

Semi-annual Report

March 2019

# **Town Electrification Investment Program – Tranche 1**

Prepared by PNG Power Limited for the Asian Development Bank.

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**TOWN ELECTRIFICATION INVESTMENT PROGRAMME TRANCHE 1**



**5<sup>th</sup> Semi Annual Environmental Monitoring Report**

**Reporting Period: July to December 2018**

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

**March 2019**

## ABBREVIATION

ADB	Asian Development Bank
AGJJVL	Joint Venture of AG Investment Ltd & Huan Lishui Hydro & Power CO. Ltd
AIL	Angelique International Limited
AROB	Autonomous Region of Bougainville
CBC	Community Base Contracts
CEMP	Construction Environment Management Plan
CEPA	Conservation and Environment Protection Authority
DDC	Divune Development aCompany
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
HPP	Hydro Power Project
KBTL	Kimbe Bialla 66kV Transmission Line
KM	Kilometre
KV	Kilovolt
LHHPP	Lake Hargy Hydro Power Project
LLG	Local Level Government
LO	Landowner
MFF	Multi Tranche Facility
MW	Megawatt
PE	Project Engineer
PMU	Project Management Unit
PPE	Personnel Protection Equipment
PPL	PNG Power Limited
PRO	Project Relations Officer
PSO	Project Site Officer
RCHPP	Ru Creek Hydro Power Project
TC	Tree Compensation

TEIP	Town Electrification Implementation Programme
T1	Tranche 1
TL	Transmission Line

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## **1.0 Introduction**

1. This is the fifth environment monitoring report covering the last six months from July to December 2018. The report covers the activities carried out for the Town Electrification Investment Program Tranche 1 (TEIP T1) subprojects and the environment monitoring of construction activities.

### **1.1 Background**

2. TEIP Project Management Unit (PMU) of PNG is solely responsible for managing the subprojects under PNG Power Ltd. Funds for tranche 1 are provided under a MFF provided by ADB and the PNG Government.

3. There are four subprojects covered under Tranche 1 including additional funding for Lake Hargy Refurbishment and Ru Creek Rehabilitation. Tranche 1 subprojects include (i) Kimbe Bialla 66 kV Transmission Line (TL) in West New Britain that connects Kimbe and Bialla town over a distance of 142km. (ii) Divune Hydro Power Project, a 3MW hydro power project located in Northern province and (iii) Divune TL of 33kV that will supply electricity from DHPP to Popondetta Town and Kokoda Station in Northern Province as well. (iv) Ramazon 33kV TL in Buka, Autonomous Region of Bougainville constructed over 67km. Lake Hargy and Ru Creek will include rehabilitation works within the powerhouse only to replace the old control systems and generators to improve capacity output. Table 1 outlines the six sub projects to be implemented under T1 and brief on the type of work required.

4. Lake Hargy and Ru Creek HPP are two mini hydro with an output capacity of 1.5MW each located in West New Britain Province. LHPP has been in operation for the last 20 years providing electricity to the small town of Bialla and neighbouring communities. Ru Creek has been in operation for the last 25 years and supplies electricity to Kimbe town and communities nearby, however, ceased to operate in 2013 since its spillway collapsed. Additional funding from the MMF for tranche 1 has been allocated to rehabilitate the Powerhouse for these two existing HPP to maintain its capacity output. An IEE on Lake Hargy and an environmental audit for Ru Creek was prepared back in 2016 by PMU that covers the environment aspects of these two sub projects. EMPs for both LHPP and RCHPP were prepared and included in the Bidding documents. There is an existing WUP for LHPP and LCHPP that needs to be renewed and updated by CEPA.

**Table 1: Tranche 1 Sub Projects**

No.	TRANCHE 1 PROJECTS	MAIN SCOPE OF WORK	CONTRACTOR
1	Kimbe Bialla 66KV Transmission Line	Construction of a new 66 kV TL connecting Kimbe and Bialla towns with a length of over 142km.	Angelique International Limited
2	Divune Hydro Power	Construction of a new run-of-river hydropower plan with a capacity of 3MW	Joint Venture of AG Investment and Hunan Lishui Hydro & Power Co. Ltd.
3	Divune 33kV TL	Construction of 33kV TL from Popondetta town to Kokoda station; over 70km	PPL/Contractor
4	Ramazon 33kV TL	Construction of 33kV TL from Kokopau Buka to Tearoki Mission; over 40km	PPL
5	Lake Hargy HPP Rehabilitation	Rehabilitate the Lake Hargy Hydropower facility back to its rated operating capacity of 2 x 750 kW.	Joint Venture AG Investment and Dong Fang Electric International Corporation
6	RuCreek HPP Rehabilitation	Refurbishment of the powerhouse including replacement and installation of new electromechanical equipment.	Vortex

### 1.3 Environmental Category

5. Monitoring reports on the environment are required by the ADB in accordance to Safeguard Policy Statement 2009, and also by Conservation, Environmental Protection Authority (CEPA). This is to ensure environmental sustainability and social-economic impacts are managed well during project implementation without causing adverse environmental impacts. The subprojects are categorised as Level 2B and require environment permits and EMP by CEPA. ADB categorises the sub projects as category B which requires IEE and EMP.

6. All T1 subprojects have complied with the environmental requirements by ADB and CEPA. Environmental monitoring and audits continues throughout the life cycle of the project. Kimbe-Biala Transmission Line (KBTL) subproject has been completed in December 2018. The environmental monitoring of KBTL subproject has ceased after completion. The environmental

monitoring is ongoing for Divune Hydro Power Project, Divune TL (DTL) and Ramazon TL projects. Since these sub projects construction works are currently on going.

#### 1.4 Institutional Arrangements

7. TEIP is responsible for monitoring Contractors CEMP for all subprojects. An International specialist will be engaged to assist in strengthening capacity, supervision and guidance of the environmental assessment process for all subprojects under the MFF, providing if necessary capacity building and on job training.

8. The Project EO of PMU is responsible for monitoring the contractors' implementation of the EMP and to coordinate EMP implementation of the project. A contractor's representative is responsible to implement the CEMP on-site is stationed at the contractors site office. The contractor reports to the Project Site Engineers and EO of PMU.

#### 1.5 Current Works Progress

9. Over the six month period from July to December 2018 the following activities were recorded and reported by the TEIP PMU currently implementing the projects according to target dates outlined. Kimbe Bialla 66kV TL has been completed awaiting final inspection and commissioning. However, household connections are an ongoing activity. DHPP, Ramazon TL and Divune TL is expected to be completed by the end of June 2019. Table 2 and table 3 shows the status updates on works progress so far on the subprojects for tranche 1.

##### 1.5.1 Transmission Line Sub Projects

**Table 2: Progressive Work status of the TL sub projects**

SUB PROJECT	CONTRACTOR	PROGRESSIVE WORKS STATUS	PERCENTAGE OF PROGRESSIVE WORKS
KBTL	AIL	<ul style="list-style-type: none"> <li>Works on the Kimbe-Bialla 66kV TL has been completed awaiting final inspection and commissioning.</li> <li>A total of 1,469 poles erected and strung over a distance of 142km from Mai Junction in Kimbe to Buluma in Bialla</li> <li>household connections are an ongoing activity by PPL</li> <li>So far 850 HH have esipay meters installed in their homes and 686 HH have excess to electricity</li> <li>TC and CBC for APs completed however, outstanding claims and</li> </ul>	<p>TL – HV =100%</p> <p>LV strung =100%</p> <p>LV energised= 100%</p> <p>HH connection –Meter installed 44.81%; HH energised – 36.16%</p> <p>CBC &amp; TC -95%</p>

		issues to be resolved by end of June 2019	
<b>RTL</b>	PPL	<ul style="list-style-type: none"> <li>• Poles strung up to Ton village totalling distance of 27.2km out of 67km.</li> <li>• Total number of poles erected 250/531</li> <li>• Total number of poles strung 210/531</li> <li>• LV strung over 19.2km and 16km energised</li> <li>• 700 HH installed with MSK and 523 HH energised.</li> <li>• No Tree Compensation, however, CBC awarded to APs for clearance works</li> </ul>	<p>TL – HV =45.07%</p> <p>LV strung =28.66%</p> <p>LV energised= 23.88%</p> <p>HH connection –Meter installed 57.19%</p> <p>HH energised – 42.73%</p> <p>CBC – 45%</p>
<b>DTL</b>	PPL	<ul style="list-style-type: none"> <li>• Construction works carried out so far at DTL route is outlined below.</li> <li>• PPL works on DTL is from Popondetta to Awala over 20km</li> <li>• Total distance covered so far is 10km out of 20km</li> <li>• Poles erected 250/ 667 from Popondetta to Koipa Village</li> <li>• 194 poles strung from Popondetta to Hohorita Village</li> <li>• Low voltage stinging is 10km out of 20km and LV energised is 10km</li> <li>• HH connection – MSK installed in 800/1,879 and 550/1,879 HH energised</li> </ul>	<p>TL – HV =78.57%</p> <p>LV strung =25.71%</p> <p>LV energised= 25.81%</p> <p>HH connection –Meter installed 42.58%</p> <p>HH energised – 29.32%</p>
	Contractor - AGJJVL	<ul style="list-style-type: none"> <li>• Contractors works on DTL is from Awala Village to Kokoda station over 50km</li> <li>• Easement clearing: A total route length of 30km out of 50km have been cleared. The percentage of work done is 80%.</li> <li>• Pole fabrication: A total of 244 poles out of 244 required pole have been fabricated. The percentage of work done is 100%.</li> <li>• Pole or bollard erection: A total of 123 poles out of 244 poles have been erected. The percentage of work done is 54%.</li> <li>• Stringing: A total of 15km out of 50km of stringing work have been completed. The percentage of work done is 30%.</li> </ul>	Overall works progress is 60%

		<ul style="list-style-type: none"> <li>Sagging: A total of 10km out of 50km of stringing work have been completed. The percentage of work done is 20%.</li> </ul>	
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### 1.5.2 Hydro Power Projects

**Table 3: T1 HPP Progressive Works**

SUBPROJECT	CONTRACTOR	PROGRESSIVE WORKS DETAILS	PERCENTAGE OF PROGRESSIVE WORKS
<b>DHPP</b>	JVAGDEC	<ul style="list-style-type: none"> <li>The construction activities for anchor block and saddle support commenced at the end of December 2018 and is ongoing. To be completed by the end of May 2019.</li> <li>No works yet on weir and powerhouse due to delays in preparing detail design specifications by the contractor. Approval of detail designs to be completed by the end of March 2019.</li> </ul>	43.53%
<b>LHHPP Rehab</b>	JVAGDEC	<ul style="list-style-type: none"> <li>Existing HPP</li> <li>Contract awarded on the 28<sup>th</sup> May 2018.</li> <li>Works to commence in April 2019 pending detailed design from the Contractor</li> <li>CEMP in review for approval</li> </ul>	20%
<b>Ru Creek HPP Rehab</b>	Vortex	<ul style="list-style-type: none"> <li>Existing HPP</li> <li>Contract awarded on the 22<sup>nd</sup> June 2019</li> <li>Works to commence in May 2019 pending detailed design from the Contractor</li> <li>CEMP in review for approval</li> </ul>	20%

## 2.0 Environmental Monitoring

10. Monitoring of the environmental issues identified in the EMP and CEMP have been going during the construction period for each sub project. Contractor's monthly reports for T1 sub projects have been up to date with some months not submitted due to works not carried on site.

### 2.1. Monitoring Methods

11. Each sub project site follows a standard monitoring process listed below.

- Carryout Site Inspection
- Review of Contractors EMP monthly reports
- Review Contractors' progress monthly report
- Meeting with Contractors' Environment Officers

### 2.2 Monitoring Schedule

12. Environment audits and reporting by the PMU are required every after six months. For 2019 monitoring of T1 subprojects schedule is outlined below. LHPP and RCHPP monitoring to be advised pending CEMP approvals. This will be updated in the next monitoring period.

**Table 4: Monitoring Schedule T1**

Subproject	Contractor	Responsibilities	Monitoring Period
Divune Hydro Power	Joint Venture of AG Investment and Hunan Lishui Hydro & Power Co. Ltd.	TEIP PMU EO, Contractor's HSE officer, PRO and Project Site Manager	Monthly reports January to June 2019  Environment Audit – April 2019
Divune 33kV TL	PPL/Contractor	TEIP PMU EO, PPL Transmission Line Supervisor, PSO	Monthly reports January to June 2019  Environment Audit – April 2019
Ramazon 33kV TL	PPL	Project Transmission Line Engineer, Project Site Supervisor and Project Site Officer	Monthly reports January to June 2019  Environment Audit – April 2019
Lake Hargy HPP Rehabilitation	Joint Venture AG Investment and Dong Fang Electric International Corporation	Project Engineer, Center Manager, Project Site Officer, TEIP PMU EO, Contractors EO/HSE Officer	TBA

RuCreek HPP Rehabilitation	Vortex	Project Engineer, Center Manager, Project Site Officer, TEIP PMU EO, Contractors EO/HSE Officer	TBA
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### 2.3 Monitoring Activities

13. Monitoring activity for DHPP and Divune TL for this bi annual reporting was carried out from the 26<sup>th</sup> to 27<sup>th</sup> November 2018. Weather condition was mainly cold and rainy.

14. Personnel on site: AG- Richard Geo – Senior Geotech Engineer, Lele Lulue – Lab Technician. Johnson –Office Admin. PPL staff: - Teresa Katu \_Project Civil Engineer, Dianah Lolo- Environment Officer

15. This was the only site visit carried out during this six monthly period.

16. 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 (July to September 2018)
- Inspection of construction works along DTL

17. For RTL, no site visit however, the PSO and TL Supervisor provides monitoring checklists. 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.

18. Monitoring activities for LHPP and RCHPP will be updated in the next reporting period when the CEMPs have been approved. Some of the preconstruction activities have been completed as required in the EMP.

### 2.2 Monitoring Results

19. Base on each sub projects CEMP activities are monitored and the results of monitoring activities of the three sub projects during the last six months (July –December 2018) are shown below.

### 2.3.1: DHPP

20. Divune Hydro has had some set back on the construction works in the last six months from July to December. At the time of monitoring conducted in October, the following observations were noted as listed in table 5.

**Table 5: General Observations –DHPP**

PROJECT COMPONENT	OBSERVATIONS	ISSUES	REMARKS
Weir	no activity		Diversion channel has been damaged by the river
Powerhouse	No activity		Works to start by the end of November 2018
Penstock	Cemmenting of anchor blocks	PPE still an issue especially for local labours	
Batch Plant	all cement stored in shed, new aggregated storage being built,	new water supply area being dug needs to be fenced properly near batch plant	Batch plant has ceased to operate at the time of reporting
Workshop	welding of penstock	PPE partially worn / concrete washed down area to be restricted	All vehicles are stored at the two workshops. All materials have been stored away correctly and fenced.
Campsite	Tidy and all issues addressed	Pets not to allowed into mess area during meal times	
Crusher Illimo	No activity	Dispute with Landowners over land ownership	Dispute resolved and operations to commence in March 2019.
Staff housing	The front house has been occupied by PPL staff		Fencing around the house to power house is incomplete at the time of monitoring

21. During site inspections also, the following issues were monitored: waste management, pollution prevention, top soil protection, community safety, air emissions, protection of private property outside construction site, etc. table 6 shows the monitoring results. Checklist is attached as annex 1.

**Table 6: Monitoring Activites DHPP**

ACTIVITIES	MONITORING RESULTS
Site Clearance	Whole project area of 26 ha has been cleared in preparation for construction of powerhouse, weir and access road
Noise, Dust and Vibration	Dust is not an issue since it often rains in the area. Noise has been limited between working hours only from 6 am to 7pm. No complaints from communities.

Cultural significant areas	No significant land mark apart from the waterhole has been disturbed at the time of reporting. No complaints from communities.
Workers Camp and facilities	There are two camp quarters. A workshop, mess and office within project site. Common living facilities are provided for both local and international employees.
Waste Management	Waste has not been an issue and managed well at the moment. Waste segregation has also improved.
Workers Health and Safety	Workers still need to improve on PPE and will be monitored closely during full construction period.
Protection of forest resource and sensitive ecology	Most areas around the project site had been disturbed and construction works is carried out strictly within project boundary. No complaints from communities.
Material transport	All materials transported to site carefully. Licensed drivers are employed and no accidents were reported at the time of reporting.
Storage and Handling of lubricants and fuel	All fuel drums and lubricants are stored and kept well and tidy in designated areas and away from living quarters.
Management of Hazardous Materials Explosives, Combustibles and toxic materials	Not stored at the project site at the time of reporting.
Increased Traffic and Operating Speeds	Maintained. No complaints from communities. Assigned officers to control traffic.
Stockpiling of top soil	All excessive soil and aggregated gravel have been piled neatly and stored in designated areas
Access road construction	New road access had been constructed and is now accessible. Drainage provided and road maintained.
Invasive Species control	All vehicles brought into site have gone through quarantine and have been cleared. No complaints from communities 'on employees venturing into customary land.
Works alongside stream channel	There was no work done during the time of monitoring, however water quality monitoring is yet to be done by the contractors now that construction works is in full swing. This will be closely monitored during the next reporting period.

### 2.3.2 Divune TL

22. Monitoring results of activities for DTL conducted from June to December 2018 are shown below in table 7. Checklist is attached as annex 3.

**Table 7: DTL Monitoring Activities**

ACTIVITIES	MONITORING RESULTS
Land Acquisition and clearance of ROW and other areas	<p>Clearance of ROW is ongoing with 40 percent of the TL has been cleared and Affected Person compensated.</p> <p>Issues are complaints on compensation, false claims and missed out APs however, PPL is responsible to resolve issues by working with village leaders and</p>

	local enforcement.
Material Transport	Transporting of materials such as poles and cables are secured and no accidents reported at the time of reporting.
Increased traffic and operating speeds	Only license drivers are allowed to drive PPL vehicles to and from project site. Sign boards are used to advise drivers along the road to slow down during working hours. No complaints and near missed accidents reported.
Dust and air quality	Dust is not a big issue as it often rains in the area. The project area is mostly rural so the air quality is not an issue.
Construction waste management	All construction waste are transported back to the designated storage area. all waste scrape will be recycled. Other waste materials disposed off at approved local land fills.
Storage and handling of fuel and lubricants	All fuel and lubricants are also stored in a designated area.
Community health and safety	Awareness has been carried out during initial stages of project and most of the communities are well aware of the issues. No issues at the time of reporting
Community consultation and grievances	Consultations are ongoing currently during CBC works and TC pay outs. Grievances are also issues PPL deals with on a daily basis, however, manageable.
Workers health and safety	Health and safety of workers is paramount and all workers are strictly in PPE during working hours.

### 2.3.3 Ramazon TL

23. Monitoring results of main activities along the RTL from June to December 2018 are shown below in table 8. Checklist is attached as annex 2.

**Table 8: RTL Monitoring Activities**

ACTIVITIES	MONITORING RESULTS
Land Acquisition and clearance of ROW and other areas	Clearance of ROW is ongoing with 60 percent of the TL has been cleared.  No compensation policy however, Community Base contracts are awarded as incentives during clearance.
Material Transport	Transporting of materials such as poles and cables are secured and no accidents have been reported during this reporting period.
increased traffic and operating speeds	Only license drivers are allowed to drive PPL vehicles to and from project site. Sign boards are used to advise drivers along the road to slow down during working hours. No complaints and near missed accidents reported.
dust and air quality	Dust is an issue and corrective measures will be done.

Construction waste management	All construction waste are transported back to the designated storage area
storage and handling of fuel and lubricants	All fuel and lubricants are also stored in a designated area.
community health and safety	Awareness has been carried out during initial stages of project and most of the communities are well aware of the issues. No issues at the time of reporting
community consultation and grievances	Consultations are ongoing currently during CBC works. Grievances are also issues PPL deals with on a daily basis, however, manageable.
workers health and safety	Health and safety of workers is paramount and all workers are strictly in PPE during working hours.

### 2.3.4 LHPP and RCHPP

24. Most of the preconstruction task have been completed and will be updated in the next monitoring period. Activites carried out so far are outlined in table 9.

**Table 9: Preconstruction Activities Updates LHPP & RCHPP**

No.	ACTIVITIES	WHO	WHEN	STATUS	Actions Required
1	Project Disclosure	PMU	December 2016	CEPA to edit and review	To be updated
2	Environment Capacity Development	PMU		Not done however when required	To be updated
3	Environmentally responsible Procurement	PMU	Dec 2017	EMP included in bid documents  CEMP yet to be submitted by contractor end April	
4	Disclosure of CPP and GRM and established procedures	PMU	DEC 2016	IEE Document Disclosed and made available to public	
5	Workers and public safety	PMU/ Contractor	Not yet	To be included in CEMP	To be updated
5	Climate Change Adaptation Measures	PMU/ Contractor	June 2018	Will be emphasised during start of costruction works	

6	GRM established	PMU/Contractor	Not yet	GRM well established in PMU and will be required for Contractor to have a GRM plan	To be updated
7	Awareness of Contractors on Environmental Management Matters	PMU	Not yet	Pending CEMP approvals	To be updated

### 3.0 Environmental Management

25. The Environmental Management System (EMS) establishes what the PMU needs to do in order to manage itself so as to meet its environmental goals for T1.

- **Policy** – ADB Safeguard Policy 2009, CEPA guidelines on HP and EMP
- **Planning** – IEE and EMP, CEMP for all sub projects and updated
- **Implementation** – Monitoring by contractor and PMU is ongoing and reporting done at the end of each monitoring period biannually.
- **Checking and Correction Actions**- checklist updated and provided at the end of monitoring period and noncompliance issued to contractor where PMU finds contractor not complying with CEMP
- **Management Review**- External Audits from Financier and CEPA

26. All documentations have been implemented accordingly for all subprojects. All documents are made available to all stakeholders.

#### 3.1 Site Inspection and Audits

27. Only two site inspection and environmental audits were conducted during this 6 monthly monitoring period from July to December 2018.

28. Officer in charge of monitoring the CEMP for DHPP and DTL is a sub contractor based in Popondetta. His task is to conduct environmental monitoring every end of the month and provide reports to Contractor and PPL. He is also required to be present during the environment audits conducted by the PMU.

29. For RTL monitoring is conducted by the PSO. His tasks are to provide CEMP montly reports and checklist every end of the month to PMU for verification.

30. Status updates on the audits conducted during this reporting period is shown below in table 10.

**Table 10: Site Inspection Updates T1**

SUBPROJECT	DATES OF AUDITS	REPOSIBLE PERSONNEL	REMARKS
Divune HP	28 <sup>th</sup> to 29 <sup>th</sup> November 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	30 <sup>th</sup> November 2018	TEIP PMU EO, PPL Transmission Line Supervisor, PSO	Site visited and inspected from Popondetta town Kumisi Bridge
Ramazon TL	No monthly reports since June 2018	Project Transmission Line Engineer, Project Site Supervisor and Project Site Officer	Updates, checklist and photos received from Project Site Officer.

### 3.2 Noncompliance

31. DHPP and DTL non compliance is on PPE- workers Health and Safety. However, continuous monitoring and updates will be provided in the next monitoring period. For RTL the main issue during this reporting period is dust nuisance as monitored by the PSO.

### 3.3 Corrective Actions Plan

32. Corrective actions plan for subprojects is shown below in table 11. These issues need to be addressed and will be closely monitored in the next reporting period.

**Table 11: Issues to be addressed by Contractors'**

SUBPROJECT	ISSUES	DATE	CORRECTIVE ACTIONS	DATE TO RECTIFY ISSUE	REMARKS
DHPP	PPE still an issue		Contractor to provide full PPE to workers	30/12/118	A follow up in the next reporting period on corrective actions
DTL	PPE still an issue		Contractor to provide full PPE to workers	30/12/118	A follow up in the next reporting period on corrective actions
RTL	Dust Nuisance	24/12/18	watering the road during dry weather using water trucks.	30/12/18	A follow up in the next reporting period on corrective actions

33. Issues to be addressed at DHPP are shown below in table 12. PMU will continue to follow up in the next reporting period on these issues.

**Table 12: Issues to be addressed by Contractor DHPP**

No.	Workers Health and Safety	Yes	No	Remarks
1	Does the project have nominated health and safety personnel?		✓✓	Still no permanent personnel on site
2	Are adequate first aid resources Available on site?	✓✓		
3	Have adequate Work Statements (WSs) been prepared for the work area?	✓✓		
4	Do the WSs include emergency response plans where applicable?		✓✓	Currently developing it.
5	Are workers trained and equipped as per the WSs?		✓✓	PMU to follow up next reporting period
6	Are copies of the WSs clearly displayed at the work area?		✓✓	PMU to follow up next reporting period
7	Are accidents recorded and corrective measures taken?		✓✓	PMU to follow up next reporting period
8	Are workers trained and equipped as per the WSs?		✓✓	Proper records need to be well kept In file.

### 3.4 Grievance Redress Mechanism

34. Grievances are ongoing with the APs along the DTL on TC and CBC. Most APs compare payouts with others and complain however, when verifying most claims are not genuine. Proper monitoring of CBC and verification on affected cash crops is important during TL clearance. All issues are communicated through our PSO based in Popondetta PPL Office. Issues that cannot be resolved at his level are addressed by PMU directly.

35. At DHPP most grievances are about local employment and land issues. Contractor has promised to employ more locals when construction work is in full swing. Land issues are ongoing amongst the clans and to be resolved amongst themselves. PPL is assisting by maintaining dialogue through the LO company DDC. All issues between the contractor and the Landowners are communicated and redressed through the local PRO and clan leaders.

36. For KBTL there are grievances on TC and CBC from some APs that have been overlooked during the time of activities being carried out. These issues are being resolved at the moment by the Lands Officer who is onsite to verify and resolve all outstanding issues.

37. No complaints on environment issues during this reporting period for all three sub projects. PPL will be closely monitored the issues and complaints in the next reporting period.

### 3.5 Disclosure and Participation

38. Landowners of Waju have been engaged in small security contracts and minor labour works at DHPP. Most information from contractor is communicated through the Local PRO employed by .the contractor.

39. One of the benefits include new water supply being constructed by the contractor. The construction of the new water supply is underway by the contractor as shown in figure 1.



**Figure 1: New Water Supply Source**

#### **4.0 Conclusion and Recommendation**

40. All in all, all subprojects for T1 have progressed steadily and on track towards achieving its target dates. Monitoring of the environmental issues is on track and improving as the sub projects progresses. There was no reportable environmental issue in DHPP for this reporting period. Continuous monitoring of the environmental conditions at the project site and the surrounding areas was carried out by the EPC Contractor to ensure no environmental damage or impact is experienced from any incident(s) that may occur.

41. DHPP and Divune TL environment compliance is rated at 80% and for Ramazon TL is 50%.

42. Recommendations for the T1 subprojects that needs to be addressed and monitored during the next reporting period is outlined below in table 13.

**Table 13: Recommendations for T1 subprojects**

<b>Sub project</b>	<b>Issues</b>	<b>Corrective Action Plans</b>
KBTL	Outstading CBC and TC claims	To be resolved st the end of June 2019
DTL	Safety of Workers and PPE	To be issued end March 2019 to all PPL Linesmen and construction workers
RTL	Dust nuisance Updated monthly reports	Provide watering trucks during dry periods PSO to provide this every end of the month
DHPP	Needs onsite EO during full construction period	Environment Officer for the contractor should be based at site by next month April 2019.

## 5.0 Annexes

### Annex 1: CEMP Monitoring Checklist for DHPP

#### CEMP Compliance & Inspection Monitoring Form

**Project** : Divune HPP

**Implementing Agency:** PNG Power Ltd

**Scope of Inspection:** CEMP Audit

**Contractor** : JV AGILHLHPL

**Weather Condition:** fine    **Attendees: Name & Position:** TEIP EO Dianah Lolo, Teresa Katu, Johnson Officer Admin, Richard Geo Technical Engineer

**Date** : 25<sup>th</sup> October 2018

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
PLAN FOR WORK WITHIN AND ALONGSIDE LUWINI CREEK	Prohibit stream-bank and in-stream work during high flows	YES	
	Skim and remove any visible hydrocarbon film before the decontaminated water is pumped out of the coffer dam or trench.	YES	
	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	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
NOISE AND VIBRATION MANAGEMENT PLAN	Formulate a planned maintenance schedule for vehicles, electric tools, and machinery as well as power generators and implement it as specified.	YES	
	Service vehicles, electric tools, machinery and power generators as stated in the maintenance schedule and where possible, fit noise suppression attachments.	YES	
	Carry out night time work only if absolutely unavoidable	YES	
	Issue ear/hearing protection gear to workers where required.	YES	
	Ensure noise level does not exceed 45dBA at the boundary of residential areas.	YES	
AIR QUALITY PLAN	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	
	Use clean low sulphur fuel in vehicles, heavy machinery and power generators to avoid production of repulsive emissions.	YES	
	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	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	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	Locate fuel and oil storage areas at least 20m away from a watercourse	YES	
	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	
	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.	YES	
	Do not transfer fuel into a vehicle or unit of machinery within 20m of any watercourse	YES	
	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	
	Dispose of waste oil and fuel filters in a PPL sanctioned recycling, landfill or incineration facility.	YES	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	Transfer contaminated soil to a remediation site and rehabilitate the affected locality with fresh topsoil.	YES	
CONSTRUCTION MATERIAL STORAGE PLAN	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	
	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	Liaise with PPL and CEPA on the setting up of a project dedicated landfill and/or incineration facility.	YES	
	Engage waste management operators and ensure they are appropriately trained and equipped with PPE.	YES	
	Sort out types of solid waste generated and ensure proper storage before recycling, reuse or disposal.	YES	
	Identify recycling or reuse options for each waste type.	YES	
	Waste that cannot be recycled or reused must be either buried in the landfill area or incinerated.	YES	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	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	
	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.	YES	
	Provide adequate flush toilets with hand washing sinks. Flush toilets should be connected initially to septic tanks and then underground soak-away trenches.	YES	
	Ensure ablution block wastewater and kitchen grey-water are also piped into septic tanks and underground soak-away trenches.	YES	
	Provide for site drainage control and runoff clarification before the clarified liquid exits the construction area.	YES	
HAZARDOUS SUBSTANCES STORAGE AND HANDLING PLAN	Compile a list of all HAZCHEMs and their respective Material Safety Data Sheets (MSDS) and submit it to PPL for clearance.	YES	
	Display the MSDS for each approved HAZCHEM in a relevant work area.	YES	
	Train personnel in the safe use of these substances and supply appropriate PPE.	YES	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	Install an emergency eye was station and a shower in each relevant work area.	YES	
	Transport and handle each HAZCHEM as per the MSDS	YES	
	Provide a suitable waste receptacle for each HAZCHEM and ensure disposal as per the MSDS.	YES	
WORKPLACE HEALTH AND SAFETY PLAN	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	
	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	
	Display a copy of the WS at each relevant work site and discuss it with workers before work commences.	YES	
	Prohibit the use of drugs and alcohol on site	YES	
	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	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	Provide workers a safe work environment and personal protective equipment (PPE) including hand, head, eye and ear protection as well as appropriate footwear.	YES	
	Set up a fully resourced first-aid facility on site and engage a trained and competent health worker.	YES	
	Mitigate noise and dust generation on site.	YES	
	Provide potable water and ablution facilities for all workers.	YES	
	Record each accident, its lost production time as well as corrective action and compile the data monthly.	YES	
WORKERS CAMP ESTABLISHMENT AND INCOMING WORKERS PLAN	Give priority for employment to local people.	YES	
	Locate and manage camps so that social harmony is maintained between workers and local communities.	YES	
	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	
	Forbid extraction and trading in wildlife by workers to prevent the unsustainable loss of local flora and fauna.	YES	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	Prohibit workers from trespassing onto local customary land.	YES	
	Dispose of waste generated from the camp as per the Waste Management Plan.	YES	
TRANSMISSION LINE INSTALLATION PLAN	Ensure the width of the transmission line easement meets conductor safety requirements in terms of sag and side clearance limits.	YES	
	Erect transmission line bearing steel poles alongside the road within the road easement.	YES	
	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	
	At regular time intervals, trim and clear vegetation growth along transmission line routes.	YES	
	Offer waste vegetation to villagers as fuel-wood or otherwise burn it to clear the area.	YES	
	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	Carry out awareness on road safety and project site access in the local area.	YES	

Construction Activity	Mitigation Measure (CEMP)	Mitigation Implemented (YES /NO/PATIALLY)	Defect Notice Corrective Action Required including deadline
	Ensure all visitors report to a check-point for clearance to enter the site.	YES	
	Demarcate work areas with barrier tape and erect signs as required to warn people to keep away.	Partially	
	Routinely service each vehicle or plant machinery so that it is in a safe operating condition.	YES	
	Ensure each driver or machinery operator works in a safe and responsible manner	YES	
	Secure each load and cover loose material such as soil or sand with tarpaulin.	NO	

**Attachments**

(E.g. Photos, Remarks, laboratory reports etc)

## Annex 2: Compliance checklist RTL

### ANNEX I: COMPLIANCE CHECKLIST

#### PPL COMPLIANCE CHECKLIST

Project: RAMAZON TRANSMISSION Project N° \_\_\_\_\_

EO/Supervisor: CHRISTIANO ONI

Site/Selection: TGN/SELAU

Signature: [Signature]

Date: 24/12/19

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

### Annex 3: Compliance Checklist Divune TL

Project: Divune TL

EO/Supervisor: Dianah Lolo  
Awala 20km

Site/Selection: Popondetta to

Signature: .....

Date: 28<sup>th</sup> November 2018

PERFORMANCE CRITERIA	CHECKED & OK	NOT OK... Actions taken to correct
<b>Noise Control</b>		
Noise and vibration levels minimized	OK	
<b>Air Quality</b>		
Dust Generation –Plant and Equipment	OK	
Exhaust	OK	
<b>Access and Construction Extent</b>		
Construction materials and access contained on site	OK	
<b>Fuel and Hazardous Goods</b>		
Hazardous materials stored properly	OK	
Materials safety data sheet on site		
<b>Fuelling and maintenance of Vehicle</b>		
Fuelling being carried out in designated areas	OK	
Major repairs carried out away from construction works	OK	
<b>Rubbish, Waste and Site Clean Up</b>		
Waste generation kept to minimum	OK	
Excess soil and rock disposed of appropriately	OK	
Any area of potential waste contamination	OK	
Final clean-up of jobsite on completion	OK	
<b>Prevention of Land and water contamination</b>		
Accident Spills immediately cleaned up	OK	
Minimize potentials for spillage	OK	
<b>Cultural Heritage</b>		
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
15.0 1	Does the route for the transmission line meet the technical specifications?	✓		Specific to PPL standards
15.0 2	Are the power poles fitted with anti-climbing barriers and correctly positioned?	✓		
15.0 3	Is vegetation clearance within the transmission route regularly conducted?	✓		Yes but to be maintained by PPL
	Compliant			

## Annex 4: HHP and TL Photos.

### 4.1: Weir site at Divune



### 4.2: Workshop, Office and Living Quarters.



### 4.3: Batch-Plant Area



### 4.4: Staff Houses and Penstock Materials



#### 4.5: Transmission Lines-Contract.

Pole Erection and Stringing at – Ombisusu Village- Popondetta



#### 4.6: Ramazon Transmission Line Works.

House connection and energized.

