) and loss of natural state; • Use quarry sites lying close to the alignment, with a high level of accessibility not on slopes and with a low hill gradient; • Reinstate upon completion of construction works at each section damaged access roads, agricultural land and other properties due to transport of quarry/borrow materials, other construction materials and any other project-related activities n; • Provide adequate drainage to avoid accumulation of stagnant water during quarry/borrow site operation; • Avoid use of quarry sites located on river bed. If it is not possible to locate quarries out of river beds use only quarry sites lying on large rivers as approved by PMU. Quarry sites lying on small rivers and streams shall be avoided; • Cut berms and terraces during and after extraction in quarries in the mountainous or hilly areas to stabilize slopes, or wherever slopes are important, and implement a drainage system and vegetation cover for rehabilitation; • Dewatered and fence quarries and borrow pits as appropriate, upon completion of extraction activities to minimize health and safety risks; • Ensure borrow pits are left in a tidy state with stable side slopes and proper drainage in order to avoid creation of water bodies favorable for mosquito breeding; • Prevent accidental access and avoid drowning when pits become water-filled by implementing measures such as fencing, providing flotation devices such as a buoy tied to a rope, and backfill as soon as practicable; and • Additional extraction sites and/or borrow pits will not be opened without the restoration of those areas no longer in use; • Refill borrow pits as required by NDE using inert surplus spoil material and • Mark refilled borrow pits and cover with soil and plant vegetation as required by NDE. • The excavation and restoration of sites and borrow areas, as well as their immediate surroundings, will be undertaken in an environmentally sound manner to the satisfaction of the PMU. Sign-off to this effect by PMU will be required before final acceptance and payment under the terms of the contract. 				

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Decommissioning of all accommodation, plant and construction materials processing areas will include removal of all residual contamination, waste, machinery and constructed facilities. Decommissioning plan will be included in the CEMP covering rehabilitation, revegetation and recontouring of quarries, borrow areas and construction materials processing areas. 				
Spoil disposal. The mitigation measures also apply equally to discarded asphalt of macadam pavement surfaces.	Improper disposal impacts habitats and water courses	<ul style="list-style-type: none"> Contractor's CEMP to include section on spoil disposal Spoil will be reused as far as possible for bulk filling; Spoil shall not be stockpiled at the side of the road or dumped over the road edge or the crash barriers; Spoil will not be disposed of in rivers and streams or other natural drainage path; Under no circumstances will spoil be dumped into any other watercourses (the sea, cliffs near the sea, rivers, streams, drainage, irrigation canals, etc.); Under no circumstances will spoil be temporarily dumped into any other watercourses (rivers, streams, drainage, irrigation canals, etc.); Spoil disposal shall not cause sedimentation and obstruction of flow of watercourses, damage to agricultural land and densely vegetated areas; Spoil will not be disposed of on fragile slopes, flood ways, wetland, farmland, forest, mangrove and associated salt flats, beaches, religious or other culturally sensitive areas or areas where a livelihood is derived; Surplus spoil will be used where practicable for local repair works to fill eroded gullies and depression areas and degraded land in consultation with local community; Spoils shall only be disposed to areas approved by land owner, local authority, PISC and PMU; Spoils shall only be disposed to areas that have acceptable ecological and engineering safety as approved by PISC and PMU; Spoil will be to disposed of to disused quarries and abandoned borrow pits where practicable; Disposed spoil will be spread in 15 cm layers and compacted to optimum moisture content, covered with topsoil, landscaped and provided with drainage and vegetation to prevent erosion in line with best practice; 	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> The spoil disposal site shall be located at least 20m from surface water courses and shall be protected from erosion by avoiding formation of steep slopes and by grassing and other planting. 				
Clearing, grubbing, cut and fill activities, construction of embankments; Gravel extraction from rivers leads to erosion; Stockpile and staging areas lead to loss of land use	Soil erosion & silt generation; Increased runoff / erosion; Sediment contamination of rivers; Turbidity	<ul style="list-style-type: none"> All required materials will be sourced in strict accordance with GOTL guidelines and the EMP; Material stock-piles, borrow pits and construction camps will only be located on unused land or non-agricultural land following consultation with PMU, land owners and suco chiefs. All land will be rehabilitated to its original condition or better condition upon completion of the project works; Excavated material will be reused and surplus will be used to refill borrow pits; In the event that the contractor causes damage to agricultural land, productive land or gardens, the contractor is solely responsible for repairing the damage and/or paying compensation based on the rates in the approved resettlement plan; Embankments and in-stream/river activities will be monitored during construction for signs of erosion. A standby pile of stones and rocks should be kept on hand to be used in the event that there is bank or channel erosion for work in location of stream and river; Gabion baskets, rip-rap or bio-engineering methods will be used to both strengthen the road and to prevent erosion upstream and downstream of bridge abutments; Re-vegetation of riverbanks will be carried out with fast growing species, or other plants in consultation with the land owners and suco chiefs, as quickly as possible after work has been completed; Random and uncontrolled fly-tipping of spoil, or any material, will not be permitted. Suitable dump sites will be designated in consultation with land owners and suco chiefs. Dump sites will not be permitted within 50m of rivers or streams or on garden land or in areas used for livelihood production by suco residents; and Obtaining all necessary permits or approvals for location of construction camps, material extraction sites and sources of construction materials from NDE and other government agencies prior to works commencing. 	COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH
Run-off, discharges, generation of liquid wastes	Impacts on water quality;	<ul style="list-style-type: none"> Lubricants will be stored in containers / dedicated enclosures with a sealed floor >50m from water bodies; 	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
	Increased siltation at culverts and bridges; Construction materials washed out into rivers	<ul style="list-style-type: none"> Fuel tanks 5000 litres or less will be stored in dedicated areas with a sealed floor >50m from water bodies; Fuel tanks greater than 5000 litres will be stored in a walled enclosure with a sealed floor and bunds >50m from water bodies including rivers and beach; Work in rivers will be scheduled during dry season and work duration shall be as short as possible. Bare slopes shall be stabilized immediately after works are completed; Stockpile areas and storage areas for hazardous substances shall be located away from water bodies; Washing of machinery and vehicles in surface waters shall be prohibited; Sediment controls such as silt fences or other sediment reducing devices (rock dams or silt barriers), to prevent both siltation and silt migration during works being undertaken in the vicinity of streams and rivers; Sediment control devices will be cleaned and dewatered, discharges will not be to the rivers or streams. Consultation with land owners and suco chiefs will identify suitable land-based areas for settling ponds or discharge areas; Diversion ditches will be dug around material stockpiles to catch runoff; Minimizing interference with natural water flow in rivers, water courses or streams within or adjacent to work sites. Pollution of water resources will not be permitted; Abstraction from water resources may be permitted after prior approval from PMU in consultation with local suco leaders and local authorities. Solid wastes, debris, spent oil or fuel from construction machinery or plant, construction material, or waste vegetation removed from work sites will not be dumped in or near streams, rivers or waterways Discharge of sediment laden construction water or material (including dredged spoil) directly into the rivers, sea, inter-tidal area or surface waters will not be permitted. All such construction water will be discharged to settling ponds or tanks prior to final discharge; Discharge zones from culverts and drainage structures will be carefully identified, and structures will be lined with rip-rap. Down-drains and chutes will be lined with rip-rap, masonry or concrete; 				

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Spoil and material stock piles will not be located near the coast, on the coastal side of the Project road, or within 15 m of waterways, streams or rivers, or on the edge of slopes or hills above rivers or stream; Hydro-carbons, fuel, and other chemicals as required for the works, will be stored in secure containers or tanks located >50m away from surface waters, or streams. Any spills will be contained and immediately cleaned up as per the requirements of the emergency response plan prepared by the contractor (and approved by PMU); and All water, waste-water and other liquids shall be disposed of after treatment in line with the Environmental License - see below 				
General activities - solid and liquid waste generation	Uncontrolled and un-managed waste disposal	<ul style="list-style-type: none"> Contractor's CEMP to include section on waste disposal, recycling and re-use of materials from the project; Areas for disposal to be agreed with local authorities and checked and recorded and monitored by the PMU; Segregation of wastes shall be observed. Cleared foliage, shrubs and grasses may be given to local farmers for fodder and fuel. Organic (biodegradables) shall be collected and disposed of on-site by composting; NO Burning. Waste associated with the project or the supporting activities is NOT allowed to be burned anywhere ; Burning of construction and domestic wastes shall be prohibited; Recyclables shall be recovered and sold to recyclers; Residual general wastes shall be disposed of in disposal sites approved by local authorities; Construction/workers' camps shall be provided with garbage bins; Disposal of solid wastes into flood ways, wetland, rivers, other watercourses, farmland, forest, mangrove and associated salt flats, beaches, places of worship or other culturally sensitive areas or areas where a livelihood is derived canals, agricultural fields and public areas shall be strictly prohibited; There will be no site-specific landfills established by the contractors. All solid waste will be collected and removed from the work camps and disposed in the local authority designated waste disposal sites at Tibar; and Waste disposal areas approved by local authorities shall be rehabilitated, monitored, catalogued, and marked if required. 	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Use of hazardous materials	Oil and other hazardous chemicals are spilled into the environment resulting in pollution; Hydrocarbon leakage or spills from construction camps and workshops; Accidents placing people at risk	<ul style="list-style-type: none"> Emergency Response Plan (as part of EMP) shall be prepared as part of the CEMP by Contractor to cover hazardous materials/oil storage, spills and accidents; Ensure that safe storage of fuel, other hazardous substances and bulk materials are agreed by PMU and have necessary approval/permit from NDE and local authorities. Hydrocarbon, toxic material and explosives (if required) will be stored in adequately protected sites consistent with national and local regulations to prevent soil and water contamination. Equipment/vehicle maintenance and re-fuelling areas will be confined to areas in construction sites designed to contain spilled lubricants and fuels. Such areas shall be provided with drainage leading to an oil-water separator that will be regularly skimmed of oil and maintained to ensure efficiency; Fuel and other hazardous substances shall be stored in areas provided with roof, impervious flooring and bund/containment wall to protect these from the elements and to readily contain spilled fuel/lubricant; Segregate hazardous wastes (oily wastes, used batteries, fuel drums) and ensure that storage, transport and disposal shall not cause pollution and shall be undertaken consistent with national and local regulations; Ensure all storage containers are in good condition with proper labeling at least in English and Tetun; Regularly check containers for leakage and undertake necessary repair or replacement; Store hazardous materials above flood level; Discharge of oil contaminated water shall be prohibited and all oily waste shall be taken to Tibar oil disposal facility as required by NDE; Used oil and other residual toxic and hazardous materials shall not be poured on the ground; Used oil and other residual toxic and hazardous materials shall be disposed of in an authorized facility off-site but shall be taken in sealed drums to Tibar oil disposal facility as required by NDE; Adequate precautions will be taken to prevent oil/lubricant/ hydrocarbon contamination of river channel beds; 	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Ensure availability of spill clean-up materials (e.g., absorbent pads, etc.) specifically designed for petroleum products and other hazardous substances where such materials are being stored; Spillage, if any, will not be washed away but will be immediately cleaned up using absorbant cleaning materials with utmost caution to leave no traces; Spillage waste to disposal sites approved by local authorities and approved by PMU; All areas intended for storage of hazardous materials will be quarantined and provided with adequate facilities to combat emergency situations complying with all the applicable statutory stipulation; The contractors shall identify named personnel in their EMP in-charge of storage sites for hazardous materials and ensure they are properly trained to control access to these areas and entry will be allowed only under authorization. 				
Construction activities causing accidental damage to existing services	Interference with existing infrastructure; Water supply contaminated, and power and telecommunications supplies disrupted through knocking over poles or breaking of pipelines or exposing water table during works.	<ul style="list-style-type: none"> Consult with inservice providers to minimize physical impacts on public infrastructure and disruption to services; Reconfirm power, water supply, telecommunications and irrigation systems likely to be interrupted by the works and any additional trees to be cut near utilities; Contact all relevant local authorities for utilities and local village groups to plan re-provisioning of power, water supply, telecommunications and irrigation systems; Relocate and reconnect utilities well ahead of commencement of construction works and coordinate with the relevant utility company at the district and district levels for relocation and reconnection well before works commence and include for compensatory planting for trees; Inform affected communities well in advance; <p>1. Arrange reconnection of utilities and irrigation channels in the shortest practicable time before construction commences; and</p> <ul style="list-style-type: none"> If utilities are accidentally damaged during construction it shall be reported to the PMU, DRBFC and utility authority and repairs arranged immediately at the contractor's expense. 	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Encroachment into precious ecology, disturbance of marine and terrestrial habitats, effects on flora and fauna	Impacts on terrestrial habitats; Workers poach animals for food or feathers etc; Protected or sensitive areas affected	<ul style="list-style-type: none"> Invasive species shall not be introduced. Contractor’s site office, works yard, rock crushers, material storage, borrow pits, and quarries will all be approved by PMU and will not be permitted in any ecologically important sites or areas valuable for conservation; Vegetation clearance during construction activities, especially of trees along the river banks and road-side, will be minimized and no greater than the absolute minimum in line with the detailed designs; Under no circumstances is the contractor permitted to fell or remove mangroves; Contractors will not cut any trees within or outside the project at the request of the local land owners or suco leaders without prior approval from PMU; Vegetative cover cleared from the roadside during rehabilitation activities will be kept for land protection and re-vegetation. Contractors will be responsible for re-vegetation in cleared areas; The contractor will be responsible for providing adequate knowledge to construction workers in relation to existing laws and regulations regarding illegal logging. Contract documents and technical specifications will include clauses expressly prohibiting the felling of trees, not requiring to be cleared by the project, by construction workers for the term of the project; The contractor will be responsible for providing adequate knowledge to construction workers in respect of fauna. Contract documents and technical specifications will include clauses expressly prohibiting the poaching of fauna by construction workers and making the contractor responsible for imposing sanctions on any workers who are caught trapping, killing, poaching, or being in possession of or having poached fauna; The PMU will supervise and monitor a ban on use of forest and mangrove timber and workers shall be prohibited from cutting trees and mangroves for firewood; and Construction workers will be informed about general environmental protection and the need to avoid un-necessary felling of trees unless justified on engineering grounds and approved by PMU. 	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH	PARTIALLY COMPLIED WITH
Accidental encroachment into	Impacts on PCR or cultural property sites	<ul style="list-style-type: none"> Contractor’s CEMP to include section on “chance finds” Site agents will be instructed to keep a watching brief for relics in excavations. 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	PARTIALLY COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
historical / cultural sites		<ul style="list-style-type: none"> Should any potential items be located, the PMU will immediately be contacted and work will be temporarily stopped in that area. The PMU with the assistance of the PMU will determine if that item is of potential significance and contact MPW to pass the information to the relevant department in GOTL (i.e. Secretary of State for Culture) who will be invited to inspect the site and work will be stopped to allow time for inspection. 				
Operation of construction plant and equipment creating noise	Noise in community; Impacts on construction workers	<ul style="list-style-type: none"> Baseline data on noise levels shall be collected before commencement of civil works. Rock crushers and asphalt plant to be located at least 500m from sensitive receivers. Requirements in the EMP and contract documents that all vehicle exhaust systems and noise generating equipment be acoustically insulated and maintained in good working order and that regular equipment maintenance will be undertaken; The contractor will prepare a schedule of operations that will be approved by suco chiefs and PMU. The schedule will establish the days, including identifying days on which there should be no work, and hours of work for each construction activity and identify the types of equipment to be used; Workers will be provided with ear defenders and noise abatement equipment as may be required; and Temporary noise barriers will be used if necessary as approved by the PMU Any complaints regarding noise will be dealt with by the contractor in the first instance through the GRM. 	COMPLIED WITH (Monitored by PMU IES)	COMPLIED WITH (Monitored by PMU IES)	COMPLIED WITH (Monitored by PMU IES)	COMPLIED WITH (Monitored by PMU IES)
Presence of vehicles and equipment in villages, use of people's land for access to construction site, traffic and safety issues	Traffic and access disrupted during construction; Traffic safety affected	<ul style="list-style-type: none"> The contractor will prepare, and submit to PMU, a traffic management plan detailing diversions and management measures; Signs and other appropriate safety features will be used to indicate construction works are being undertaken; Contract clause specifying that care must be taken during the construction period to ensure that disruptions to access and traffic are minimized and that access to villages along the Project road is maintained at all times; Provincial Works and village officials will be consulted in the event that access to a village has to be disrupted for any time and temporary access arrangements made; Construction vehicles will use local access roads, or negotiate access with land owners, rather than drive across vegetation or agricultural 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<p>land, to obtain access to material extraction sites. Where local roads are used, they will be reinstated to their original condition after the completion of work;</p> <ul style="list-style-type: none"> • The road will kept free of debris, spoil, and any other material at all times; • Disposal sites and haul routes will be identified and coordinated with local officials; • Provision of adequate protection to the general public in the vicinity of the work site, including advance notice of commencement of works, installing safety barriers if required by villagers, and signage or marking of the work areas; and • Provision of safe access across the works site to people whose villages and access are temporarily affected during road re-sheeting activities. 				
General activities, handling equipment and plant; construction vehicles	Worker health and safety risks	<ul style="list-style-type: none"> • At least one month before construction commences the contractors will demonstrate to the PMU they are properly resourced and a qualified/experienced environment and safety officer (ESO) will be identified by the contractors in the bid; • Establishment of safety measures as required by law and by good engineering practice and provision of first aid facilities at work sites, in vehicles and establishment of an first aid/health post at the camp; • The contractor will conduct of training (assisted by PMU) for all workers on safety and environmental hygiene at no cost to the employees. The contractor will instruct workers in health and safety matters as required by law and by good engineering practice and provide first aid facilities; • Instruction and induction of all workers by the contractor in health and safety matters, including road safety is required for all operatives before they start work; • The contractor will instruct and induct all workers in health and safety matters (induction course) including construction camp rules and site agents will follow up with toolbox talks on a weekly basis. Workforce training for all workers starting on site will include safety and environmental hygiene; • Workers shall be provided with appropriate personnel protection equipment (PPE) such as safety boots, helmets, reflector vest, gloves, protective clothes, dust mask, goggles, and ear protection at no cost to the workers; 	COMPLIED WITH but ESO general late arrivals	COMPLIED WITH but ESO late arrivals and do no speak English	COMPLIED WITH but ESO late arrivals and do no speak English	COMPLIED WITH but ESO late arrivals and do no speak English

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Fencing will be installed on all areas of excavation greater than 1m deep and sides of temporary works; Fencing will be installed on all excavation, borrow pits and sides of temporary bridges; Reversing signals (visual and audible) shall be installed on all construction vehicles and plant. Provision of potable water supply in all work locations; Scheduling of regular (e.g. weekly tool box talks) to orientate the workers on health and safety issues related to their activities as well as on proper use of PPE; Where worker exposure to traffic cannot be completely eliminated, protective barriers shall be provided to shield workers from passing vehicles. Another measure is to install channelling devices (e.g., traffic cones and barrels) to delineate the work zone; and Construction camps shall be provided with toilets/sanitation facilities in accordance with local regulations to prevent any hazard to public health or contamination of land, surface or groundwater. To ensure these facilities never overflow they shall be well maintained and cleaned regularly to encourage use and allow effective operation and emptied regularly at disposal site approved by PMU. 				
Presence of construction workers	Various social impacts including: (i) social disruption; (ii) possibility of conflicts or antagonism between residents and workers; (iii) spread of communicable diseases including STIs and HIV/AIDS; (iv) children are potentially exposed to exploitation; (v) impacts on community health and safety	<ul style="list-style-type: none"> The contractor will appoint an EO to address health and safety concerns and liaise with the PMU and sucos within the Project area; Barriers (e.g., temporary fence), and signs shall be installed at construction areas to deter pedestrian access to the roadway except at designated crossing points; Adequate signage and security will be provided at the site office and works yard and prevention of unauthorized people (including children) entering work areas and camp. Warning signs will be provided at the periphery of the site warning the public not to enter; The general public/local residents shall not be allowed in high-risk areas, e.g., excavation sites and areas where heavy equipment is in operation and these sites will have a watchman at the entrance to keep public out; Speed restrictions shall be imposed on Project vehicles and equipment traveling within 50m of sucos and sensitive receptors (e.g. residential, schools, places of worship, etc.); Upon completion of construction works, borrow areas will be backfilled or temporarily fenced, awaiting backfilling; 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
		<ul style="list-style-type: none"> Provisions will be made for site security, trench barriers and covers to other holes and any other safety measures will be installed as necessary; Drivers will be educated on safe driving practices to minimize accidents and to prevent spill of spoil and hazardous substances (fuel and oil) and other construction materials during transport; Contractors will ensure that no wastewater is discharged to local water bodies, mangroves, rivers, streams or lakes; Measures to prevent proliferation of mosquitoes shall be implemented (e.g., provision of insecticide treated mosquito nets to workers, installation of proper drainage to avoid formation of stagnant water, standing water will not be allowed to accumulate in the temporary drainage facilities or along the roadside); The contractor will make prior provision to ensure the construction workforce attends STI and HIV/AIDS prevention workshops provided through an approved service provider. The workshops will be delivered to the contractor's workforce prior to commencement of any civil works; and Suco-based community awareness raising about transmission of STIs and HIV, reproductive health and safe sex. The program will be implemented after to contractor mobilization and staff are in post but prior to the commencement of civil works.. No child labour will be used 				
Site office and works yard and use of water and electricity supplies	Stress on resources and existing infrastructure	<ul style="list-style-type: none"> Site office and works yard located, if possible, in areas better supplied with infrastructure and services.; Contractor to supply temporary facilities i.e. health post, accommodation, water and electricity, telecommunications, and sanitation 	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH	COMPLIED WITH
OPERATIONAL						
Operation of vehicles creating emissions	Hydrocarbons, Carbon Monoxide, Nitrous compounds, Sulphur Dioxide and particulate matter increase through increased traffic	<ul style="list-style-type: none"> Forecasts of traffic growth indicate that emissions will be low and not have a noticeable effect on air quality; Landscaping along roadside to reduce dust impacts 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
Routine and ongoing maintenance	Constriction of water flows through structures blocking water flow; The need for gravel for on-going road maintenance leads to acquisition of new source areas affecting properties; Standing water degrades road and surrounding environment	<ul style="list-style-type: none"> Maintenance of structures to ensure river debris does not collect and result in damage to culverts and drainage structures, riverbanks, or land through altered flow patterns (see below); MPW will negotiate with resource owners and prepare an MOU acceptable to all parties; Drain and fill areas where water can pool as part of ongoing maintenance activities 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Placement of culverts	Alterations to river flow; Restriction of natural meandering of streams; Restriction of natural flood cycles by temporary storage of floodwaters and restricted flood plain movements	<ul style="list-style-type: none"> Proper maintenance of structures to ensure river debris does not collect and result in damage to banks and land; Scour protection; Good design to ensure normal flood behaviour maintained as closely as possible through use of transparent structures and relief culverts 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Run-off from road	Use of the road results in problems with runoff, loss of soils and other forms of erosion; Water quality in rivers and near-shore areas is affected by use of the new roads (debris laden run-off and silts etc)	<ul style="list-style-type: none"> Maintenance of erosion control structures, preventing debris build-up and ensuring good vegetation cover; Roads will be better compacted, covered and provided with culverts and drains; Awareness of the value of maintaining vegetation cover will be undertaken 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Climate change issues	Unexpected and costly failure of road; Impacts on rainfall, groundwater depletion, or carbon	<ul style="list-style-type: none"> Note: The Project will not induce climate change; Coastal protection works implemented to accommodate climate change (extreme weather events and predicted sea level rise) 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase

MITIGATION MEASURES IN EMP						
Project activities	Environmental Impact	Mitigation measures to be included in EMP	RNUSP P1 MAN-LAC	RNUSP P2 LAC-NAT	NR1UP MAN BAU	RNUP-AF TAS-TIB
	emissions not expected					
Improved access to previously inaccessible, or difficult to reach, areas	Hunting and poaching increases	<ul style="list-style-type: none"> Lack of through-route access and low traffic volumes means it is unlikely there will be any impacts on flora and fauna; There are no rare or endangered species that could be affected by operation; There are no protected areas in or near the Project area 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Increased traffic	Increases in noise nuisance for residents; Increased traffic volumes and higher speeds leads to accidents	<ul style="list-style-type: none"> Low traffic forecasts and the low population density means that ambient noise levels will not significantly increase General safety will be improved through providing a shoulder and widening within ROW Installation of road safety signage Work with police to carry out enforcement of traffic regulations once road is upgraded Awareness raising through village meetings will be needed to create road safety programs Ongoing community awareness ascertain village concerns regarding traffic calming & management 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Spread of communicable diseases	Roads act as pathway for spread of communicable diseases such as HIV and STIs	<ul style="list-style-type: none"> At expected traffic volumes risk of spread of such diseases are not expected 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase
Any other	Unintended or unanticipated impacts	<ul style="list-style-type: none"> As required to avoid or reduce effects or impacts 	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase	Project is in Construction Phase

Note: The EMP table above is the approved EMP for RNUSP P1 and P2 Projects (Manatuto – Laclubar and Laclubar – Natarbora).

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Appendix 4 – Corrective and preventative action requests for ADB Projects 2016 & 2017.

CPAR #	RNUSP P1 Manatuto - Laclubar Junction	RNUSP P2 Laclubar Junction – Natarbora	NR1UP P1 Dili - Manatuto (JICA)	NR1UP P1 Manatuto - Baucau	RNUP-AF Tas-Tib
0001	Clearing Lined Drains. Km65+235 – Km100+355 existing line drains and newly constructed drains blocked. No temporary drainage. Disposal for surplus debris from drains and culverts. Dispose of debris and waste macadam to approved spoil disposal area. Clear the drain and required to construct temporary drains and erosion control structures. 22 January 2016	Dust Accumulation Km 100 to Km144 - Onsite. Dust suppression methods are not in place to control dust in line with IEE and EMP. Water is not sprayed every three hours as requested by EL. Ditches and drains be demarcated with reflective barriers at night for safe traffic movement especially at night. 2 December 2016	Spoil Disposal Areas Are Not Compacted and in Danger of Collapse. Km 100 to Km144 - Offsite Spoil disposal sites boundary not marked and not compacted. Uncontrolled and unsafe dumping not in line with IEE and EMP. Spoil has already partially collapse encroaching farm land below. 15 September 2016	Letter Multiple issues. To Nippon Koei listing 33 matters requiring attention. Matters for general attention in all areas as well as site specific issues were drawn to the attention of the Contractor via this letter to the consultant. Safety of Workers and Public / Spoil Disposal / water ponding-tem drains / Dust control / River protection during bridge construction/ safe storage at casting yard / waste management at camp / control of stockpiling. 30 March 2017 N.B. Contractor Env. Officer resigned March 2017	Fuel Tank, Fuel tank at the contractor's camp is not bunded and covered properly. Fuel tanks with total ≥5000l need to be shaded and bunded to contain 110% of largest tank within the bund. 28 August 2017
0002	No Burning of Waste. Disposal of Garbage and Oily Waste. Contractor camp at Cribas Km88+200. Garbage and office waste being dumped and burned outside camp fence behind kitchen. NO BURNING OF WASTE ALLOWED. No proper disposal of waste. 22 January 2016	No Burning of Waste. Disposal of Garbage and Oily Waste. Contractor camp at Barique Km115. Garbage and office waste being dumped and burned inside camp fence behind kitchen. NO BURNING OF WASTE ALLOWED. No proper disposal of waste. 2 December 2016	No Burning of Waste. Disposal of Garbage and Oily Waste. Contractor camp at Cribas Km88+200. Garbage and office waste being dumped and burned outside camp fence behind kitchen. NO BURNING OF WASTE ALLOWED. No proper disposal of waste. 15 September 2016	ENVIRONMENTAL OFFICER POST vacant Mar to May 2017. REPLACEMENT ENVIRONMENTAL OFFICER IN POST June 2017. Letter Multiple issues to Nippon Koei listing 33 matters requiring attention. Mostly repeat of previous letter with some additions and site specific issues. Safety of Workers and Public / Spoil Disposal / Dust on road / preserve champion Trees / waste disposal / HIV-AIDS training / River protection during bridge construc. / dust at crushers / Not wearing proper protective equipment when drilling & welding & metal cutting. 5 th June 2017 N.B. EST request to inspect site in April and May not approved	Contractor's Environmental Management Plan, Health and Safety Plan and Traffic Management Plan Contractor to produce their site specific plan EMP, Health and safety Plan and traffuc management plan covering all the associated facilities . 29 September 2017
0003	Fuel Tanks Secondary Containment. Contractor camp at Cribas Km88+200. Fuel storage not bunded fuel tank with total ≥5000l need to be bunded large enough to contain 110% of the contents of the largest tanks within the bund. Seal the ground under both tanks. 22 January 2016	Fuel Tanks Secondary Containment. Contractor camp at Barique Km115. Fuel storage not bunded fuel tank with total ≥5000l need to be bunded large enough to contain 110% of the contents of the largest tanks within the bund. Seal the ground under both tanks. 2 December 2016	No topsoil shall be dumped. Management of topsoil does not comply with Contract requirements. Topsoil shall be conserved, removed properly& kept separate from other excavated materials. Topsoil shall be covered and kept for later use or rehabilitation work. Roadway surfaces to be kept clear of topsoil. Contractor to notify Engineer 5 days before before stripping topsoil etc. 15 September 2016	Spoil Disposal Sites. Contracctor should provide the waiver signed by the suco chief and land owner approval of using the land as spoil disposal site to the engineer to be submitted to PMU record. No spoil to take place on river/stream banks or other drainage path. 28 August 2017	Spoil Disposal Sites, burning is not allowed at any location. Extinguishes any spontaneous/accidental fires immediately Contractor should provide their waiversigned by the suco chief and land owner approval of using the land as spoil disposal site before dumping commences to engineer and submit to PMU for record. 29 September 2017

CPAR #	RNUSP P1 Manatuto - Laclubar Junction	RNUSP P2 Laclubar Junction – Natarbora	NR1UP P1 Dili - Manatuto (JICA)	NR1UP P1 Manatuto - Baucau	RNUP-AF Tas-Tib
0004	Clearing lined drains and Temporary drains. Km93– Km99 existing line drains and newly constructed drains blocked. No temporary drainage. Disposal for surplus macadam pavement and debris from drains and culverts. Dispose of debris and waste macadam to approved spoil disposal area. Clear the drain and required to construct temporary drains and divert to minimize erosion control. 29 March 2017	Spoil Disposal Areas Are Not Compacted and in Danger of Collapse. Km 100 to Km144 - Offsite Spoil disposal sites boundary not marked and not compacted. Uncontrolled and unsafe dumping not in line with IEE and EMP. Spoil has already partially collapse encroaching farm land below. 2 December 2016	Multiple issues. Letter to Nippon Koei listing 43 matters requiring attention. Matters for general attention in all areas as well as site specific issues were drawn to the attention of the Contractor via this letter to the consultant. Safety of Workers and Public / Spoil Disposal / Waste Disposal / Drainage / Safe storage RCPC / Oils spills & clean up / Warning signs / Disturbance of beach / Dust / Traffic Management 30 March 2017		Portable batching Plant. Portablr batching plan (PBP) allowed to set up dischraging into river bed. Sludge should not discharge to river bed. Hazardous materiasl including cements waste water shall shall not discharged directly on the ground. 24 October 2017
0005	Letter Multiple issues to SINOTEC listing 41 matters requiring attention. Safety of Workers and Public / Dust on road / spoil management & disposal / Not wearing proper protective equipment when working on line ditches / waste management & disposal / crack in fuel tank bund / unsafe storage in casting yard HIV-AIDS training / minors gaining access to work areas. 30 th March 2017	Road safety signs and barriers. CPAR 005 Attention to Safety of Workers and Public / Not wearing proper protective equipment when working on cross drains and structures. Use of Flagmen and spotters to see dead space for heavy machinery. Also Letter Multiple issues to SINOTEC listing 41 matters also requiring attention. Safety of Workers and Public / waste management & disposal / bund required for fuel tank / conditions in temporary worker accommodation HIV-AIDS training. General verbal warning issued minors gaining access to work areas. 30 th Mar 2017			
0006	Letter Multiple issues to SINOTEC listing 24 matters requiring attention. Safety of Workers and Public / Dust on road / Not wearing proper protective equipment when working on line ditches / waste management & disposal / minors gaining access to work areas. 28 th July 2017	Letter Multiple issues to SINOTEC listing 28 matters requiring attention. Safety of Workers and Public / Dust on road / spoil management & disposal / Not wearing proper protective equipment when working on line ditches / waste management & disposal / crack in fuel tank bund / unsafe storage in casting yard HIV-AIDS training / minors gaining access to work areas. 28 th July 2017			

CPAR #	RNUSP P1 Manatuto - Laclubar Junction	RNUSP P2 Laclubar Junction – Natarbora	NR1UP P1 Dili - Manatuto (JICA)	NR1UP P1 Manatuto - Baucau	RNUP-AF Tas-Tib
007	<p>Insufficient drinking water for workers. Lack of watering for bioengineering-fail to grow. No correct spoil disposal procedures for bioengineering slope trimmings. Some spoil deposited on unstable ground. Dust nuisance at the settlements and visibility for traffic at active working areas. Contractor's drivers should be trained and instructed to follow safe speed limits and contractors shall enforce this on the drivers. Lack of warning signs on road. Correct stockpiling of materials at side of road. Insufficient drinking water for workers. Workers at the active working area should be provide with full PPE and life lines if necessary. Waste diaposal at main camp. 28 Sept 2017</p>	<p>Dust nuisance at the dense settlements and active working area. Contractor's drivers should be trained and instructed to follow safe speed limits and contractors shall enforce this on the drivers. Lack of warning signs on road. Correct stockpiling of materials at side of road. Insufficient drinking water for workers. Workers at the active working area should be provide with dust mask. No secondary containmant for fuel tanks. Sealed bunds and weather proof cover needed. 28 September 2017</p>			
008	<p>Workers at the active working area should be provide with full PPE. Spoil located for protection of works in river requires proper repositionong in river. Spoil disposal without record of land owner permission. Lack of flagmen for traffic control. Poor safety procedures and waste disposal at Contractor camp. Lack of watering for bioengineering-fail to grow. Dust nuisance at the settlements and visibility for traffic at active working areas. Waste diaposal at main camp. Reminder for renewal of Mineral License. 6 December 2017</p>	<p>Km 105 Quarry Operation; Stockpiling and hauling of material done on the public road, narrowing the road and endangering road user. Lack of warning signs on road. Correct stockpiling of materials at side of road. Workers at the active working area should be provide with dust mask. Improper waste disposal. No sealed bunds for fuel tank at asphalt mixing plant. Lamara river quarry too close to the bridge and right hand bank. Renewal of Mineral License. 6 December 2017</p>			

Appendix 5 –Responsibilities for Environmental Management

Agency	Responsibilities
Directorate General of Public Works, - DPW	<ul style="list-style-type: none"> • Overall responsibility for project design and implementation; • Provide support and operating budget to the PMU; • Ensure that sufficient funds are available to properly implement all agreed environmental safeguards measures; and • On behalf of the GOTL, ensure that projects, regardless of financing source, comply with the provisions of development partners' policies to supplement as required the GOTL environmental laws and regulations.
Project management unit - PMU	<ul style="list-style-type: none"> • Engage and retain two full-time staff within PMU as environmental safeguards specialist and resettlement specialist; • During detailed design, work with design consultants to ensure that the SEIS and EMP are updated and suitable environmental protection and mitigation measures design including climate change adaptation measures are incorporated into the design; • Following detailed design carry out baseline survey as specified in the EMP; • Ensure that requisite measures from the updated and approved SEIS and EMP and all relevant parts of the environmental assessment and project agreements are incorporated into the bid and contract documents; • As required, provide advice and/or recommendation on bid responses to the EMP requirements during bid evaluation; • With support from PISC, undertake environmental management capacity building activities for DPW and orientation and awareness training for contractors; • Ensure that DPW has obtained necessary environmental license(s) from DNCPIA prior to award of civil works contracts; • Assist DPW to establish a GRM, as described in the SEIS, to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's performance; • Ensure that PISC provides support, as required, to contractor in preparing the CEMP and ensure that PISC reviews and clears CEMP prior to any works commencing; • Ensure that contractors obtain necessary environmental license(s) from NDPCEI and mineral licenses ANPM prior to commencement of civil works; • Review contractor's monthly reports submitted by the PISC to the PMU; • Audit the PISC monitoring of the contractor's compliance with, and implementation of, the approved CEMP; • Prepare inputs on safeguards matters (including training) to the quarterly progress reports (QPR) prepared by PMU and submitted to DPW, ADB and JICA; • Ensure that in general and overall EMP provisions are implemented to mitigate environmental impacts to acceptable levels; • Based on the results of monitoring, identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to ADB and JICA as necessary; • Based on the contractor's monthly reports, the QPR and audits prepare and submit to DPW, ADB and JICA semi-annual safeguards monitoring reports; and • During operation phase, work with DRBFC to undertake any additional environmental assessment, EMP, license applications and submit to ADB, JICA and DNCPIA for review and clearance.
Design consultants – (supporting the PMU)	<ul style="list-style-type: none"> • Engage and retain safeguards specialists as required by the TOR and contract; • During detailed design, work with PMU to ensure that the SEIS and EMP are updated and suitable environmental protection and mitigation measures design including climate change adaptation measures are incorporated into the design; • During detailed design stage provide all necessary information to the DPW to facilitate obtaining environmental licenses from DNCPIA prior to award of civil works contracts; • During detailed design notify PMU of any change in alignment or project design/components and provide all necessary information to the PMU to facilitate preparation of any additional environmental assessment prior to project construction as required in the EMP (e.g., preparation of new or supplementary environmental assessment in case of change in alignment that will result to

Agency	Responsibilities
	<p>adverse environmental impacts that are not within the scope of the SEIS prepared during loan processing, etc.); and</p> <ul style="list-style-type: none"> • Update, based on detailed design, the EMPs and other environmental protection and management measures to be incorporated in bid and contract documents.
<p>Project implementation and supervision consultant – PISC (supporting the PMU)</p>	<ul style="list-style-type: none"> • Engage and retain safeguards specialists as required by the TOR and contract; • Provide training and capacity building to DPW, PMU staff (including management) and contractors prior to the submission of contractor's CEMP; • Assist PMU in the review and approval of the contractor's CEMP for each road contract package; • Assist PMU to undertake monitoring of the implementation of the EMP (mitigation and monitoring measures) make monthly environmental monitoring reports including incorporation of reports from the contractors • Assist PMU to prepare QPR and semi-annual safeguards monitoring reports for submission to ADB, JICA and DPW as necessary including incorporation of reports from the contractors and corrective action requests to contractor; • Based on the results of CEMP monitoring, identify environmental corrective actions and prepare a corrective action plan, as necessary, for submission to ADB, JICA and other co-financiers as necessary
<p>Contractor(s)</p>	<ul style="list-style-type: none"> • Engage and retain (or designate staff as) ESO and Deputy ESO as required by the contract and the CEMP; • Participate in induction training on EMP provisions and requirements delivered by the PMU and PISC; • Prepare the CEMP (including sub-contractors and method statements) and submit to PMU and PISC for approval; • Obtain necessary mineral license(s) from ANPM and clearance from DNCPIA for associated facilities for project works, quarries, aggregate extraction hot-mix plant etc. prior to commencement of civil works contracts; • Ensure that all workers, site agents, including site supervisors and management participate in training sessions delivered by PMU and PISC. Maintain a record of training and conduct of awareness sessions for staff to ensure compliance with environmental and safety statutory and contractual obligations including the approved CEMP; • Ensure compliance with environmental statutory and contractual obligations and proper implementation of ADB & JICA requirements including approved CEMP; • Based on the results of CEMP monitoring, cooperate with the PISC and PMU to implement environmental corrective actions and corrective action plans, as necessary; • Respond promptly and efficiently to requests and instructions from PMU for environmental corrective actions and corrective actions and implement additional environmental mitigation measures, as necessary; • Prepare monthly reports covering, inter alia, implementation of CEMP and training and submit to PMU through the PISC; and • Provide sufficient funding and human resources for proper and timely implementation of required mitigation measures in the EMP/CEMP.
<p>National Directorate of Pollution Control and Environment Impact – DNCPIA</p>	<ul style="list-style-type: none"> • Review and approve environmental assessment reports required by the GOTL; • Issue, and renew environmental licenses as required by the GOTL during the life of the project; and • Undertake monitoring of the project's environmental performance based on its mandate.