

Semi-annual Monitoring Report

July 2018

Town Electrification Investment Program – Tranche 1

Reporting period covering January to June 2018.

Prepared by PNG Power Limited for the Asian Development Bank (ADB)

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TOWN ELECTRIFICATION INVESTMENT PROGRAMME TRANCHE 1

1. Kimbe Bialla 66kV Interconnection Transmission Line Project
2. Divune Hydro Power Project
3. Divune 33kV TL Project
4. Ramazon 33kV TL Project

4th Semi Annual Environmental Monitoring Report

Reporting Period: January to June 2018

**Prepared by PNG Power Limited Town Electrification Investment Program Project
Management Unit for Government of Papua New Guinea**

July 2018

CONTENTS

1.0 INTRODUCTION.....	5
1.1 Progress of Construction Activities from January to June 2018	5
1.2 Changes to Environment Management Team.....	8
1.3 Relationship with Contractors, Lenders, owners etc.	9
2.0 ENVIRONMENTAL MONITORING	11
2.1 Monitoring Methods	11
2.2 Results of Monitoring.....	11
2.2.1 DHPP.....	12
2.2.2 Divune Transmission Line	17
2.2.3 Ramazon Transmission Line.....	18
3.0 ENVIRONMENTAL MANAGEMENT	19
3.1 Site Inspections and Audits	19
3.2 Non Compliance	20
3.3 Corrective Action Plan	20
3.4 Grievances Redress	22
3.5 Consultation, Disclosure and Participation.....	22
4.0 CONCLUSION AND RECOMMENDATION	22
5.0 ANNEXES.....	23
Annex 1: CEMP Compliance & Inspection Monitoring Form	23
Annex 2: Ramazon TL Compliance Checklist.....	36
Annex 3: PPL Compliance Checklist Divune TL	37
Annex 4: Divune HPP Site Photos.....	38
Annex 5: Divune TL Photos	39
Annex 6: Ramazon TL Photos.....	40

List of Tables

Table 1: Progress up date for Tranche 1 subprojects	7
Table 2: Personnel and Responsibilities Ramazon TL.....	8
Table 3: Updated Environment Permits and License	10
Table 4: DHPP Issues Management.....	16
Table 5: Monitoring Results of Duvune TL.....	18
Table 6: Monitoring Results Ramazon TL.....	18
Table 7: Status of Management Plans.....	19
Table 8: Site Inspection updates	19
Table 9: DHPP Isseus to be addressed by Contract.....	21
Table 10: Recommendations for T1 projects.....	22

ABBREVIATION

ADB	Asian Development Bank
AGJJVL	Joint Venture of AG Investment Limited& Huan Lishui Hydro & Power CO. Ltd
AIL	Angelique International Limited
AROB	Autonomous Region of Bougainville
CEMP	Construction Environment Management Plan
CEPA	Conservation and Environment Protection Authority
DHPP	Divune Hydropower Power Project
EMP	Environment Management Plan
EO	Environment Officer
EP	Environment Permit
GoPNG	Government of Papua New Guinea
GRM	Grievances Redress Mechanism
IEE	Initial Environment Examination
IES	International Environment Specialist
HH	household
HSE	Health, Safety and Environment
HP	Hydro Power
HSE	Safety Health & Environment
KBTL	Kimbe Bialla 66kV Transmission Line
km	kilometre
kV	kilovolt
LLG	Local Level Government
LO	Landowner
MFF	multi-tranche financing facility
MW	Megawatt
NBPOL	New Britain Palm Oil Limited
PE	Project Engineer
PMU	Project Management Unit
PPE	Personnel Protection Equipment
PPL	PNG Power Limited
PRO	Public Relations Officer
PSO	Project Site Officer
RHPP	Ramazon Hydro Power Project
SE	Site Engineer
TEIP	Town Electrification Implementation Programme
T1	Tranche 1
TL	Transmission Line

1.0 INTRODUCTION

1. The Town Electrification Investment Program (TEIP) is co-funded by ADB and GoPNG under a multi-tranche financing facility (MFF) loan to be implemented over a ten-year period. The aim of this MFF is to improve electrification service to the small towns and communities in selected provinces and promote clean energy such as in hydro and replace diesel fuel generators. TEIP is managed by PNG Power Ltd, a state owned enterprise solely responsible for generation, transmission, distribution and retail of electricity.
2. There are two tranches covered under this MFF. Tranche One covers four subprojects, Kimbe-Bialla 66kV Transmission Line Project in Kimbe, West New Britain, Divune Hydro Power in Popondetta, Oro Province, Divune Transmission Line and Ramazon Transmission Line in Bougainville. Kimbe-Bialla 66kV TL sub-project was completed in September 2017. This report outlines the progress and environmental monitoring outcomes so far on the tranche 1 subprojects.
3. CEPA the government body responsible for issuing permits and regulations under the Environment Act 2000 categories the subprojects as Level 2B and requires an environment assessment, EMPs and environmental permits. ADB requirements under the Environment and Safeguard Policy 2009 require an IEE and EMP for each subproject.
4. As a requirement of ADB, under the Environment and Safeguard Policy 2009, TEIP is required to submit semi-annual reports on the environment monitoring activities. This is the fourth monitoring report covering activities carried out from January to June 2018.

1.1 Progress of Construction Activities from January to June 2018

5. Over the six month period from January to June 2018 the following activities were recorded and reported by the TEIP PMU currently implementing the projects according to target dates outlined. KBTL has been successfully completed in September 2017. The other three sub-projects are still under implementation at this time of reporting. For DHPP, the expected completion date is December 2018. Ramazon TL and Divune TL are expected to complete by January 2019. Table 1 shows the status of the subprojects for tranche 1.

SUB PROJECT	DESCRIPTION OF PROJECT	CONTRACTOR	CONSTRUCTION PROGRESS																	
KBTL	Construction of a new 66 kV TL connecting Kimbe and Bialla towns over a distance of 142km	AIL	Completed construction 100%. Awaiting commission and final payments.																	
DHPP	Construction of a new run-of-river hydropower plan with a capacity of 3MW	AGJJVL	<p>Works within the month of January - June 2018. Progress so far 35%</p> <p>Works carried out are as follows:</p> <ol style="list-style-type: none"> 1. Crusher – works being carried on crushing and maintenance of crusher, trucks loading from Kumusi River to Ilimo. 2. Batching Plant- The Batching Plant is in production producing concrete mix for the Penstock Fabrication 3. Flooring slabs and the fencing around the PPL Staff Housing. 4. Workshop- Works continues at motor workshop maintaining heavy vehicles and machines. Site is maintained and no environmental risks and impacts identified. 5. Penstock Fabrication Area and Storage – The Penstock Fabrication warehouse is currently being constructed and is almost complete. Penstock materials arrived on site between the dates of 9th – 14th of May 2018. 																	
Ramazon TL	Construction of 33kV TL over 67km that starts from Kokopau and ends at Tearoki Mission station, Tinputz	PPL	<p>Progress so far 45%</p> <table border="1"> <thead> <tr> <th>Energized Line Poles</th> <th>Pole Erection</th> <th>Total Poles Strung</th> <th>Pole Fabrication</th> <th>TOTAL POLE AT YARD</th> </tr> </thead> <tbody> <tr> <td>172 / 531</td> <td>210 / 531</td> <td>172LV / 186HV / 531</td> <td>23 with OPGW SHS</td> <td>321</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Steel 40</td> </tr> </tbody> </table>			Energized Line Poles	Pole Erection	Total Poles Strung	Pole Fabrication	TOTAL POLE AT YARD	172 / 531	210 / 531	172LV / 186HV / 531	23 with OPGW SHS	321					Steel 40
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Divune TL	Construction of 33kV TL over 70km that starts from Popondetta to Kokoda Station	PPL/ AGJJVL	<p>Progress so far 40%</p> <ul style="list-style-type: none"> Total No: of Main Poles Erected to date = 206 poles (33KV & 22KV including Oro Bay Junction) Total No: of Open Wire LV Extension Poles Erected = 11 (All stringing completed) Actual Transmission Line Poles Erected to Date is at Pole #184/667 25,590.39 km. Approximately 70 poles to reach targeted Pole # 257 at Awala where AGJJVL Team started off. Total Poles Strung HV/LV = 167 poles Total Poles Strung HV only = 20 Poles Total Poles yet to string HV/LV = 42 poles 												

Table 1: Progress up date for Tranche 1 subprojects

1.2 Changes to Environment Management Team

6. Roles and responsibilities of the environment team remains the same for the Divune TL and DHPP sub projects except for Ramazon TL which is constructed by PPL and Environmental monitoring responsibilities are outlined below in table 2.

KEY PERSONNEL	ROLES
PMU Project Manager	<ul style="list-style-type: none"> • The establishment, maintenance and approval of the CEMP in accordance with the requirements of the contract; • Provision of adequate and suitable resources; • Ensuring environmental reporting requirements are implemented.
PMU EO	<ul style="list-style-type: none"> • Provide support to construction staff to meet the environmental requirements • Ensure that the construction staff receive proper environmental awareness training • Maintain environmental records and files • Make sure non- conformance incidents are recorded and actioned. • Provide reports to ADB
Site Engineer	<ul style="list-style-type: none"> • Identifying and reporting any existing or potential adverse environmental impacts on site. • Ensuring the work under their control in accordance with environmentally sound practices and providing suitable leadership to labour and subcontractors with regard to construction and environmental issues.
Linesmen/ casuals	<ul style="list-style-type: none"> • Complying with acceptable safe environmental requirements/ reporting procedures • Ensuring awareness of their supervisors/ employees of the project environmental requirements/ reporting procedures • Identifying and reporting of any existing or potential adverse environmental impacts on site.

Table 2: Personnel and Responsibilities Ramazon TL

1.3 Relationship with Contractors, Lenders, owners etc.

7. Relationships are maintained through the following;
- Contractors' communication and information for the monitoring of activities are carried out in conjunction with the contractors monitoring activities. Monthly reports are given on time and reporting of construction activities updates are also required by TEIP PMU.
 - PMU EO is required to conduct environment audits on project sites and provide a report to ADB on a six-monthly basis.
 - PMU is also required to visit communities impacted by the project and conduct awareness and address concerns raised through consultations.

The updated status of environmental permits and licenses submitted by the contractors/sub-contractors for T1 sub projects are reflected in the Table 3 below:

ITEM	STATUS	COMMENT
Divune HPP		
Permit for cutting of grass, bushes and trees, located on construction site	Not needed	Land plot is a property of PPL. It is not needed to take any permission for cutting of grass, bushes and trees located on construction site.
License for borrow pit and crusher plant	Yes	Covered in Environment Permit obtained from CEPA
Inventory of Emissions of hazardous substances in to ambient air from batching plant	Yes	Covered Environment Permit obtained from CEPA
Disposal of municipal and construction waste	Yes	Permit obtained from CEPA for disposal to local land sites.
Divune 33kV TL		
Permit for cutting of grass, bushes and trees, located on construction site	No	Restricted to road easement corridor
Disposal of municipal and construction waste	Yes	Covered in DHPP EP

ITEM	STATUS	COMMENT
License for borrow pit	No	Obtained locally from river beds with permission from community leaders.
Ramazon 33kV TL		
Permit for cutting of grass, bushes and trees, located on construction site	No	Restricted to road easement corridor
Disposal of municipal and construction waste	Yes	Covered in RHPP EP
License for borrow pit	No	Obtained locally from river beds with permission from community leaders.

Table 3: Updated Environment Permits and License

2.0 ENVIRONMENTAL MONITORING

8. Monitoring of environment activities are outlined in the IEE and EMP that have been approved by ADB and CEPA. The CEMP is required by the Contractor to provide and monitor. PMU carries out environment monitoring audits and reporting to ADB.

2.1 Monitoring Methods

9. For the monitoring of activities we do the following for all sub projects;
 - Carryout Site Inspection
 - Review of Contractors EMP monthly reports
 - Review Contractors' progress monthly report
 - Meeting with Contractors' Environment Officers

10. Monitoring took place for DHPP and Divune TL from the 23rd to the 26th of May 2018. This was the only site visit carried out during the six monthly periods.

11. The Monitoring activities included;
 - Site Inspection of construction site (Weir, Power house and penstock, diversion channel), workers camp, concrete batching plant and the crusher site at Illimo.
 - Meeting with AGJJVL HSE Officer, PRO and Site Project Manger
 - Monitoring contractors EMP and monthly reports (January to June 2018)

12. Ramazon TL monitoring activities includes;
 - Daily monitoring and monthly reporting as required by the CEMP using a standard checklist
 - Reporting incident reports
 - Providing reports to the PMU at the end of each month.

2.2 Results of Monitoring

13. For this 6 monthly monitoring period, only the two sites were visited .i.e. DHPP and Divune TL. For Ramazon TL, the site engineer and site project officer is responsible for monitoring and reporting. No environmental monitoring for KBTL since completion of project in September 2017.

2.2.1 DHPP

14. Due to the delay in construction the results after the inspections will only cover the works which are currently in progress as listed below;

1. Penstock Fabrication Area
2. Batching Plant
3. Workshop
4. Camp site
5. Crusher

Table 4 shows environmental issues managed at DHPP site.

ISSUES	Waste Management	Noise and Vibration	Air Quality	PPE	Water Turbidity	Water Quality	Siltation	Stockpiling	Workers Safety and Health	Community Safety
PENSTOCK	all waste vegetation from clearance have been disposed of	Working hours limited to 7am to 7pm	not an issue	an issue at the moment. Employees need to comply	not required	Sample results to be obtained	not required	All parts sorted and stored in fabricating workshop that is fenced and secured.	No reports on the accidents at the time of reporting	People still walking freely into project site. Barriers need to be erected however; signs have been erected at the entrance gates into project area.
BATCH PLANT	All waste water contained in sediment basin and recycled	no activity at the time of reporting	Not an issue	Partially complied by Contractor	Water recycled. Water collected from rainwater			Gravel stored in designated area 10m away from water source	No reports of incidents at the time of reporting	Community access to water hole located near batch plant. Yet to be fenced once actual construction commence.

ISSUES	Waste Management	Noise and Vibration	Air Quality	PPE	Water Turbidity	Water Quality	Siltation	Stockpiling	Workers Safety and Health	Community Safety
WORKSHOP	All waste oil, grease and drum contained in one area. Oil tyres, rubber and lubricants dispose of into designated areas. No approved landfills, however, recycling, reuse and incineration is applied to all waste disposals. Scrape metals to be recycled	Working hours limited between 6am to 7pm.	Nil. No complaints from communities	Still an issue and needs improvement						fenced and local security enforcement applicable

ISSUES	Waste Management	Noise and Vibration	Air Quality	PPE	Water Turbidity	Water Quality	Siltation	Stockpiling	Workers Safety and Health	Community Safety
CAMP SITE AND FACILITIES	<p>All waste from kitchen are biodegradables are used as compose for vegetable patches or buried.</p> <p>Other rubbish require burning are incinerated</p> <p>Scape food are given to pets that are kept in cages</p>	Generator is switched off at 10pm				Water for drinking obtained from rainwater tanks			Small improvements on rations	Camp and facilities fenced and local security service provided.

ISSUES	Waste Management	Noise and Vibration	Air Quality	PPE	Water Turbidity	Water Quality	Siltation	Stockpiling	Workers Safety and Health	Community Safety
Crusher	All waste rocks to be recycled	Restricted from 6am to 7pm	Not an issue	Need to be improved. Still an issue	All waste water contained in ponds	Need sampling and reporting	All silts stockpiled and to be reused	All materials stockpiled in designated area.	Two near missed accidents happened to Local employees and was attended to by contractor	Area has been fenced and local security services provided.

Table 4: DHPP Issues Management

2.2.2 Divune Transmission Line

15. The Divune TL project is partly constructed by PPL and the Contractor AGJJVL. PPL is erecting and stringing poles from Popondetta to Awala over 20 km along the road easement. PPL is also responsible for connecting HH from Popondetta to Kokoda Station and Waju village as well. The contractor will be erecting and stringing poles from Awala to Kokoda Station covering 50km. Table 5 shows the monitoring results for Divune TL.

MONITORING RESULTS	MONITORING ACTIVITIES REQUIREMENTS ACCORDING TO CEMP AND EMP
Clearance of vegetation and economic trees restricted within road easement of 20m from centre line. Affected Persons paid fair compensation for economic trees affected	. Cleared and restricted by PPL standards and guidelines
All employees issued PPE as company policies. Partially applied by contractor	Workers Health and Safety
All materials transported to construction strictly by PPL crane truck and contractors crane truck	Material Transport
All materials collected and disposed of appropriately	Construction Waste Management
Complied	Ensure the width of the transmission line easement meets conductor safety requirements in terms of sag and side clearance limits.
Steels are used and erected strictly along road easement	Erect transmission line bearing wooden poles alongside the road within the road easement.
Applied as required	Place a smooth aluminium sheet, 0.5m wide anti-climbing barrier around each pole about 3m above ground in heavily vegetated sections to prevent conductor shorting by animals such as rodents, feral cats and cuscus.
Done at the time and where the poles are erected. Affected Persons paid fair compensation of economic trees removed. Maintenance of vegetation clearance and control is required.	At regular time intervals, trim and clear vegetation growth along transmission line routes.

Completed at sites were poles are erected	Offer waste vegetation to villagers as fuel-wood or otherwise burn it to clear the area.
Applied as required	Where ever burning of cut vegetation matter is unavoidable ensure the material is dry enough to allow a hot clean burn.
Applied as required	Ensure the width of the transmission line easement meets conductor safety requirements in terms of sag and side clearance limits.

Table 5: Monitoring Results of Duvune TL

2.2.3 Ramazon Transmission Line

Ramazon TL is constructed by PPL from Kokopau to Tearoki Catholic Mission in the Tinputz LLG over a distance of 67km along the road easement. A CEMP has been approved to monitor activities mentioned below in table 6 and the monitoring results so far.

ACTIVITIES	MONITORING RESULTS
Clearance of ROW	Restricted to road easement and no compensation policy enforced by Government of AROB administration
Material Storage and transport	All materials transported by using PPL crane truck and vehicles drivers have PPL license permits.
Construction waste management	All materials collected and disposed of appropriately
community health and safety	<ul style="list-style-type: none"> • Work conducted during working hours only and community awareness is conducted prior to works being done. • Safety signs are erected during working hours.
workers health and safety	All PPE is issued by PPL and all linesmen are required to be in safety uniforms during working hours by the Site Supervisor.
increased traffic and operating speeds	All vehicles have a speed limit of 60km/h and this speed limit is not to be exceeded.
storage and handling of fuel and lubricants	All fuel drums and lubricants are contained in workshop and storage area based at Kokopau.
Cultural Sites	Where applicable, chief are required to perform rituals to clear sites for construction

Table 6: Monitoring Results Ramazon TL

3.0 ENVIRONMENTAL MANAGEMENT

16. TEIP PMU is required to manage all activities and enforce guidelines for safeguarding the sub projects environmental aspects. TEIP PMU EO conducts environment audits on contractor's EMP and managing all information and documentation.

17. Project site officers keep record and track of information at the project site office.

18. CEMP for Ramazon TL was approved in April 2018 and will be implemented by PPL. An updated management status is shown below in table 7.

MANAGEMENT PLAN	STATUS		
	<i>Divune TL</i>	<i>DHPP</i>	<i>Ramazon TL</i>
IEE	Approved	Approved	Approved
EMP	Approved	Approved	Approved
CEMP	Approved	Approved	Approved
Fire prevention management Plan	Approved	Approved	Approved
Oil Spill Emergency Response Plan	Approved	Approved	Approved
HS Plan	Approved	Approved	Approved

Table 7: Updated status of Management Plans

3.1 Site Inspections and Audits

19. Only two site inspection and environmental audits were conducted during this 6 monthly monitoring period from January to June 2018 by TEIP EO. Ramazon TL updates were provided by the SE and PSO. Status updates are shown in table 8.

SUBPROJECT	DATES OF AUDITS	REPOSIBLE PERSONNEL	REMARKS
Divune HP	23 rd to 24 th of May 2018	TEIP PMU EO, Contractor's HSE officer, PRO and Project Site Manager	Sites visited and inspected were weir, powerhouse, batch plant, crusher, workshops, accommodation and mess facilities, ablution blocks,
Divune TL	25 th May 2018	TEIP PMU EO, PPL Transmission Line Supervisor.	Site visited and inspected from Popondetta town to Mumuni
Ramazon TL	Monthly reports received for April to June 2018.	Project Transmission Line Engineer, Project Site Supervisor and Project Site Officer	Updates, checklist and photos received from Project Site Officer.

Table 8: Site Inspection updates

3.2 Non-Compliance

20. DHPP- No noncompliance notice served to contractors during reporting period due to not much progress for this reporting period in construction phase.

21. Divune TL and Ramazon TL – no noncompliance notice issued. TEIP PMU will follow up in the next reporting period.

3.3 Corrective Action Plan

22. Issues addressed at DHPP from previous monitoring period are shown below in table 9. PMU will follow up in the next reporting period on these issues.



ITEM	DEFECTS	CORRECTIVE ACTION REQUIRED	DEADLINE	IMPLEMENTATION STATUS	RESPONSIBILITY	EMP/CEMP CONCERN	IMPLEMENTED YES /NO	EVIDENCE
Workers Camp and Storage Area – Divune								
1	Proper standard PPE to be provided to all workers fully from shoes, helmets gloves, eye protector, vest	Need to be worn at all times during working hours as part of safety.	30/11/17	Partially	Contractor	Workers Health and Safety	Partially	
2	No proper storage and designated area for fuel drums, fuel drums laying around	<ul style="list-style-type: none"> • Provide proper storage for fuel drums and oil in one designated area away from water sources • Empties must be disposed of properly or recycled. 	30/11/17	Implemented	Contractor	Fuel Handling Management	Yes	
Construction Site								
3	Construction site is exposed to public	Provide signs to warn communities	30/11/17	Partially implemented	Contractor	Community Safety	Partially	
5	Water quality monitoring	Ensure quality of water is maintained according to the CEPA water quality criteria	30/11/17	Partially	Contractor	Water Quality	Partially	

Table 9: DHPP Issues to be addressed by Contract

3.4 Grievances Redress

23. Most complaints are from the community of Waju when the team visited and one of the elders of the Waju community present advised us that most of the community's grievances were given directly to contractor through the local PRO. The contractor has a grievances registry and in the next reporting period updates will be provided.

3.5 Consultation, Disclosure and Participation

24. Consultation meetings were not held during this reporting period as the communities were busy with betelnut transport and sales for their livelihood as it was the session.

4.0 CONCLUSION AND RECOMMENDATION

25. All in all, for the three sub projects monitoring progress needs improvement on the TEIP PMU. At least two site inspections for each site should be done during the six monthly reporting periods. For DHPP and Divune TL environment compliance is rated at 80% and for Ramazon TL 20%. There is need for improvement in monitoring in the next reporting period.

26. The following actions in table 10 are recommended;

SUBPROJECT	RECOMMENDATIONS
DHPP	<ol style="list-style-type: none">1. PPE to be maintained2. Waste Management recording to be provided by contractor3. Community grievances registry to be provided by contractor4. water quality monitoring data to be provided by contractor
Divune TL	<ol style="list-style-type: none">1. Maintain PPE and Safety requirements2. Provide monthly updates by SE and PSO
Ramazon TL	<ol style="list-style-type: none">1. Maintain PPE and Safety requirements2. Provide monthly updates by SE and PSO

Table 10: Recommendations for T1 subprojects

5.0 ANNEXES

Annex 1: DHPP CEMP Compliance & Inspection Monitoring Checklist

Project : Divune HPP

Implementing Agency : PNG Power Ltd

Scope of Inspection: **CEMP Audit**

Contractor : JV AGILHLHPL

Weather Condition: dull day Attendees: Name & Position: TEIP EO Dianah Lolo, Mathew Malas AG HSE Officer, Rosalind Loo Project Site Manager

Date : 23-24th May 2018

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
SITE CLEARANCE PLAN	MM1	Limit land area to be cleared for project infrastructure.	YES	
	MM2	Clearly mark out each allotted segment of land for all workers including machinery operators.	YES	
	MM3	Avoid clearance of riparian vegetation unless absolutely necessary.	YES	
	MM4	Determine usage of cleared vegetation material and store in secure heaps according to disposal or re-use requirements.	YES	
	MM5	If requested, supply waste vegetation for use as fuel-wood to villagers.	YES	
	MM6	Should incineration of vegetation be unavoidable make sure it is dry so that it burns with minimal smoke.	YES	
	MM7	Prepare a site clearance map which must be endorsed by the SE.	YES	
ACCESS ROAD CONSTRUCTION	MM8	Ensure all access roads have a gravelled surface.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM9	Establish a series of side drains at 2m vertical intervals (VI) where bare earth channels will be maintained to direct stormwater flows away from the road. If a 2m VI cannot be achieved, evaluate the feasibility of vegetated channels with a VI of 4m or otherwise armoured, concrete or half-round steel pipes may be used to stabilise the stormwater drainage system	YES	
	MM10	Provide stable outlets where cross drains are required.	YES	
	MM11	Ensure all pipe culverts have flared level outlets with a vertical toe wall at the end of the apron that extends about 0.35m below the apron to avoid undercutting of the apron	YES	
	MM12	Ensure all culverts discharge to safe, non-eroding areas.	YES	
	MM13	Install sediment traps or silt curtains wherever the risk of water quality contamination in nearby water courses is high.	YES	
INVASIVE SPECIES PLAN	MM14	Ensure earth and other organic materials are removed from vehicles and items of heavy machinery before they are transported to the project site.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM15	Set up a wash-down facility on site to clean vehicles and items of heavy machinery prior to usage in the field and before they are taken out of the project area. The wash down facility must be bunded, have an impervious surface and drain into a silt-oil-water separation unit.	YES	
	MM16	The silt from the separation unit in (ii) must be extracted periodically and spread on a sheltered bed to monitor the presence of seeds.	YES	
	MM17	Hydrocarbon material from the separation unit in (ii) must be transferred into a wastewater storage drum which should be located in the fuel bay.	YES	
	MM18	Ensure project employees do not remove native flora and flora from the project site.	YES	
SITE PROTECTION PLAN	MM19	The above project components and support facilities will be restricted to locations that can be effectively managed and protected.	YES	
	MM20	As far as is practicable, limit the extent of excavation in order to reduce the scope for soil erosion.	YES	
	MM21	Remove topsoil and store in pre-identified stable areas for later re-use for site rehabilitation.		

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM22	Separate the other excavated material as either competent (able to be used for site stabilisation or construction work) and incompetent (to be used for site restoration) materials. As in (iii) above, ensure proper storage of this material before usage	YES	
	MM23	Install sediment traps and silt curtains to restrict the movement of eroded particles into the local natural drainage.	YES	
	MM24	Ensure site excavation work is not carried out during heavy rainfall.	YES	
	MM25	Promptly stabilise excavated areas so that exposure to erosion is minimised. Appropriate site stabilisation methods include reduction of flow gradients, contouring to local drainage, placement of gravel and compaction as well as planting of local grass and other vegetation.	YES	
STOCK PILE AND SPOIL HEAP MANAGEMENT PLAN	MM26	Deposit excavated material outside and away from the work site where it can be either re-used in the construction process or reincorporated into the project area	YES	
	MM27	Place incompetent material into appropriate locations within the project area and then re-vegetate these sites to inhibit erosion into the natural drainage.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM28	Structurally secure each stockpile and spoil heap storage area to avoid outward movement of the material.	YES	
	MM29	Install appropriate drainage and sediment containment devices.	YES	
PLAN FOR WORK WITHIN AND ALONGSIDE LUWINI CREEK	MM30	Prohibit stream-bank and in-stream work during high flows	YES	
	MM31	Skim and remove any visible hydrocarbon film before the decontaminated water is pumped out of the coffer dam or trench.	YES	
	MM32	Maintain compliance with water quality standards in Schedule 1 of the Environment (Water Quality Criteria – Aquatic Life Protection) Regulation 2002 of the Environment Act 2000, 100m downstream of the weir.	YES	
NOISE AND VIBRATION MANAGEMENT PLAN	MM33	Formulate a planned maintenance schedule for vehicles, electric tools, and machinery as well as power generators and implement it as specified.	YES	
	MM34	Service vehicles, electric tools, machinery and power generators as stated in the maintenance schedule and where possible, fit noise suppression attachments.	YES	
	MM35	Carry out night time work only if absolutely unavoidable	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM36	Issue ear/hearing protection gear to workers where required.	YES	
	MM37	Ensure noise level does not exceed 45dBA at the boundary of residential areas.	YES	
AIR QUALITY PLAN	MM38	Formulate a planned maintenance schedule for vehicles, heavy machinery as well as power generators and implement it as specified to prevent the generation of foul emissions.	YES	
	MM39	Use clean low sulphur fuel in vehicles, heavy machinery and power generators to avoid production of repulsive emissions.	YES	
	MM40	Any vehicle, unit of heavy machinery or power generator that continuously emits foul exhaust gases should be promptly removed from active service for repair.	YES	
	MM41	Monitor the amount of dust generated and apply suitable control measures such as traffic restriction and water spraying on roads and other exposed areas.	YES	
FUEL STORAGE AND HANDLING PLAN	MM42	Locate fuel and oil storage areas at least 20m away from a watercourse	YES	
	MM43	Where the amount of fuel to be held on site exceeds 5,000 litres, store the fuel in a sealed tank mounted on a concrete base which is bunded to hold 110% of the tank capacity and drains via an oil and water separation unit.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM44	Ensure that each fuel and oil storage facility or workshop is adequately sized, has a roof as well as an impervious base which is bunded and drains via an oil and water separation unit.	NO	
	MM45	Do not transfer fuel into a vehicle or unit of machinery within 20m of any watercourse	YES	
	MM46	Allow only trained personnel with appropriate PPE to handle fuel and clean up accidental spills onto land or water. Report any major spill into Luwini Creek to PMU immediately.	NO	
	MM47	Dispose of waste oil and fuel filters in a PPL sanctioned recycling, landfill or incineration facility.	YES	
	MM48	Transfer contaminated soil to a remediation site and rehabilitate the affected locality with fresh topsoil.	YES	
CONSTRUCTION MATERIAL STORAGE PLAN	MM49	Set up appropriate storage areas for the type of material including ventilation for large freight containers, provision for shelter from rain and site drainage control.	YES	
	MM50	Ensure each storage area provides adequate space for temporary placement of waste material prior to disposal as per the Waste Management Plan.	YES	
WASTE MANAGEMENT PLAN	MM51	Liaise with PPL and CEPA on the setting up of a project dedicated landfill and/or incineration facility.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM52	Engage waste management operators and ensure they are appropriately trained and equipped with PPE.	YES	
	MM53	Sort out types of solid waste generated and ensure proper storage before recycling, reuse or disposal.	YES	
	MM54	Identify recycling or reuse options for each waste type.	YES	
	MM55	Waste that cannot be recycled or reused must be either buried in the landfill area or incinerated.	YES	
	MM56	Ensure nails are removed from non-treated timber off-cuts if they are to be offered to local villagers. Prohibit the supply of treated timber off-cuts to local villagers since these items may be used as firewood for cooking.	YES	
	MM57	Maintain a record of all solid waste generated with particulars including waste type, quantity and mode of management, i.e., reuse, recycling or disposal method.	NO	
	MM58	Provide adequate flush toilets with hand washing sinks. Flush toilets should be connected initially to septic tanks and then underground soak-away trenches.	YES	
	MM59	Ensure ablution block wastewater and kitchen grey-water are also piped into	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
		septic tanks and underground soak-away trenches.		
	MM60	Provide for site drainage control and runoff clarification before the clarified liquid exits the construction area.	YES	
HAZARDOUS SUBSTANCES STORAGE AND HANDLING PLAN	MM61	Compile a list of all HAZCHEMs and their respective Material Safety Data Sheets (MSDS) and submit it to PPL for clearance.	YES	
	MM62	Display the MSDS for each approved HAZCHEM in a relevant work area.	YES	
	MM63	Train personnel in the safe use of these substances and supply appropriate PPE.	YES	
	MM64	Install an emergency eye was station and a shower in each relevant work area.	YES	
	MM65	Transport and handle each HAZCHEM as per the MSDS	YES	
	MM66	Provide a suitable waste receptacle for each HAZCHEM and ensure disposal as per the MSDS.	YES	
WORKPLACE HEALTH AND SAFETY PLAN	MM67	Prepare a Work Statement (WS) that identifies hazards applicable to a particular site together with an outline of the approved work procedure and details of protective safety equipment to be used by any person entering the specified work area.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM68	As a component of the WS, formulate an emergency response plan that addresses serious accidents and nominate a response coordinator who must be contacted when an accident occurs.	YES	
	MM69	Display a copy of the WS at each relevant work site and discuss it with workers before work commences.	YES	
	MM70	Prohibit the use of drugs and alcohol on site	YES	
	MM71	Appoint from within the Joint Venture or recruit a HSO who will evaluate workplace safety issues and instruct workers on workplace hazards, health and safety issues.	YES	
	MM72	Provide workers a safe work environment and personal protective equipment (PPE) including hand, head, eye and ear protection as well as appropriate footwear.	YES	
	MM73	Set up a fully resourced first-aid facility on site and engage a trained and competent health worker.	YES	
	MM74	Mitigate noise and dust generation on site.	YES	
	MM75	Provide potable water and ablution facilities for all workers.	YES	
	MM76	Record each accident, its lost production time as well as corrective action and compile the data monthly.	YES	

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
WORKERS CAMP ESTABLISHMENT AND INCOMING WORKERS PLAN	MM77	Give priority for employment to local people.	YES	
	MM78	Locate and manage camps so that social harmony is maintained between workers and local communities.	YES	
	MM79	Provide potable water, nutritional meals and recreational facilities to meet the requirements of the Employment Act 1978 or an acceptable international standard whichever is the superior.	YES	
	MM80	Forbid extraction and trading in wildlife by workers to prevent the unsustainable loss of local flora and fauna.	YES	
	MM81	Prohibit workers from trespassing onto local customary land.	YES	
	MM82	Dispose of waste generated from the camp as per the Waste Management Plan.	YES	
TRANSMISSION LINE INSTALLATION PLAN	MM83	Ensure the width of the transmission line easement meets conductor safety requirements in terms of sag and side clearance limits.	YES	
	MM84	Erect transmission line bearing wooden poles alongside the road within the road easement.	No	Steel poles are used instead of wooden

Construction Activity	MM#	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	MM85	Place a smooth aluminium sheet, 0.5m wide anti-climbing barrier around each pole about 3m above ground in heavily vegetated sections to prevent conductor shorting by animals such as rodents, feral cats and cuscus.	YES	
	MM86	At regular time intervals, trim and clear vegetation growth along transmission line routes.	YES	
	MM87	Offer waste vegetation to villagers as fuel-wood or otherwise burn it to clear the area.	YES	
	MM88	Wherever burning of cut vegetation matter is unavoidable ensure the material is dry enough to allow a hot clean burn.	YES	
COMMUNITY HEALTH AND SAFETY PLAN	MM89	Carry out awareness on road safety and project site access in the local area.	YES	
	MM90	Ensure all visitors report to a check-point for clearance to enter the site.	YES	
	MM91	Demarcate work areas with barrier tape and erect signs as required to warn people to keep away.	No	
	MM92	Routinely service each vehicle or plant machinery so that it is in a safe operating condition.	YES	
	MM93	Ensure each driver or machinery operator works in a safe and responsible manner	YES	
	MM94	Secure each load and cover loose material such as soil or sand with tarpaulin.	NO	

Annex 2: Ramazon TL Compliance Checklist

ANNEX I: COMPLIANCE CHECKLIST

PPL COMPLIANCE CHECKLIST

Project: RAMAZON TRANSMISSION PROJECT Project N° _____

EO/Supervisor: CHRISTIANO OMI

Site/Selection: SELAN / SWIR

Signature: 

Date: 04/07/2018

PERFORMANCE CRITERIA	CHECKED & OK	NOT OK... Actions taken to correct
Noise Control		
Noise and vibration levels minimized	OK	
Air Quality		
Dust Generation –Plant and Equipment	OK	
Exhaust	OK	
Access and Construction Extent		
Construction materials and access contained on site	OK	
Fuel and Hazardous Goods		
Hazardous materials stored properly	OK	
Materials safety data sheet on site	OK	
Fuelling and maintenance of Vehicle		
Fuelling being carried out in designated areas	OK	
Major repairs carried out away from construction works	OK	
Rubbish, Waste and Site Clean Up		
Waste generation kept to minimum	OK	
Excess soil and rock disposed of appropriately	OK	
Any area of potential waste contamination	OK	
Final cleanup of jobsite on completion	OK	
Prevention of Land and water contamination		
Accident Spills immediately cleaned up	OK	
Minimize potentials for spillage	OK	
Cultural Heritage		
Culture heritage items are barricaded and protected	OK	
Appropriate training for staff on importance		NOT OK

Annex 3: PPL Compliance Checklist Divune TL

Project: Divune TL Project N° _____

EO/Supervisor: Dianah Lolo _____

Site/Selection: Popondetta to Awala 20km

Signature:

Date: 25th May 2018

PERFORMANCE CRITERIA	CHECKED & OK	NOT OK... Actions taken to correct
Noise Control		
Noise and vibration levels minimized	OK	
Air Quality		
Dust Generation –Plant and Equipment	OK	
Exhaust		
Access and Construction Extent		
Construction materials and access contained on site	OK	
Fuel and Hazardous Goods		
Hazardous materials stored properly	OK	
Materials safety data sheet on site		
Fuelling and maintenance of Vehicle		
Fuelling being carried out in designated areas	OK	
Major repairs carried out away from construction works	OK	
Rubbish, Waste and Site Clean Up		
Waste generation kept to minimum	OK	
Excess soil and rock disposed of appropriately	OK	
Any area of potential waste contamination	OK	
Final cleanup of jobsite on completion	OK	
Prevention of Land and water contamination		
Accident Spills immediately cleaned up	OK	
Minimize potentials for spillage	OK	
Cultural Heritage		
Culture heritage items are barricaded and protected	OK	
Appropriate training for staff on importance	OK	

ID	15.00 Installation of transmission line	Yes	No	Remarks
15.01	Does the route for the transmission line meet the technical specifications?	✓		Specific to PPL standards
15.02	Are the power poles fitted with anti-climbing barriers and correctly positioned?	✓		
15.03	Is vegetation clearance within the transmission route regularly conducted?	✓		Yes but to be maintained by PPL
	Compliant			

Annex 4: Divune HPP Site Photos



Annex 5: Divune TL Photos



POLE ERECTION AT POPONDETTA



TRANSMISSION LINE SAGGED ALONG ROAD



SAGGING TL



POLES SAGGED AND ERECTED ANGENABO



Annex 6: Ramazon TL Photos



LAYDOWN AREA KOKOPAU



LAYDOWN AREA KOKOPAU



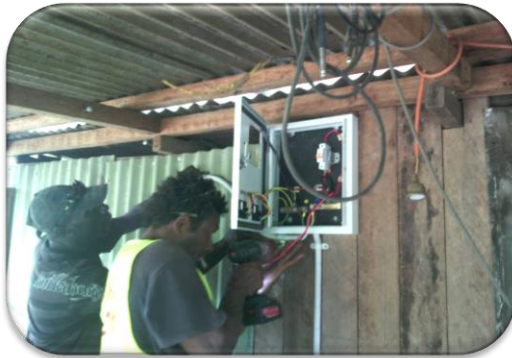
CRANE TRUCK ERECTING POLES



CRANE TRUCK ERECTING POLES



LINESMAN CONNECTING HV LINES



LINESMEN CONNECTIONG EASIPAY METER